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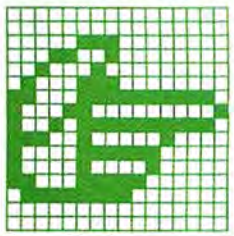

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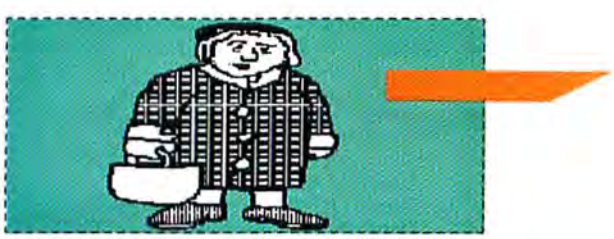

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*An intrepid investigator applies uncanny intuition to exploring* MacWrite, *and uncovers some hidden passageways. See "The MacWrite Sleuth" on page 108.*

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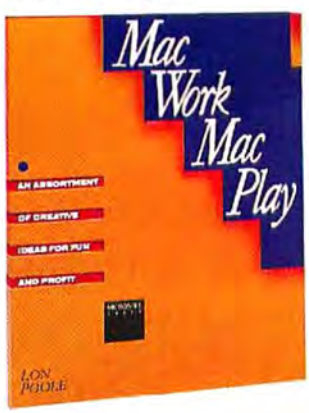


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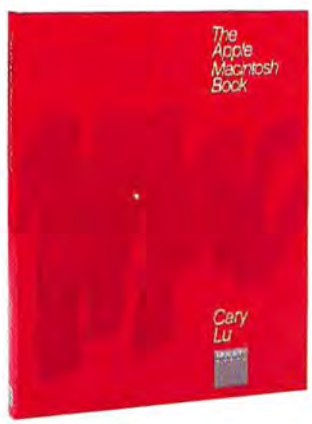


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**Kearney Rietmann**

# More Than the Sum of the Mac's Parts

The people at Apple who created the Macintosh have left a personal stamp on both its hardware and software. Inscribed inside the Mac's case, for example, are the signatures of the people on the development team (see "Macworld View," May/June). When you open *MacPaint,* an author credit—"MacPaint by Bill Atkinson"—appears briefly on the screen. And the first time I chose the About MacPaint option, I was pleasantly surprised to see a *MacPaint* portrait of the person who wrote the program.

A program seems more personal when you know something about its creator. I wonder if some day we'll choose our computers and our software by who the hardware designer or the programmer is. We select books and designer clothes because we like their creator's personal stamp, so why not computers and programs?

Just as Apple has its Macintosh development team, at *Macworld* we have what we call the "Macworld Task Force," made up of six (sometimes seven) people: me, the Editor; Associate Editor Daniel Farber; Editorial Manager Janet McCandless; Assistant Editor Adrian Mello; Editorial Assistant Erfert Nielson; and Copy Editor Jeffrey Bartlett. When we're lucky, we can count on the seventh member of the *Macworld* team, Andrew Fluegelman, our Editor-in-Chief. *Macworld* readers know his writing from "Word Processing's New Look" (Premier issue) and "The Compleat Disk Juggler" and "Exploring Microsoft Chart" (May/June issue).

Daniel Farber was one of the first people to start working on *Macworld.* When you need tips for working with the Mac, he is one of the best to ask. Having a background in literature and writing, Dan says that the Mac changed his view of computers. He had kept his distance from other computers, but working with the Mac he has realized that computer technology can be shaped to meet the needs of people.

Dan advises Mac owners not to assume that they can become experts on the computer in a few hours. He compares exploring the Mac to learning a foreign language. You can quickly learn enough vocabulary and grammar to develop "survival skills" in a language, but the ability to express yourself in all its nuances comes only with extensive practice in real-life situations. Dan believes it's worth the effort to get to know the Mac inside out; that way you'll learn how to adapt it more creatively to your work style.

Janet McCandless is *Macworld*'s Editorial Manager. She researches and writes "Macworld View," keeps track of article ideas and assignments, and handles various administrative tasks such as paying authors.

Janet predicts that the Mac will change the ways its owners work and think. To her, the Mac's transportability means that the boundaries between home, business, and educational computing will dissolve. People will use the computer at the office or at school and then take it home with them.

Janet hopes that people who have Macs at home will communicate electronically with other Mac owners and with large data bases and information services. She thinks that people don't even realize yet the extent to which the personal computer will alter the way communities create and distribute information.

Assistant Editor Adrian Mello writes and edits *Macworld* articles. His article on AppleLine appears in the State of the Art section of this issue. Adrian thinks that *Macworld* supplements the Mac's design philosophy of ease of use. The Mac has confirmed Adrian's belief that computers should be adapted to suit human beings, instead of the other way

*The* Macworld *editorial staff takes a five-minute break between issues. Left to right: Adrian Mello, Janet McCandless, Kearney Rietmann, Jeffrey Bartlett, Andrew Fluegelman, Erfert Nielson, Daniel Farber.*

around. He appreciates that the Mac's creators designed computer technology to match people's work and recreation habits.

To Adrian, the Mac's most impressive feature is the user interface, which makes it easy to switch from one program or application to another. Because the commands for one program function like those for other programs, people can go right to work with new software. This feature will encourage people to buy more software and try more applications than they might if they had to learn commands and procedures for each new program.

Having a B.A. in Fine Arts from the University of Colorado and five years of experience copy editing computer books, Editorial Assistant Erfert Nielson is the perfect curator for the "Macworld Gallery." To prepare the Gallery, Erfert chooses 8 to 10 *MacPaint* drawings from the 50 or so submissions she receives for each issue. After making her selections, she contacts the artists and edits their descriptions of the techniques they used in their drawings. She hopes that Gallery readers not only enjoy looking at the drawings but try to incorporate the techniques in their own *MacPaint* documents. Erfert also oversees "Macware News" and "World Events," and when magazine deadlines draw near, she lends a hand at copy editing.

To Erfert, the Mac is a practical computer, but it also conveys a lighthearted spirit. She has found that Mac owners are an enthusiastic group of people who enjoy using their computers. Working at *Macworld* gives Erfert an opportunity to exchange information with members of the Mac community.

Jeffrey Bartlett is *Macworld*'s Copy Editor. A former college teacher who has a Ph.D. in English, Jeff is qualified to edit *Macworld* articles, doing quick rewrites and checking grammar, spelling, punctuation, and other points of style. He notes that just as the Macintosh has a standard user interface for each program, *Macworld* has a "house" writing style; part of his job is tailoring articles to fit it.

Jeff thinks that the Mac encourages teamwork at the magazine. Our list of upcoming articles (called the status sheet), for example, is kept on disk in a *MacWrite* document. The editors make changes to their printed copies of the status sheet as they progress in writing and editing articles. Periodically, someone updates the disk and circulates printouts of it to the other editors. Because *Macworld* authors write their articles on the Mac and send them in on disk, Jeff does some copy editing right on the disk. After the editing is finished, the disk is turned over to the magazine's telecommunicators, who send the article electronically to the typesetter.

For even the best computers, people provide the insights and creative applications that make the machine successful. A computer, a program, or a magazine is more than just the sum of its parts. The product reflects the combined efforts of all the people who make it. □

*Kearney Rietmann is the Editor of* Macworld. *Before joining the* Macworld *team, she was the Editor of Special Editions for* PC World.

thousand Sinclair 1000s before suddenly discontinuing them, and Texas Instruments sold about a million TI 99/4 home computers before abandoning the line. In this business, a new standard is set not by quantity but by the ability to generate a software base—which is impossible in 3½ months. Now that the deadline has passed, the Mac can proceed with the business of carving its initials on the industry's wall by meeting users' demands with a variety of peripherals and applications software.

As of now, the Macintosh is not flawless: it is too much limited by its current memory and disk storage capacity to maintain the rampant interest it has spurred. For a 32-bit computer, the Mac's functional operation in many ways falls short of being the promised sweetheart of the industry. Just getting a disk to eject takes an eternity and is often baffling—and irritating—to anyone who has previous personal computer experience. Mac owners are adaptable and patient to a certain extent, but until these problems are solved, the computer is on questionable ground.

The emerging success of the Mac is reflected by the steady increase of new product advertising in *Macworld* and by the amazing amount of Macintosh software development. The first product wave should hit in the fall, when we can expect a multitude of software introductions from developers who were fortunate enough to obtain Macintoshes before the Mac's announcement. By January 1985, there should be at least 100 serious application programs running on the Mac. The number of programs is a truer test of the Macintosh's longevity as a new standard than is the number of Macs sold by May 3. If there aren't at least 75 application packages by the end of 1984, the germination effort will have failed and Apple can forget it.

Along with software development, we need to see hardware improvements, including the ability to use the Mac with a letter quality printer. Jobs claims that Apple is listening to the marketplace. If this is true, the Mac has the potential to be great—512K of RAM, Steve, please!

As publisher of *Macworld,* naturally I have confidence in the Macintosh; I expect its current deficiencies to become merely bad memories—trashed along with the Radio Shack TRS-80 cassette tape file storage system. We believed that the Mac was a safe gamble the first day we saw it, and our faith remains fervent. To coincide with the impending flood of Mac enhancements, *Macworld* will be published on a monthly basis beginning with our November issue. This increased pace will help keep our readers aware of new products as well as new ideas as the Mac matures.

Meanwhile, those of us who purchased Macs during the first 100 days have something to be proud of: we are pioneers who have worked through the initial criticisms and doubts to build the foundation for the Mac dream. Perhaps someone should establish a 100-day club—with membership limited to those who can prove they purchased a Macintosh before May 3, 1984. □

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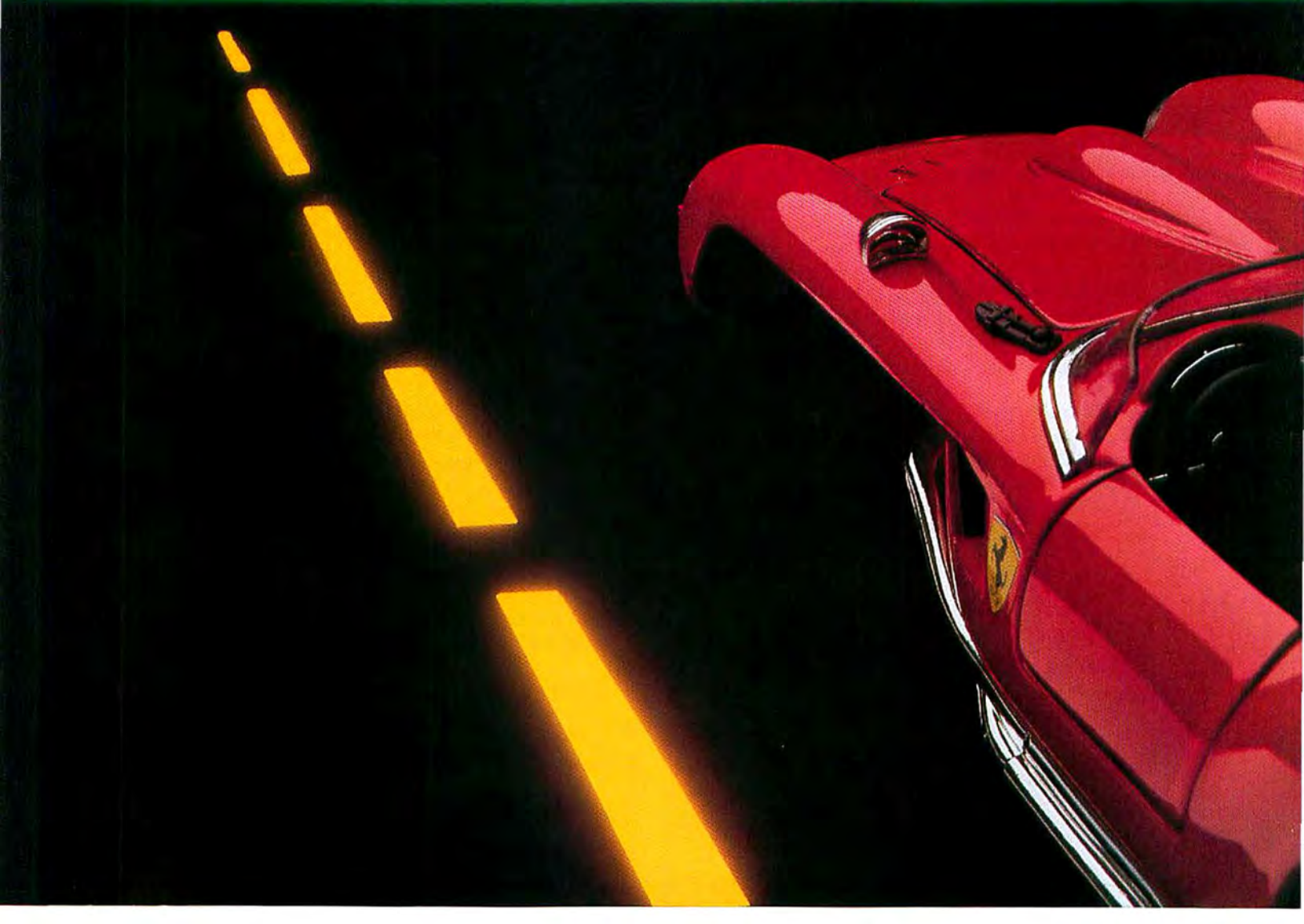

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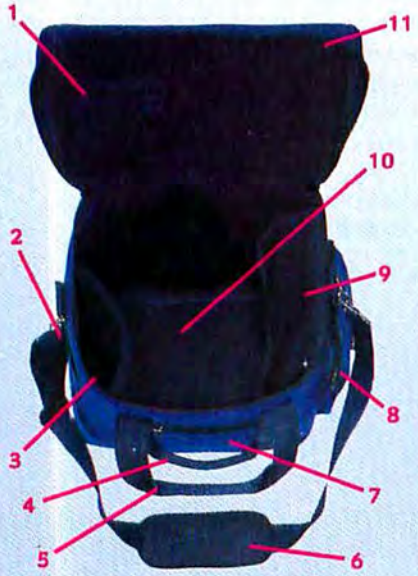


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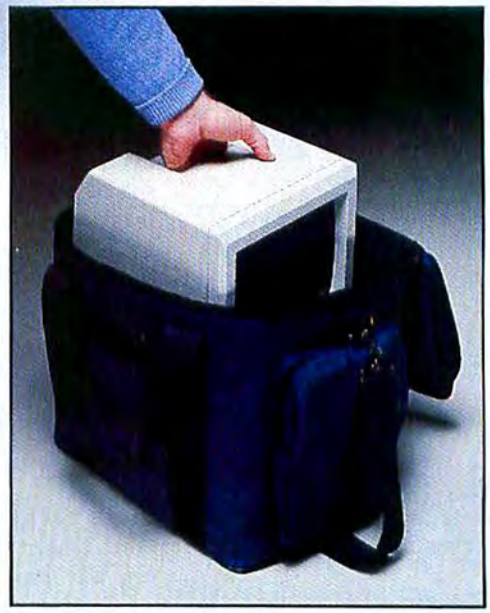

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OMNIS 1

**The File Manager.** An easy-to-use entry level product with HELP screens. Ideal system for a variety of file management tasks. Full calculation capability. Comprehensive report facility with standard, built-in letter/mail merge. Upward file and data compatible with OMNIS 2 and 3.

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**The Information Manager.** A sophisticated information management system. Capable of advanced error checking on data entry via a wide range of logical functions and operators. Multiple update and delete facilities. Upward file and data compatible with OMNIS 3. Supports hard disk systems and multi-user operation on local area networks.

OMNIS 3

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OMNIS 1** | **$95** | **unlimited** | **120** | **1** | **3000** | **yes** | **yes** | **no** | **menu** | **yes** | **1,2,3,4** | **yes** |
| PFS-File™ | 120 | 32K | 32 | 1 | 1600 | no | no | no | menu | no | 1,2,3,4 | no |
| PFS-Report™ | 120 | -0- | -0- | -0- | -0- | no | Report only | no | menu | no | 1,2,3,4 | no |
| **OMNIS 2** | **195** | **unlimited*** | **120** | **1** | **9600** | **yes** | **yes** | **no** | **menu** | **yes** | **1,2,3,4,5,6** | **yes** |
| Database Manager II | 295 | unlimited* | 40 | 1 | 2400 | no | yes | no | menu | yes | 1,2 | no |
| DB Master™ App.<br>IBM | 350<br>595 | 250K<br>1000K | 100<br>250 | 1<br>1 | 1020<br>3000 | no<br>no | yes<br>yes | no<br>no | menu<br>menu | yes<br>no | 3,4<br>1,2 | no<br>no |
| **OMNIS 3** | **295** | **unlimited** | **1440** | **12** | **25000** | **yes** | **yes** | **yes** | **menu** | **yes** | **1,2,3,4,5,6** | **yes** |
| dBase™II | 695 | 65K | 32 | 2 | 1000 | no | yes | yes | comm | yes | 1,2,3,4 | no |
| CONDOR™3 | 650 | 64K | 127 | 6 | 1024 | no | yes | no | comm | no | 1,2,3,4 | no |
| R:BASE™ 4000 | 495 | unlimited | 400 | 40 | 1530 | no | yes | yes | menu | yes | 1,2 | no |

*Limited only by disk capacity  Chart compiled from published information

1—IBM PC
2—IBM XT
3—Apple IIE
4—Apple III
5—Macintosh
6—Lisa

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# Letters

**A Critical Eye**
Congratulations on your early issues. I found *Macworld* #1 a more useful and practical introduction to the Macintosh than several of the hurriedly published books now on the market. Overall, however, your premier number was too "cheerleadery." You say that you're not affiliated with Apple Computer, but your breathless tone of approval makes one wonder.

I hope that future issues will take a more balanced and critical point of view toward the Mac. It is by no means a perfect machine. The helpful article on its tedious disk swapping procedure ["The Compleat Disk Juggler," *Macworld,* May/June] is a step in the right direction.

*Vicki Marasco*
*Dallas, Texas*

**Printer Problem**
Your tutor's verdict on the limited state of printing on the Mac ["Imagewriter or Nothing" in "Get Info," *Macworld,* May/June] is all too true. I need letter quality output from a printer; probably many other people do too. High resolution on the Imagewriter is good, but it's still dot matrix, and anyone can tell that from letter quality. I'll bet I'm not the only one who's holding off on buying a Mac until I see evidence of compatibility with daisy wheel printers.

I like what I've seen at my Apple dealer and in your magazine, but I'm puzzled by some obvious lapses in planning for the Mac's use in everyday applications.

*John Poindexter*
*Valdosta, Georgia*

*Apple has plans to support daisy wheel printers in the near future.—Ed.*

**Programming is Work**
So far you have shown us the Mac's flash and its attractiveness to people just starting to use computers. But as you know, the Macintosh is not meant to be a home computer like the Apple II; it's too expensive for that. The Mac will require a wide range of practical applications to make it a real success, as well as programming languages. What I want to know is, will development languages be available in the near future? Will you cover them in detail? Ultimately, the Mac will have to put those good looks to work.

*George Graves*
*San Jose, California*

*The Mac is ready to get its hands dirty, and so is* Macworld. *As of press time, Microsoft BASIC, Macintosh Pascal, and MacFORTH are in retail stores. For our coverage, see "Macintosh Pascal Preview" [May/June].—Ed.*

**Arrested Development**
I'm impressed by *Macworld,* its layout, and the computer underlying it. However, your $4 price seems a bit steep. I think that the basic Mac is a little short on RAM. The lack of color may prove to be more of a drawback than expected. And one can't be pleased with Lon Poole's observation ["The 64K Treasure Chest," *Macworld,* Premier issue] that "most serious programmers will write Mac applications on a Lisa development system." If so, all but the major software developers will be prevented from entering the game at this time.

*Patrick Banchy*
*New York City*

**To Buy or Not to Buy**
Apple has a fine computer in the Macintosh. Their marketing strategy, however, seems designed to foster high levels of buyers' remorse.

After carefully surveying the options, I decided that the Mac is the machine I want. I was ready to pay cash and carry it home. But not so fast! I was quickly made aware of an allocation scheme and a delay of 4 to 6 weeks. I made a down payment and prepared to wait.

Very soon, some dealers began to bundle software (MBASIC or *Multiplan*) into the price, and the local university announced that a deal had been struck with Apple to sell Macs to their students individually for $1100.

Realizing how unstable the pricing was, I cancelled my order and got my money back. I may still purchase a Macintosh, but for now I will watch until I have an idea of what it is truly worth. Better yet, I may wander over to the university.

*Robert A. Pekich*
*Redmond, Washington*

### An Infinite Mistake

I was very surprised to see that Bill Gates, Chairman of the Board of Microsoft, doesn't know what a turing machine is. Turing machines are one of the foundations that theoretical computing science is based on. By definition, such a machine has infinite memory, and for all practical purposes (though not literally) one may assume that computers are equivalent to turing machines.

*Rico Micallef*
*Vancouver, British Columbia*

*A number of readers pointed out that a turing machine was incorrectly described as having a finite amount of memory in "Polishing the Mac"* [Macworld, *Premier issue*]. *We misquoted Bill Gates, who knows well that a turing machine has infinite memory. —Ed.*

### Paint Correction

In Jeffrey Young's article on *MacPaint* ["MacPaint: The Electronic Easel," *Macworld,* Premier issue], there seem to be discrepancies in the wording of two procedures. On page 58 (second paragraph, third line), "Command key" should read "Option key." Four lines later, "by selecting an object" should have "with the lasso" added to it. If I select an object with the rectangle, the procedure doesn't work.

*John Guarisco, Jr.*
*Morgan City, Louisiana*

### One Man's Boycott

I purchased a Mac recently, along with all the available software. Apple's software is fabulous, even better than I expected. Microsoft BASIC is also very useful, despite some minor flaws, and *Multiplan* seems to work, except for a few bugs. However, Microsoft's copy-protection defeats the Macintosh concept of *ease of use.* You can make copies, but to use one you must insert the master disk each time you start it up.

I returned *Multiplan* and demanded a full refund. I will not purchase any Microsoft products—nor those of other software firms—that use copy-protection schemes. I urge everyone purchasing software to buy only items that can give them the freedom and flexibility to copy and back up their investment of money and time.

*Andrew A. Koran*
*Bartlett, Tennessee*

### A Vote for the Mac

In a few months of existence, the Macintosh has received a great deal of attention. Some people call it the greatest invention since the telephone and say that it will revolutionize the computer industry. Others say it's severely limited and not a serious machine. Their comments seem as confusing as a political debate in which the candidates sling mud at each other and never address the real issues.

The only way I could find out if the Mac was any good was to try it myself. I did, and came to the conclusion that it's a terrific machine. And by the way, *Macworld* has done well to stay out of the squabble of pros vs. cons—just keep giving us the facts.

*Ed Verde*
*Fort Lauderdale, Florida*

### Multiplan Blamed

I purchased a Macintosh in February, after studying the market carefully for six months. One of my primary needs was spreadsheet analysis. When I used Microsoft's *Multiplan* on the Mac, I was sold.

Everything worked fine until I went back to a *Multiplan* financial program I had set up a few days previously. To my dismay, a bomb with a lit fuse appeared on the screen with the message, "A major system error has occurred": the world's easiest-to-use computer doesn't have decipherable error codes. To make matters worse, only the option to restart the disk would work.

It took two weeks for my dealer to figure out that *Multiplan* was at fault. Here I am with a $3500 investment that won't do the work I bought it for. Another case of getting the product out before it was ready.

As a consolation, I am using *MacWrite* with great success; the Mac itself is a wonderful tool. It's too bad that Microsoft has tarnished the image already.

*Michael H. Moore*
*Richmond, Virginia*

*Apparently, you experienced the same problem as a number of other users. Microsoft has fixed it in the updated version (1.01) of* Multiplan, *which is being sent free of charge to all owners who returned their registration cards. If you are still using version 1.00, follow the procedures listed in "Multiplan Warning"* [*"Letters,"* Macworld, *May/June*].

*Microsoft encourages users who have problems that can't be solved by product documentation to call their help hotline, 206/828-8089. You may also send a description of the problem to Attn. Microsoft Product Support, Microsoft Corporation, 10700 Northup Way, P.O. Box C-97200, Bellevue, WA 98009.—Ed.*

*Letters should be mailed to* Letters, Macworld, *555 De Haro St., San Francisco, CA 94107, or sent electronically to CompuServe 74055,415 or Source STE908.* □

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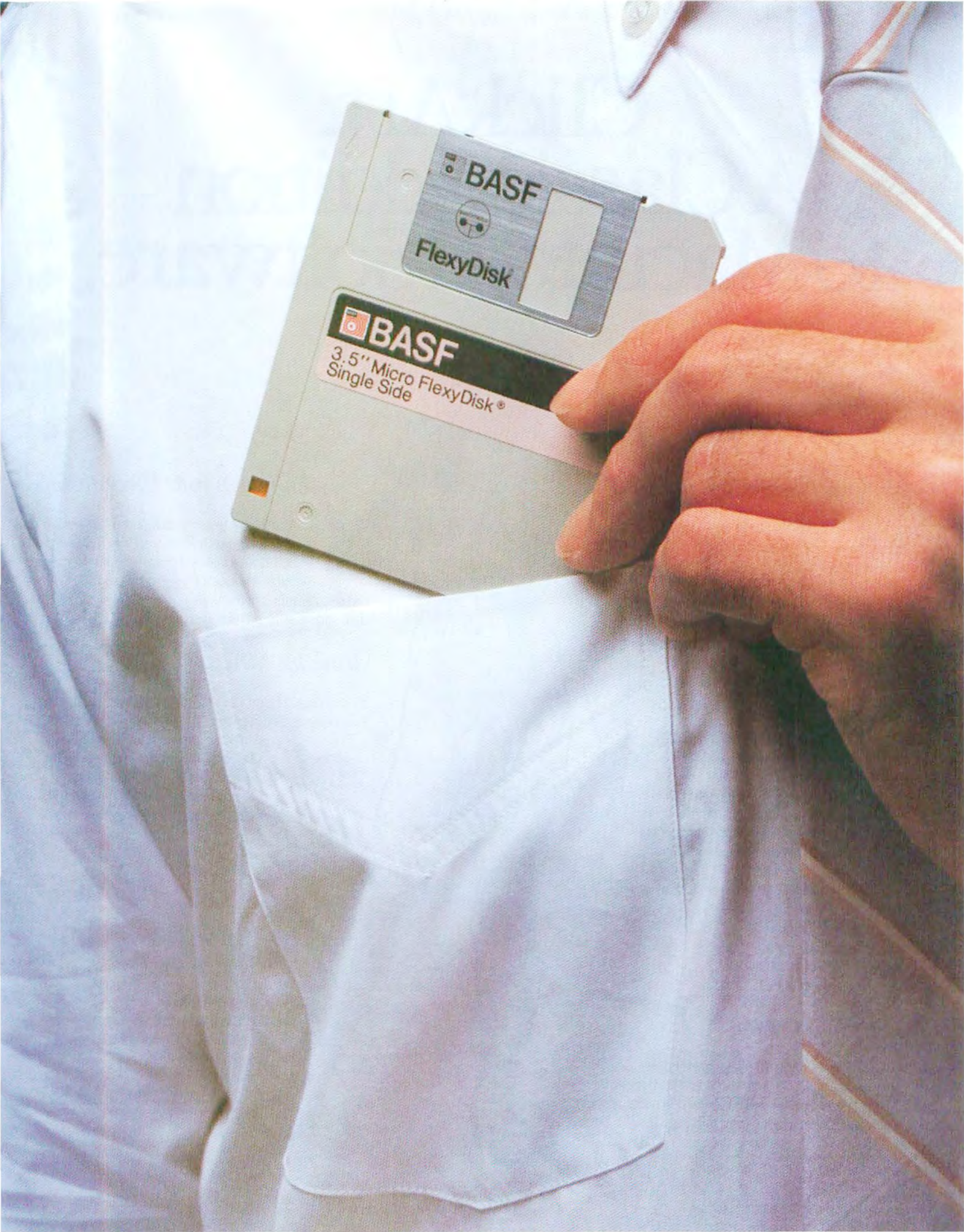
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# Macworld View

*News and notes for the Macintosh community*

***Edited by Janet McCandless***

Macworld View *reports on new developments in Macintosh technology. We will cover items of interest to Mac users and predict industry trends. We talk with programmers and hardware developers, attend trade shows, and keep an ear out for Mac-related news.* Macworld View *welcomes contributions from readers. We'll pay up to $50 for the items we use. Please include your name, address, and phone number with your contributions; send them to* Macworld View, *555 De Haro St., San Francisco, CA 94107.*

## Selling and the Campus

The University Consortium Program is officially closed, its membership restricted to the 24 universities that committed themselves to the program before the Macintosh was released. But other colleges (and high schools) need not feel left out in the cold, according to Burt Cummings, Apple's program manager for university sales. Apple plans to continue to offer a special purchase agreement to universities, using a discount pricing schedule that varies with the extent of each university's commitment to the Mac. Apple's long-standing educational marketing program, which in the past has focused on the Apple II, will now also facilitate getting Macs into high school classrooms.

There have been rumors that the Consortium Program will produce a "black market" in Macs, with students buying cheap and selling expensive, or buying for friends outside their university. Apparently, this scenario has not materialized. Each student is allowed to purchase only one Mac, and Apple believes that the students are keeping and using them. Several industry-related magazines that posed the question are receiving a backlash of letters denying it. And ultimately, Cummings says, "We have faith in students. We expect a few bad eggs, but the students know this is an experimental program that they're privileged to be part of. They don't want to see it jeopardized."

*Burt Cummings says that Apple Computer has faith in students. The University Consortium Program reflects Apple's appeal to youth and experimental ideas.*

Because the university acts as middleman (actually reselling to students the computers the school has bought from Apple), it can monitor compliance with conditions of the purchase. As part of the sales agreement, each buyer is required to sign a statement that he or she will not sell or lease the Mac for two years. At some schools, violators are subject to a large fine and expulsion from school. In addition, peer pressure may have an inhibiting effect on the black market. How would you like to see yourself identified in the student newspaper as the one who caused your school to be dropped from the discount program?

Reports of dealer opposition to university discounts may also be premature. As one dealer told us, "We'll lose some of the initial Mac sales, but most of those people might not have bought a Mac otherwise. And it's to our advantage to have a ready-made market for the hardware and software from third-party manufacturers that will be coming out."

## Quality in the Box

When it announced the Macintosh, Apple also declared its commitment to quality control. The company has attempted to follow up this policy as it has increased production to 1500 units a day. At the moment, Apple seems to be falling short of its goal of "a less than 1 percent chance of defects" during each machine's lifetime.

John Otterstedt, production manager at Apple's Fremont, California, factory, reports, "By industry standards, we're experiencing a failure rate of approximately 2 percent. We have stopped shipment on some systems that didn't meet our high quality standards."

A recent problem involved discoloration of the CRTs, which were manufactured by a subcontractor. "We first saw it in the burn-in chambers," Ot-

terstedt says. "We shut down the production line to evaluate what we were seeing. As it turned out, the discoloration was related to the phosphorus in the tube itself." Apple culled the defective units and resumed production.

To extend quality control procedures, the factory has initiated an "out-of-the-box" system check. "We pull a random sampling of units, take them out of the box, plug them in, and use them as a customer would," explains Otterstedt. In order to analyze the Mac's performance, the factory is monitoring feedback from dealers and customers.

Even Apple's continuing efforts to strengthen quality control are little consolation to the owner of a Mac that malfunctions. If this happens, you must follow warranty procedures and return the Mac to the dealer you purchased it from.

*Driver Bill Anderson poses with the Mac inside the BMW 733I that his team took through the One Lap of America rally. The Mac helped the rally drivers calculate essential time and speed requirements.*

## Coast to Coast and Back

For a new generation of auto racers, customizing a car includes hooking up a power line to a Macintosh. Bob Weber, Bill Anderson, and Bill Hawk went to Otto's BMW for a 1984 BMW 733I, to Uniroyal for tires, and then to Perseus Systems Corporation for a Macintosh. They powered the Mac by running a line to it from the car battery and used a standard inverter to convert the battery's 12 volts DC to the 120 volts AC (60 cycles) that the Mac requires. They used *Multiplan* to project their time and speed across the 8800-mile course of the One Lap of America rally that began in Darien, Connecticut, on April 13.

Officials for the rally noted arrival times at checkpoints along the route. The drivers used the checkpoints to monitor their progress and to update their projections with actual odometer readings. "As we got closer to a checkpoint," says Bob Weber, "we'd use the calculator to take readings of the odometer, the distance to go, and the time left. We then came up with the required speed and reported it to the driver."

When asked why the drivers chose a computer over a handheld calculator, Weber replied that the Mac offered more flexibility and power. The drivers could view the entire schedule on the Mac screen and update or even reprogram the worksheet between checkpoints. In the next few years, rally participants may think no more of installing a portable computer than many drivers today do of installing or removing cassette players.

## Lisa 2 and MacWorks

One way to add muscle to Macintosh software is to run it on the Lisa 2. Now that *MacWorks,* the program that enables the Lisa 2 to run Mac software, has been released, Lisa owners can run applications that require up to a full megabyte of memory and take advantage of the Lisa's larger screen. *MacWorks* accesses the profile drive of the Lisa 2 and the hard disks of the Lisa 2/5 and Lisa 2/10. At press time, Randy Battat, Lisa product manager, indicated that a new version of the Lisa Office System is also being developed. The update will offer functional enhancements to each application and more integration between applications.

# Mac Software Revisions

As reported in our last issue, enhanced versions of the MacWrite/MacPaint and System disks are now available at Apple dealers. During the upgrade period (May 15 through July 15), you can take your System and application disks to your dealer, who will copy the new versions onto your disks free of charge.

The MacWrite/MacPaint disk now contains the *Write* and *Paint* applications, the System Folder, Disk Copy (which copies an entire disk in four swaps), Empty Folder, and Sample Memo, with 68K remaining

on disk. The System disk includes System Folder, Disk Copy, Empty Folder, Font Mover, and the Fonts file.

Another new enhancement is Set Startup in the Special menu, which enables you to enter an application immediately instead of selecting it from your desktop and waiting for it to

*The Set Startup command allows you to specify a startup application other than the Finder (such as* MacPaint *or* MacWrite*).*

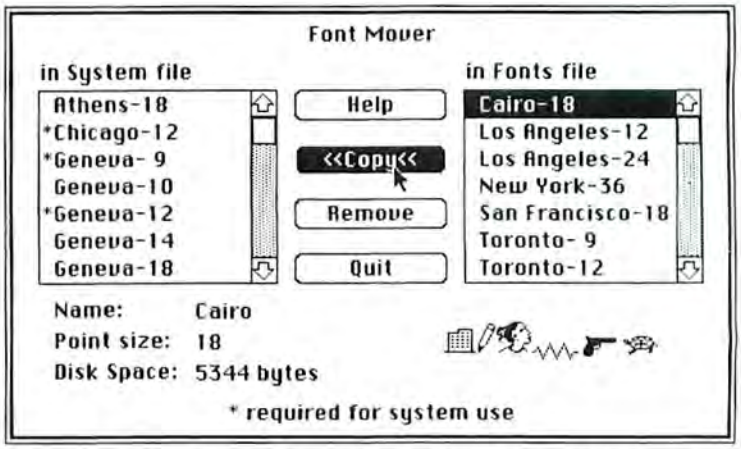
open. You begin by selecting an application and then choosing Set Startup. You will go directly into the application the next time you start up the disk. If you want to start your disk from the Finder, open the System Folder, select Finder, and then choose Set Startup.

Copying an entire disk has been simplified by the addition of a new application called Disk Copy. This application has its own icon and is filed in the System Folder. When you open the application, you are prompted to insert the disk you wish to copy in the drive. Four disk swaps transfer the information from one disk to another.

Apple has been redesigning the Write/Paint fonts. The results include cursive and pictorial fonts, new font sizes, and a Fonts file to store fonts you seldom use. Now you can optimize available disk memory by removing fonts from the System file (the file that contains the fonts you see when you open an application) to the Fonts file. In the new release, San Francisco 18 and Toronto 9, 12, 14, 18, and 24 have been moved from the System file to the Fonts file. Font sizes 10 and 20 have been added to the System file for the Geneva and New York fonts.

When you open the Fonts file, you will find, in addition to the fonts moved from the System file, a new font size for New York (36) and two new fonts. The first new font is a cursive font, Los Angeles. The second is a pictorial font, Cairo. All the options in the Style menu can be used to customize pictures produced by Cairo.

By using the Font Mover and the Fonts file, you can streamline your application disk by assigning to the System file the fonts you use most frequently.




*You can move fonts from the Fonts file to the System file and vice versa. This feature enables you to customize your disks and optimize disk space.*

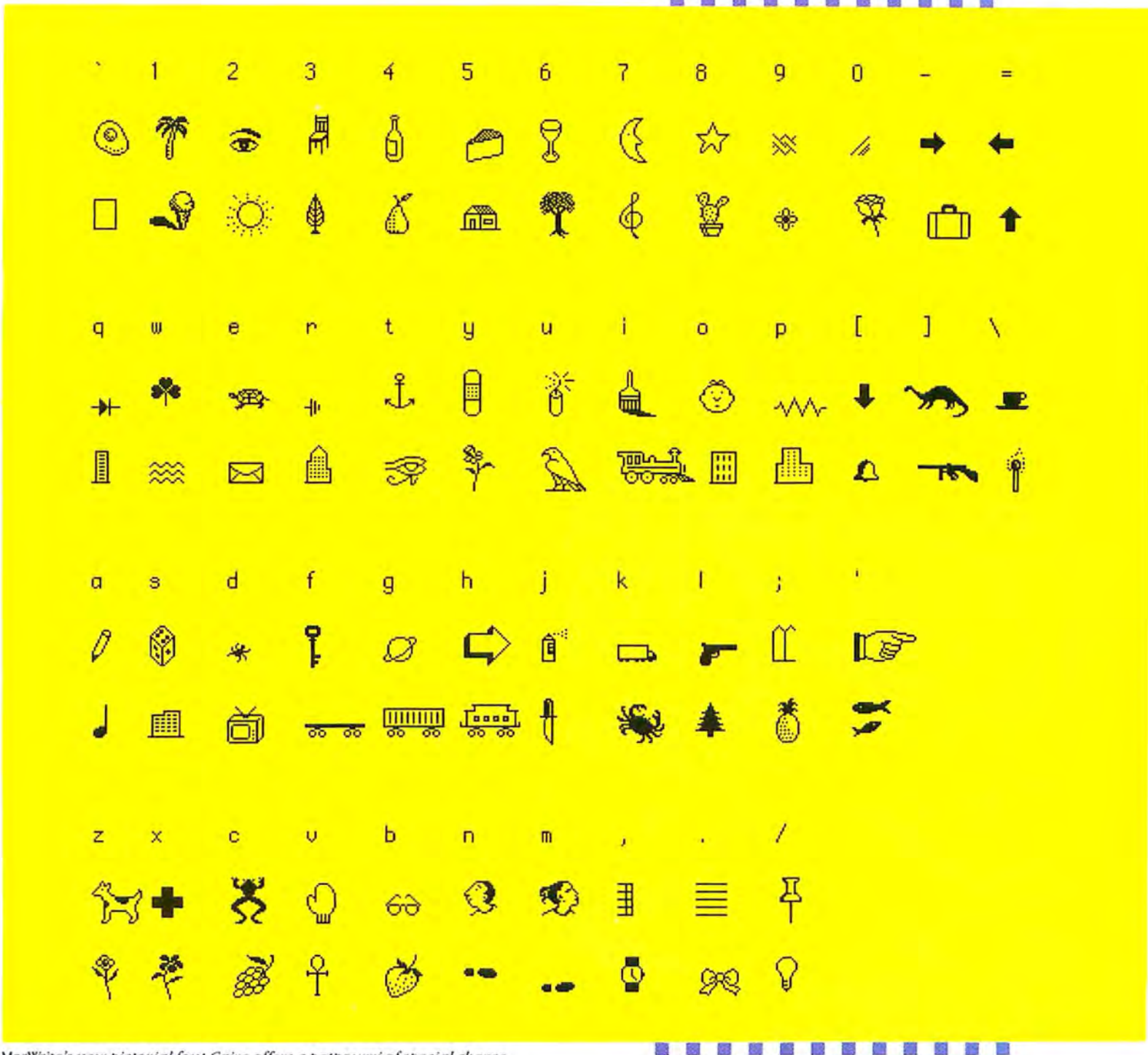
To do this, copy both the Font Mover and Fonts file onto your application disks. If you copy the Font Mover and the Fonts file to your MacWrite/MacPaint disk, remove the Paint file before you do so. When you are finished with the font selections, you can copy the Paint file back onto your MacWrite/MacPaint disk from your MacPaint disk. While this may involve additional disk swaps, it will ensure that you have enough memory available to change fonts in the System file.

You can also obtain a Paint disk reconfigured to allow more available memory (135K) for Paint documents. The disk includes *MacPaint*, System Folder, Empty Folder, and Disk Copy. *MacPaint* also has some new features, which are described in "Stepping into the Paint Bucket" in this issue.

The new version of *MacWrite* offers superscript and subscript options in the Style menu. Apple has replaced the Show and Hide Header and Footer commands in the Format menu with Open, Display, and Remove commands. The new commands clear up confusion about which command to use to enter or edit text in the header or footer, or to display or remove the header or footer from the document page.

Mac owners will also discover that the style options called from the keyboard are now toggle switches.

These enhancements are described in the new edition of the Macintosh owner manual, available at your dealer for $9.95.




MacWrite's *new pictorial font Cairo offers a potpourri of special characters. The font looks best in 18 point, as shown here. This is also the order in which characters appear on the keyboard.*

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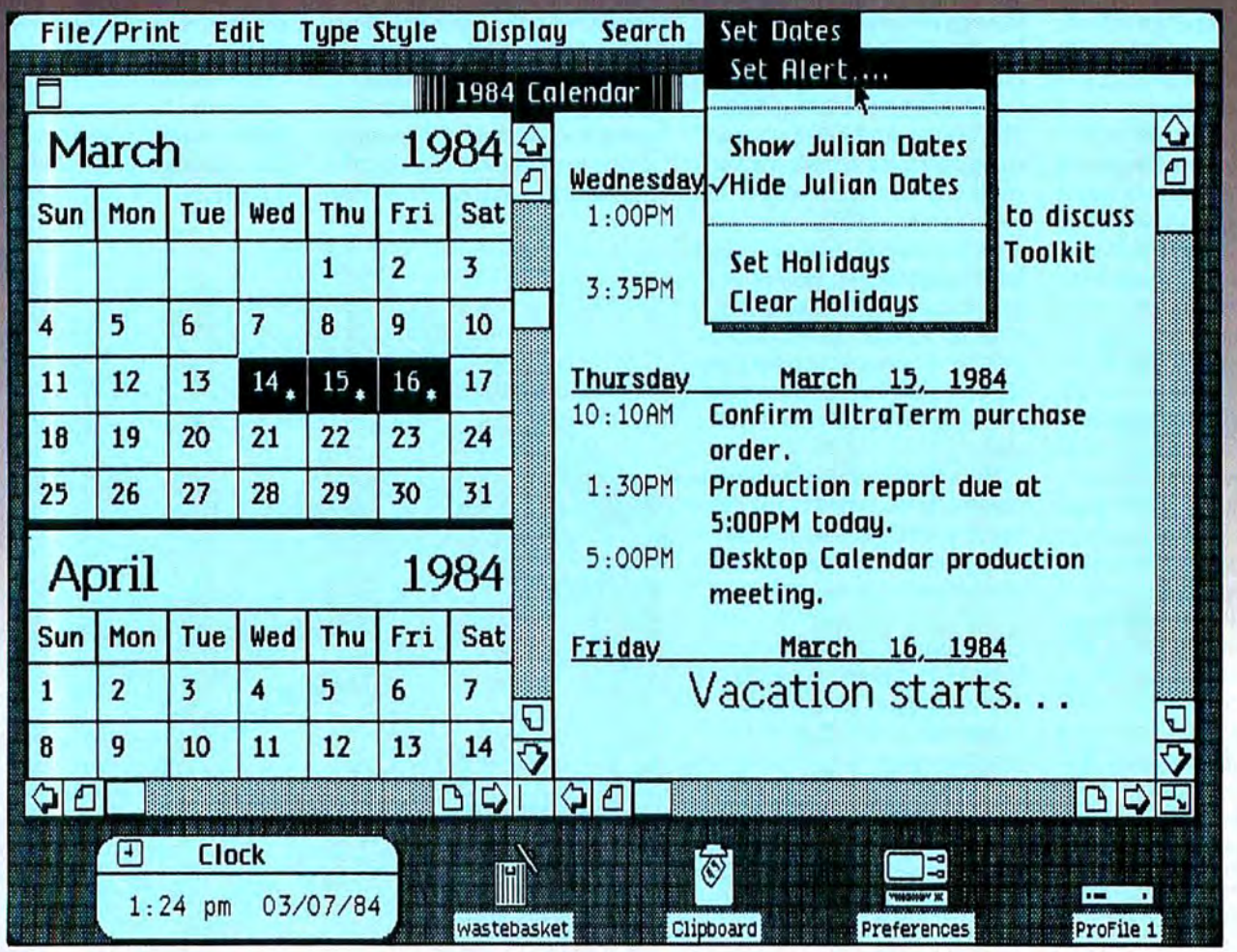


# Desktop Calendar for your Lisa 2

Desktop Calendar, a new tool for the Lisa 2, will improve the way you work because it helps you manage your time.

Your're an important person. Working hard to get the job done. But what happens if you get so involved in your work that you lose track of time? Missing an important appointment or meeting can mean disaster.

If you put the times and dates of all your important appointments and meetings into Desktop Calendar, it will automatically remind you of them in time for you to meet your commitments. Once you place Desktop Calendar on your electronic desktop, you can use your computer to write a letter, recalculate a schedule, prepare a financial statement, or use any of the Lisa Office System Tools. At the proper time Desktop Calendar will interrupt, reminding you of your appointment.

Talking on the phone to an important client? Want to know all the dealings you've had with them for the last three months? Desktop Calendar will search through its electronic notebook and tell you. Want to know the address of an important business contact named 'JONES'? Desktop Calendar will tell you that too.

Desktop Calendar is more than just a calendar for your computer. It will also keep track of appointments, hold addresses for easy reference and remind you of important events, even when you are busy working with another tool in the Lisa Office System.

Desktop Calendar will be available third quarter 1984 from Videx.

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**Videx Inc.**
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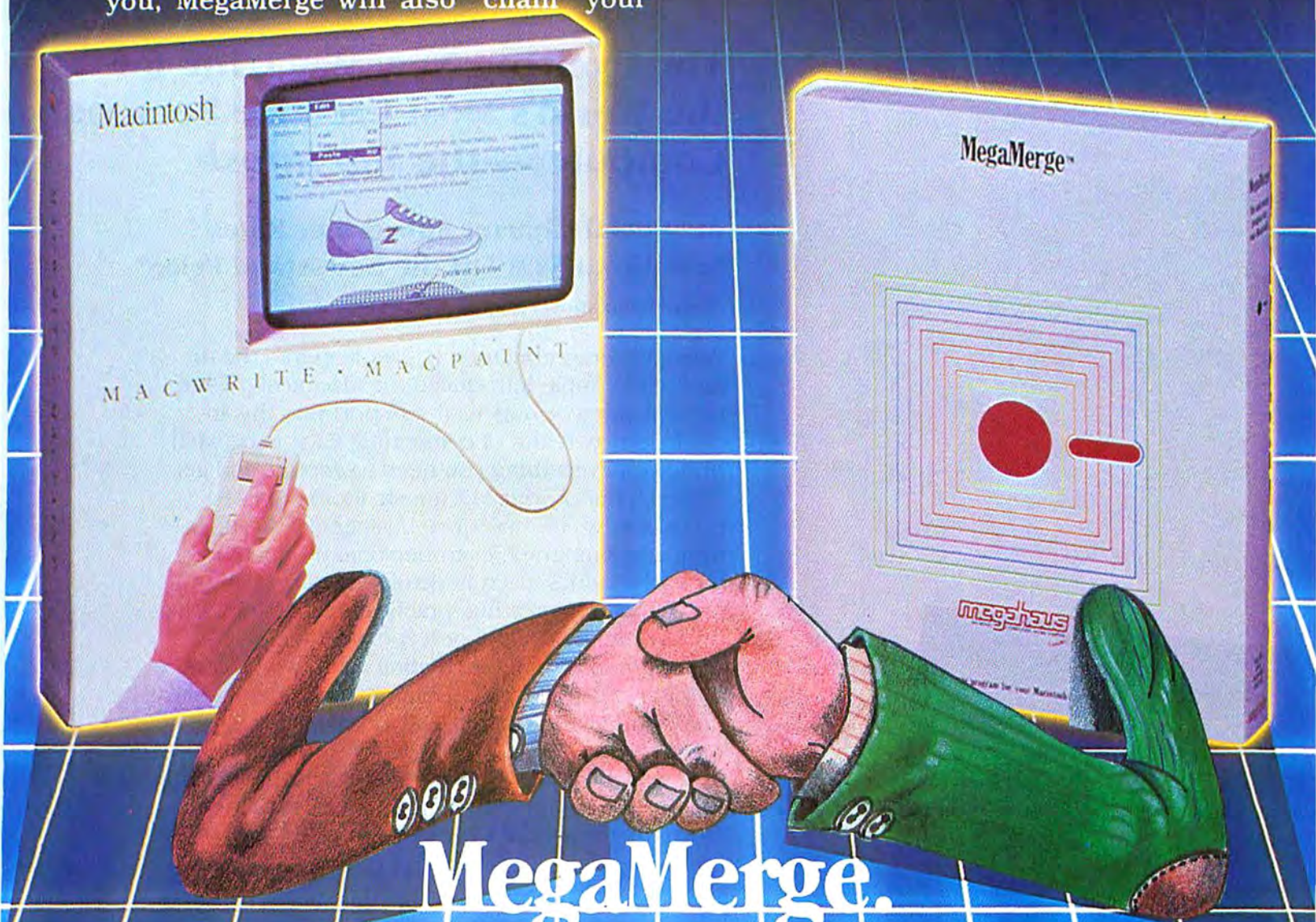


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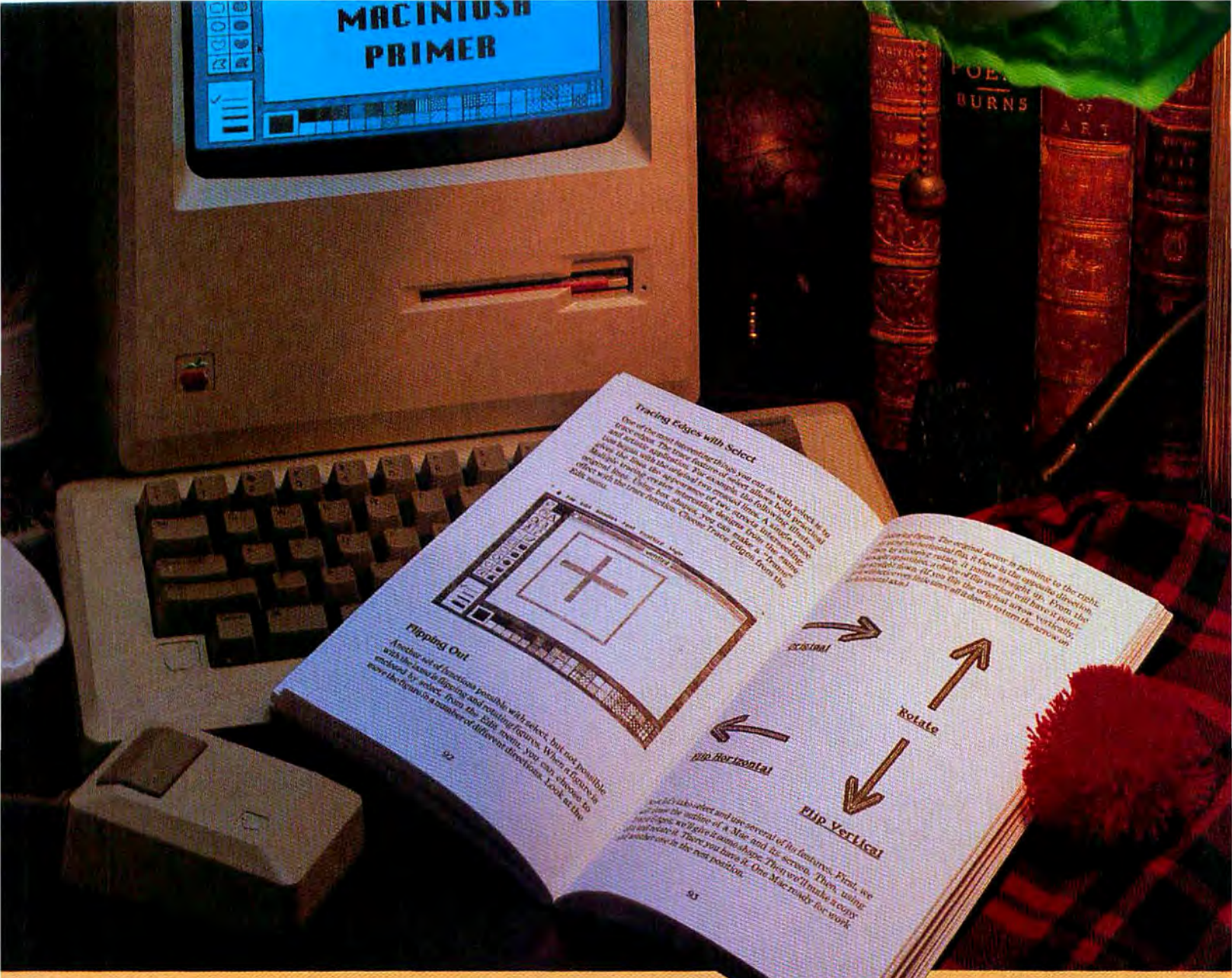


# Get MacLiterate!

## The Apple Macintosh Primer By William B. Sanders, Ph.D

Here's the easiest way to get acquainted with the Apple Macintosh Computer!* The concept. The mouse. Menus. How to set up and use the system. How Mac can help you in home, school and business applications. Plus special chapters on MacPaint and MacWrite. Written in plain English, The Apple Macintosh Primer has everything you'll need to become MacLiterate!

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# Communications Primer

*Cary Lu*

*The following is a chapter excerpted from* The Apple Macintosh Book *by Cary Lu, published by Microsoft Press. Lu had the opportunity to go behind the scenes, talk with the designers and programmers, and work with the Macintosh during its creation. The result is a step-by-step guide to using the Mac. From mouse to menus and from saving files to managing windows, his book covers every aspect of the new machine.*

Computers can help make your work easier and more efficient, and they should make exchanging work with others easier and faster, too. With a telephone line and the proper hardware and software, you can connect your Macintosh to public information services, data bases, electronic mail services, and other personal computers equipped with the proper hardware and software.

### What You Need

To use your Mac to communicate with another computer, you need:

- Communications software, such as *MacTerminal* from Apple.
- A modem. Many modems work with the Mac; make sure that the communications software you choose is compatible with the modem.
- A telephone line (not a party line).

You will also need information, called *communications parameters,* about the computer and the modem you want to communicate with. The first parameter to consider is the *baud rate:* the modem's operating speed (300 or 1200 baud in most cases.) Baud rate measures how fast information is transmitted. For these modems, 300 baud means a data transmission rate of 300 bits per second (bps), and 1200 baud means 1200 bps. One baud is one change or modulation per second; at the common 300- and 1200-baud rates, one baud corresponds roughly to one bit per second. (This isn't always true; several bits can be coded into a single modulation.) Depending on the exact data-link layer protocol, 300-baud transmission carries 25 to 30 characters per second, and 1200 baud carries 100 to 120 characters per second.

Although the baud rate can be continuously varied in some cases, the computer industry has settled on several standard speeds. If you use modems to communicate, they must operate at a common speed. For computers wired directly together, you can select the highest speed permitted by the equipment and the length of the wire; the longer the wire, the slower the speed. If in doubt, start at a slow speed and increase the speed until you encounter errors, then decrease one speed step.

### Critical Parameters

After setting matching baud rates, both computer operators must also agree on these other data-link layer parameters:

- Character width: the number of bits that make up each of the characters being transmitted (seven or eight); also called data bits.
- Stop bits: the number of bits that mark the end of each character, so that the computer knows when one character stops and another begins. Either one or two bits signals the end of a character.
- Parity: a simple means of error detection that adds an extra bit; parity can be *even, odd,* or *none.* A single parity bit lets the communicating computers determine if there is a one-bit error in the received signal. If both computers use even parity, the computers independently add up each bit in each character. If the sum is even, the sending computer adds a parity bit of 0; if odd, the parity bit is 1. Either way, the final sum is always even. If a one-bit (or three-bit) error occurs, the sum is no longer even. A two-bit error is not detected since the sum remains even. Odd parity works the same way, except the sum is always odd.

What the receiving computer does upon encountering a parity error depends on the software. The parity bit detects an error, so a program can signal for retransmission when it receives a parity check—if the sending computer is set up to recognize the signal.

*(continued on page 38)*

# Modem Methodology

Many Macintosh owners will find that they need a modem. Modems convert a computer's digital signals into modulated audio tones that travel on a telephone line. Modems also do the reverse, demodulating audio tones from a distant computer and modem back into digital form. (*Modem* is a contraction of modulator/demodulator. See "The Mac Connects" in this issue for more information about Apple's modem.)

### The Apple Modems

Apple has produced both 300- and 1200-baud modems for the Mac. Most personal computer owners have used 300-baud modems, which transmit 25 to 30 characters per second (cps). Thirty cps is slow, taking a minute to fill a Mac screen with characters, or up to 12 minutes to fill it with graphics. Despite the slow transmission speed, 300-baud modems have been popular with computer hobbyists because of their prices, which range from $50 to $300. Higher speed modems use more expensive components; 1200-baud models cost from $300 to $900. Unless you are on a very tight budget, 1200-baud modems are worth the extra money. They operate four times as fast, transmitting 100 to 120 cps. Most 1200-baud modems, including Apple's, also operate at 300 baud.

Compatibility among the many modems and communications schemes available is an extremely complex subject. For now, it is enough to say that Apple modems use the same signaling frequencies as other personal computer modems sold in North America, so different modem brands are compatible as long as they operate at the same baud rate.

A modem protocol specifies details such as which audio frequencies carry the information. All 300-baud modems use the Bell 103 protocol; most modern 1200-baud modems, including Apple's, use the Bell 212A protocol. Bell Laboratories originally set the standards and gave the protocols their names. Avoid other 1200-baud protocols, at least in North America.

In addition to setting the correct modem protocol, you must make sure several other layers of protocol are compatible. The Apple modems operate only asynchronously; they do not support synchronous communications.

### Modem/Software Compatibility

The Apple modems contain control circuitry that can dial phone numbers, check the phone line, and hang up. To take advantage of these features, your communications software must send instructions to the modem. The Apple modem's instruction set is similar to, but not completely compatible with, the Hayes Smartmodems, which are among the most popular in the personal computer industry. The similarity will create considerable confusion because software for the Apple modem may not necessarily work with Hayes Smartmodems and vice versa. (This compatibility problem affects only the commands between the software and the modem, not modem-to-modem compatibility.)

Well-designed communications software includes installation procedures for different types of modems. If you buy a non-Apple modem, make sure that it works with your software; as always, be wary of compatibility claims. Many companies swear that their modems work just like another modem, but they don't.

### Connecting the Modem

Whenever possible, the modem should connect directly to the telephone line through a modular jack. If your phone connection at the wall uses a four-pronged plug, buy a high-quality adapter plug; the cheap adapters aren't reliable.

Modems should not be connected to party lines. The computer link is disturbed if another person on the line picks up the telephone, and in case of an emergency the other person cannot ask for the line. Some

telephone convenience features such as call waiting and forwarding that produce an audible sound may interfere with computer links. You may want to disconnect these features from your phone.

When you travel, you may not be able to connect your modem directly to the phone lines available to you. You will have to resort to an acoustic modem with cups, which is a small microphone and speaker that fit over a standard telephone receiver. Acoustic modems are less reliable than direct connect modems such as Apple's because of noise and other problems. Use a direct connect modem whenever possible.

### Line Quality

The efficiency of modem communications varies with phone-line quality. Modem connections for local calls generally work satisfactorily, but long-distance calls frequently run into problems from noisy lines. You may find that some long-distance services have noisier lines than others. Line quality also varies with the time of day; during peak periods the lines have more cross-talk (leakage from other conversations) than at night. In addition, the lines of some inexpensive long-distance services do not carry information at 1200 baud. If you have trouble at 1200 baud, try another line or switch to 300 baud and try the transmission again.

### Dialing

The Apple modems and most other modern modems include automatic dialing and answering, so you can dial the telephone number from the Macintosh keyboard (or use numbers stored on disk) and the receiving modem can automatically answer the call. Take care to turn off your modem's automatic answering feature when you're not telecommunicating; otherwise a person calling will be greeted by an irritating, high-pitched tone.

The Apple modems dial either tones or pulses; you select one depending on whether you have touch-tone (tone) or rotary-dial service (pulse). If the dial tone does not stop when the modem starts dialing numbers, find out if your telephone service can handle touch-tone dialing. If so, find a way to reverse the red and green wires of the phone line.

### Making Connection

When you initiate a call, your modem operates on originate frequencies and the receiving modem on answer frequencies. The two frequencies let each party send information simultaneously without interference.

Apple modems contain internal speakers that enable you to hear the connection until it switches over to data communications. With two 1200-baud automatic answering modems, this is the exact sequence:

- Your modem dials the other modem.
- The other modem answers the line with a 300-baud answer tone.
- Your modem responds with a 1200-baud phase-modulated originate tone.
- The other modem answers with a 1200-baud answer tone.
- Your modem switches to data mode and disconnects its speaker.

If the remote modem is a 300-baud unit, it does not respond to your modem's 1200-baud originate tone, and your modem switches back to 300-baud. If a person answers the phone, pick up an ordinary telephone to talk and hang up the modem electronically.

To ensure smooth communications, you will probably find it handy to have a second phone line over which you can talk to the person operating the other computer while you set parameters. Once you have established a link, store all the parameters. Unless the line conditions change, the connection should be easy next time.

*(continued from page 35)*

• Duplex: at 300 and 1200 baud, most phone links use full-duplex mode, which means that information can be transmitted between two computers simultaneously. With a full-duplex link, the two computers use a different frequency band. To ensure that both computers don't use the same band, one computer is set to the originate band, the other to answer. It doesn't matter which computer is set to which band, as long as both sides agree. With most modems and software, the person who makes the call originates.

With a half-duplex link, information travels in only one direction at a time. The line can be reversed with signaling codes, but frequent reversing slows down the transfer rate. If the application calls for mainly one-way transfers, there is no loss of transfer speed.

• Echo: when you communicate with a remote computer, how do you know that your characters are being received? With full-duplex and echo, each character you send out is returned to you (*echoed*) by the distant computer. Echoing is only practical with a full-duplex protocol (because it takes too long in half-duplex), but not all computers operating with full-duplex can echo.

■■■■■ *Connect your modem to the Macintosh and to a telephone jack.*

When a telephone line is noisy, echoed characters are occasionally garbled. If the remote computer does not echo, your computer must generate the characters on your screen (called *local echo*). If all your characters appear doubled, turn off local echo; if you don't see anything, turn on local echo (some software confuses duplex with echo).

**Secondary Parameters**

For other data-link layer parameters, communications are more efficient if sender and receiver agree. If the messages are sufficiently short, however, or if the receiver is willing to rework the received information later, complete agreement is not absolutely necessary. These parameters include the following:

• Handshake: a way for the receiving computer to tell the sending computer to pause (these signals are called *XON/XOFF, clear to send,* and *none).* This parameter is not always needed for short messages or files. If the two computers do not agree on the handshake, portions of long files will be lost.

A sending computer sometimes transmits data faster than a receiving computer can accept, but handshaking can overcome this problem. The receiving machine sends a signal to the sending machine, which then stops transmitting until it receives another signal. Handshakes help when the receiver must write the transmitted information to disk. Unfortunately, many senders do not recognize handshakes.

• Line ends: in its internal files, the Mac uses a carriage return to indicate a move back to the left margin and a one-line paper advance. Some computers distinguish between a carriage return and a line feed and require both. Communications software for the Mac should add line feeds to carriage returns if necessary and strip incoming line feeds when accompanied by a carriage return. If these steps aren't taken, you may see double line feeds in some cases, and the receiving party may see your lines write over previous lines.

• Filters and pauses: for some communications systems, you must remove certain characters, or spurious characters will appear on your screen. Some receiving computers require a short pause at the end of each line to allow them to process the line.

**Getting Ready to Communicate**

To prepare to communicate, connect your modem to the Macintosh and to a telephone jack according to the instructions in the modem manual. Insert the communications program disk into the disk drive.

Specific set-up instructions vary among communications programs, although the general set-up procedures are similar; the following instructions apply to Apple's *MacTerminal.*

Set the communications parameters. Choose the appropriate baud rate, character width, parity, and handshake.

If you have control over the setting of both the sending and receiving machines, the choices of character width, parity, and the others aren't important as long as the two computers agree.

If you are communicating with an information service for the first time and don't know its parameters, start with: 8 data bits no parity XON/XOFF handshake. This combination often works.

Enter the terminal type. If you don't know the type, start with TTY or VT52. The wrong choice leads to problems only if the other computer expects you to have full-screen editing or other features not commonly used in the average personal computer communications link.

When you have selected all the parameters, enter the telephone number—for example, 555-1234—in the dialog box. If your phone line requires you to dial 9 first, enter 9555-1234. If you normally wait a moment to get a second dial tone after you dial 9, enter a comma after the 9 (9,555-1234); the comma inserts a two-second pause in the automatic dialing sequence of

# Operators, Credit Card Calls & PBX

Whenever possible, you should make modem connections to other computers purely electronically. An automatic dialing modem, for example, should call an automatic answering modem. In some cases, you may need to start the link through an operator. A typical procedure might be:

- Dial the phone number manually through an operator.
- When the operator answers, arrange for a collect or credit-card call.
- Wait for the connection to be completed.
- If the call is collect, the answering party must accept the charges.
- Arrange with the other party to switch to data mode.
- Switch together to data mode.

You may not always have to dial through an operator for credit-card or alternative long-distance service calls. The exact procedure varies depending on the area, but you normally do one of the following.

For a credit-card call (touch-tone dialing services only; not available in all areas):

- Dial 0 and the complete long-distance number.
- After two or three rings, you hear an acknowledgment tone.
- When the tone sounds, dial your credit-card number. (If you wait, the special tone stops and an operator comes on the line.)

For an alternative long-distance service call:

- Dial a local access number.
- After two or three rings, you hear an acknowledgment tone.
- Dial your account number.
- Dial the complete long-distance number.

To perform the entire dialing procedure with an automatic dialing modem, you must time the delay between completion of dialing and the beginning of the acknowledgment tone. For Apple modems, insert a comma into the dialing string for each two-second delay required.

If you dial from inside a company through a private branch exchange, for example, the dialing string 9,02135551234,,,,1222-5551111 instructs the modem to:

- Dial 9, and wait two seconds, allowing time to receive an outside dial tone (the Apple modem does not detect dial tones).
- Dial 0-213-555-1234, indicating to the phone company that you are making a long-distance call with assistance (even though you will not actually use an operator).
- Wait eight seconds, long enough for the call to clear the phone company's exchange, ring the operator twice, and get an acknowledgment tone.
- Dial 1222-555-1111, the credit-card (calling-card) number during the acknowledgment tone. The operator will not come on line if the card number is dialed at this time.

For the exact sequence, consult your modem and communications software manuals. You can change between pulse and tone dialing as required.

an Apple modem or a Hayes Smartmodem; for longer delays, use more commas. You can put in hyphens to make your number more legible; the modem will ignore them.

Make sure no one else is using your phone line. The Apple modem and other modems connected directly to a computer and a phone jack don't need a telephone for operation. You may, however, want to keep a telephone connected to the line for voice communication, when the modem isn't in use.

**The Connection Itself**

With the preparation out of the way, you are ready to make the connection with the other computer and start transmitting data. Instruct the program to dial the phone number.

The Apple 300 and 1200 modems contain speakers, so you hear the modem dial the number and then the shrill answering tone from the other computer's modem. Your modem then switches automatically from voice mode into data mode and silences its speaker. You can proceed with the transmission.

If you hear a busy signal instead of the other modem's answering tone, hang up the phone. If you hear someone's voice, pick up a telephone and talk to the person before hanging up.

Once the two computers are connected, whatever you type at the Mac keyboard is transmitted to the remote computer. For many computer systems, you must send a Return or a ⌘-c—sometimes more than one—to elicit a response.

When you have finished communicating, instruct the program to hang up. With luck, all your transmissions will work correctly and you can enjoy computer communications. □

*Cary Lu is an Executive Editor of* High Technology *magazine. He has worked as an independent film producer for "Sesame Street," as an associate producer for "NOVA," and as the science and technology adviser for The Children's Television Workshop.*

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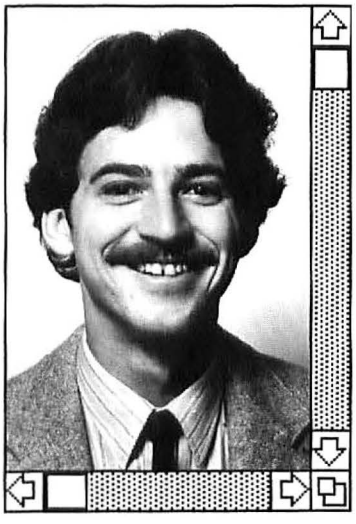
# Get Info

## *Macworld's tutor answers questions about using the Mac*

***Lon Poole***



*This column answers questions about the Macintosh and how it works. While it seems certain that most inquiries will center on working with applications, no topic is too elementary or too advanced. Expect to see discussions ranging from setting up the Mac to programming in BASIC and Pascal. Next time you have a question about using the Mac, drop me a line.*

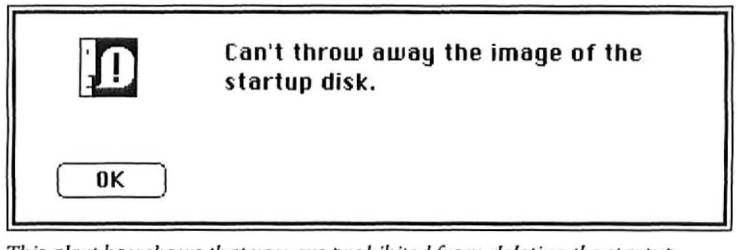
This issue's column explains some of the Mac's idiosyncracies. Two readers were puzzled by the seemingly strange behavior of the "startup" disk. Another reader wants to know how to salvage files on a corrupted disk and how to initialize a disk that the Mac refuses to accept. And several readers were curious to know the esoteric interpretations of the error codes that appear when you get a "serious system error" dialog box.

### Startup Disk

**Q.** I'm confused. When I have two disk icons showing on the desktop and I want to put the original disk icon in the trash to free up memory, the Mac tells me I can't, because it's the startup disk. But I can eject that disk, insert another, and open an application from the second disk. Then when I quit the application and go back to the desktop, the original "startup" disk icon is gone. Why can the Mac throw out the startup disk if I can't?
*Matt Brosten*
*Chicago, Illinois*

**A.** The first disk you insert after switching on the Mac is called the startup disk. When the Mac needs information about fonts, dialog boxes, alert boxes, which commands to list on a pull-down menu, and so forth, it goes to the startup disk. Furthermore, the contents of the Clipboard, the Scrapbook, and the Note Pad are stored on the startup disk. Without that information on the startup disk, the Mac desktop could not exist, so the Mac does not let you remove the startup disk icon.

When you open an application that resides on a disk other than the original startup disk, the new disk takes over the startup disk's responsibilities, and the original startup disk loses its status as startup disk. Later, when you quit an application, the only disk icon the Finder leaves on the desktop is




*This alert box shows that you are prohibited from deleting the startup disk, without which the Mac desktop couldn't exist. Opening an application on another disk makes that disk the startup disk; then you can delete the icon for the original disk icon.*

the current startup disk icon. The Finder also automatically removes any other disk icons that were on the desktop before you opened the application.

### Vanishing Scrapbook and Note Pad Pages

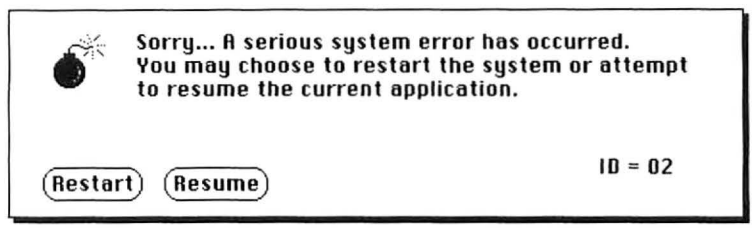
**Q.** I have *MacPaint* and *MacWrite* on different disks. I made several drawings with *MacPaint* and saved each one in the Scrapbook. Then I quit *MacPaint* and started my *MacWrite* disk, intending to paste the drawings into a report. When I opened the Scrapbook in *MacWrite,* my drawings were gone! What happened to them?
*Bernard Harrison*
*Anaheim, California*

**A.** The Note Pad desk accessory stores its eight-page scratchpad in the Note Pad File, located in the System Folder. Likewise, the Scrapbook desk accessory stores all clippings on disk in the Scrapbook File.

Every disk can have its own unique Note Pad File and Scrapbook File documents, with contents different from the files that have the same name on other disks. Neither of the two desk accessories, however, shows a dialog box with an Eject button that would allow you to access Note Pad or Scrapbook items stored on another disk. Both the Note Pad and the Scrapbook use the startup disk's Note Pad and Scrapbook Files by default.

You started up your Mac with a *MacPaint* disk, which made it the original startup disk. When you copied and pasted some drawings to the Scrapbook, they were stored in the Scrapbook File on the *MacPaint* disk. Later, when you opened *MacWrite* from a different disk, that disk became the startup disk. The Scrapbook File from the second startup disk was opened when you chose Scrapbook from the Apple menu.

If you want access to the Scrapbook File from a disk other than the current startup disk, you must copy that Scrapbook File to the current startup disk before choosing Scrapbook from the Apple menu. To do that, first rename the Scrapbook File on the startup disk (for example, "Old Scrapbook File"). Next, eject the startup disk and insert the disk that has the Scrapbook File you want to copy. Drag the Scrapbook File icon into the startup disk. The Mac will display dialog boxes that advise you to swap disks several times. That's all there is to it; the same procedure works with the Note Pad File.




*The Mac's ominous error alert box appears for many different reasons. The "ID" number at the right is keyed into a code that explains the nature of each error, but most users won't have a clue to what it means.*

### Bomb Error Codes

**Q.** What do the numbers mean that appear in the dialog box with the bomb icon?
*Sonia Ellison*
*Baton Rouge, Louisiana*

**A.** Mac software is supposed to wear a bulletproof vest, but occasionally something you do sneaks a bullet through an armhole at just the right angle, stopping the Mac dead.

When you stump the Mac, it displays the "serious system error" alert box—the one that shows a bomb icon in the upper-left corner and a mysterious number in the lower-right corner. These numbers translate to equally esoteric phrases. In most cases only someone who is intimately familiar with the program code for the Finder or the particular application software understands why a code might have appeared. But for the curious, the table labeled "Error Codes" lists interpretations for numbers 1 through 56.

**Error Codes**

**1** bus error
**2** address error
**3** illegal instruction
**4** zero divide
**5** range check error
**6** overflow
**7** privilege violation
**8** trace mode error
**9** line 1010 trap
**10** line 1111 trap (breakpoint)
**11** hardware exception error
**12** unimplemented core routine
**13** uninstalled interrupt
**14** I/O core error
**15** segment loader error
**16** floating point error
**17** package 0 not present
**18** package 1 not present
**19** package 2 not present
**20** package 3 not present
**21** package 4 not present
**22** package 5 not present
**23** package 6 not present
**24** package 7 not present
**25** memory full
**26** bad program launch
**27** file system map trashed
**28** stack ran into heap
**29** none
**30** disk insertion error
**31** no disk insertion
**32-56** memory manager errors

## Resurrecting Disks

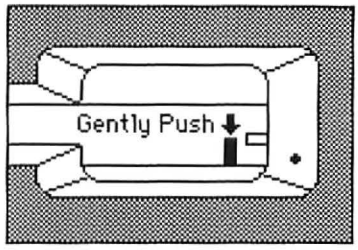
**Q.** Something happened to one of my disks so that I can't use it at all. If I try to boot up with the disk, or if I try to insert it after starting up with a different disk, I get a bomb error and have to restart. The disk used to work fine and it has some important documents on it. Can it be saved? If not, can it at least be reused?
*Richard Ashemskii*
*Boulder, Colorado*

**A.** The problem you describe occurs when the Finder loses track of what the desktop should look like. Normally the Finder knows which documents and applications are present, what their icons look like, and where the icons are located on the desktop. It also remembers the names and locations of folders and the contents of each. The Finder keeps two copies of all this information, one in memory and one on disk in a hidden Desktop file.

Every time you change any of this desktop information, the Finder records the changes in memory and should send them to the Desktop file on disk. But for expediency, not all changes are immediately recorded on disk. Instead they may be held until a sufficient quantity accumulates, when the whole batch is written to disk at once.

If the Mac's power is shut off before the changes are written to the disk, the Desktop file is not updated. Even worse, if the power goes off while the changes are being written, the Desktop file may be corrupted. Usually the Finder recognizes a corrupt Desktop file and displays the alert box with the message that begins "Repairing this disk. All Folders were lost . . . ". When you click the OK button, the Finder constructs a new Desktop file.

At times, however, the Desktop file is so corrupted that the Finder rebels and you get a "serious system error . . . " alert box. When this happens, the Finder can usually recover if you tell it to ignore its desktop record and construct a new one. To do that, hold down the Option and ⌘ keys while you start the Mac with the wounded disk. Release the keys when you see the menu bar.




***Magic Finger***
*Simply by pushing the pin inside the disk drive after ejecting a disk, you can reinitialize a disk that would otherwise be permanently ruined.*

The Finder reconstructs the desktop from a list of documents and applications on that disk. The document list is independent of the Finder's Desktop file. Furthermore, the documents and applications contain information describing what their icons look like, which the Finder also uses. Folders, however, are not stored anywhere except in the Finder's Desktop file. If that file becomes garbled, the folders will be lost.

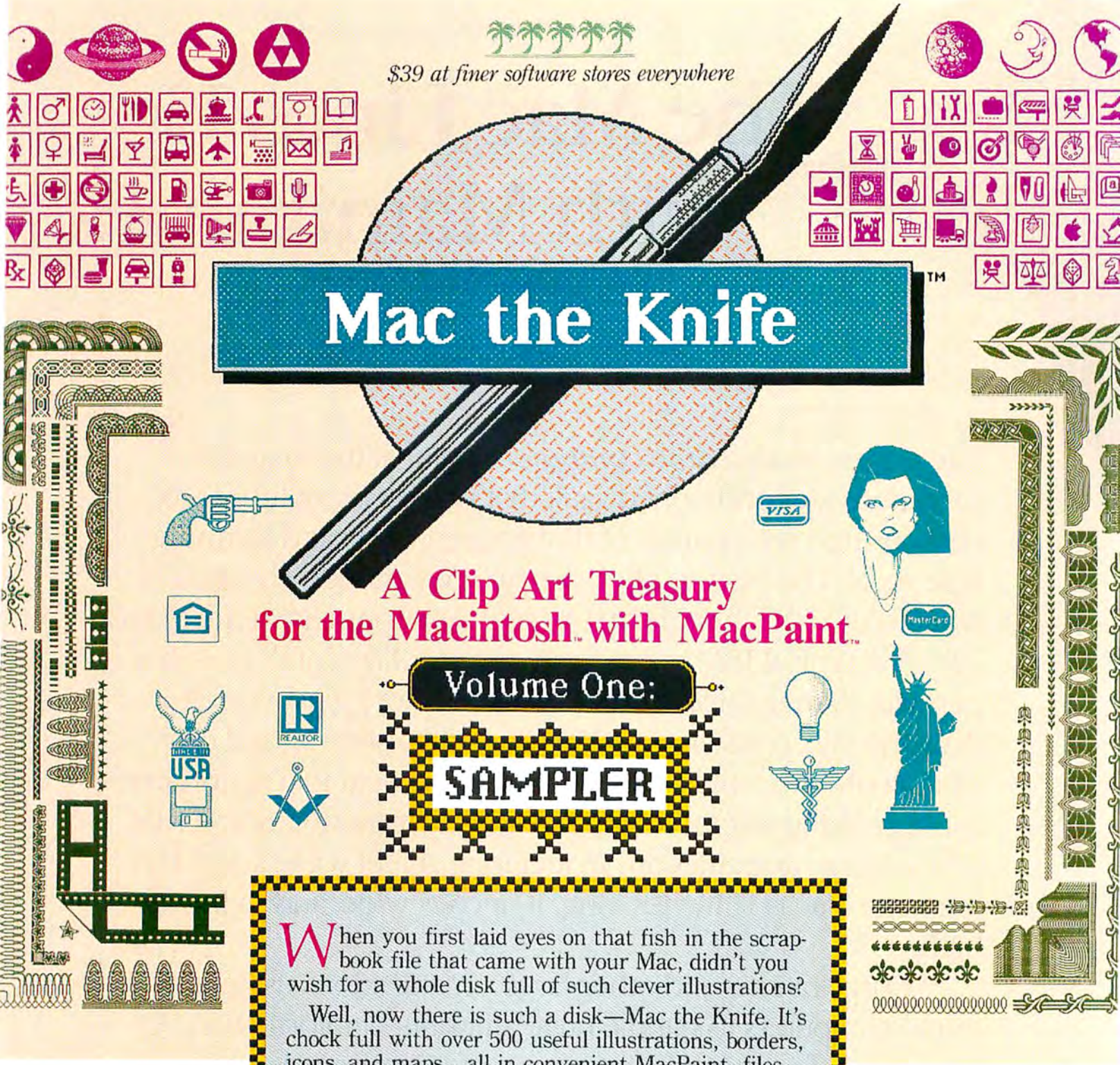
Should the Finder be unable to resurrect a disk, you can probably still reinitialize and reuse the disk by fooling the Mac into thinking you have inserted a brand new disk. To do that, eject any disk that is in the drive, and with your finger, carefully and gently press down the little black pin located just inside the disk slot on the right side (see the figure labeled "Magic Finger"). You will hear the disk motor whir faintly. A few seconds later, the Mac will display its "This disk is unreadable..." dialog box. You can now insert the disk you want to reinitialize and click the Initialize button. Be careful to insert the correct disk at this point because initializing a disk erases all the data on it.

*Important*: The serious system error alert can occur for many different reasons. Use the ⌘-Option key sequence to recover only if you cannot restart the Mac any other way. If you use the keys indiscriminately, you may needlessly lose your folders.

You can forestall about 90 percent of the desktop file problems if you always eject the disk before switching the Mac off; all the information in memory will be written on the disk. □

*Send your questions to*
Get Info, Macworld,
*555 De Haro St.,*
*San Francisco, CA 94107.*

*Lon Poole is a Contributing Editor of* Macworld *and the author of several computer books including* The Apple II Users Guide *and* MacWork/MacPlay, *forthcoming from Microsoft Press.*




When you first laid eyes on that fish in the scrapbook file that came with your Mac, didn't you wish for a whole disk full of such clever illustrations?

Well, now there is such a disk—Mac the Knife. It's chock full with over 500 useful illustrations, borders, icons, and maps... all in convenient MacPaint files. And every file has its own unique set of textures.

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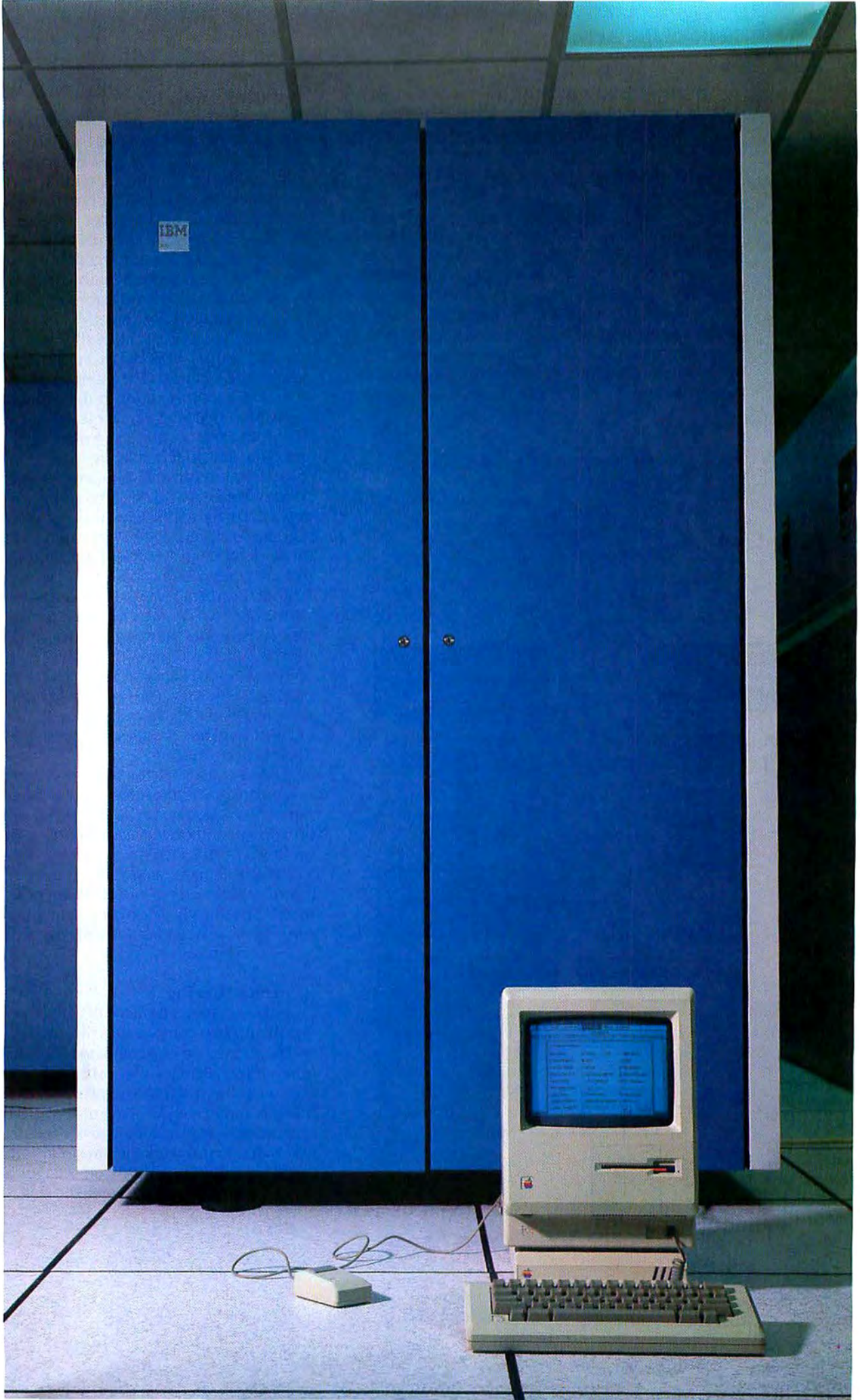
**Circle 37 on reader service card**

# The Mac Lines Up with Mainframes

*Adrian Mello*

The phrase *mainframe computer* conjures the image of a cavernous air-conditioned vault that houses monolithic cabinets covered with panels of flashing red lights and spinning tape reels. The picture of giant machines attended by men in white coats is a far cry from the cozy environment of the Macintosh. A typical IBM mainframe costs millions of dollars, has perhaps 10 megabytes of RAM, and can store gigabytes of data; the Mac costs about $2500, has 128K of RAM, and can store 400K on a single disk. Setting a Mac next to a mainframe is like parking a Volkswagen next to a locomotive. Some IBM 370 series mainframes are 15 feet long, 4 feet wide, and 6 feet high; the Mac is 11 inches long, 10 inches wide, and 14 inches high.

Corporations and other large organizations use mainframe computers to handle huge amounts of information. A large bank, for example, may use a mainframe to keep records of all its customers' accounts and transactions. Most of the bank's employees never see the computer that they use every day to check balances and enter deposits and withdrawals. They do see terminals on their desks that serve as command posts for controlling the mainframe.


IBM

A terminal is a combination keyboard and monitor that looks like a personal computer but doesn't store or process information. Some terminals, such as IBM 3278 terminals, also have extra function keys dedicated to commands like scrolling and cursor movement.

Terminals used with IBM mainframes always hook up to a device called a communications controller with a coaxial cable (which looks like the cable used to hook up cable television). A communications controller works like a traffic cop, directing the flow of data between terminals and the mainframe. Many terminals can hook up to a single controller, just as many controllers can hook up to a single mainframe. The entire hierarchy of terminals, controllers, and other devices makes up the mainframe network (see Figure 1).

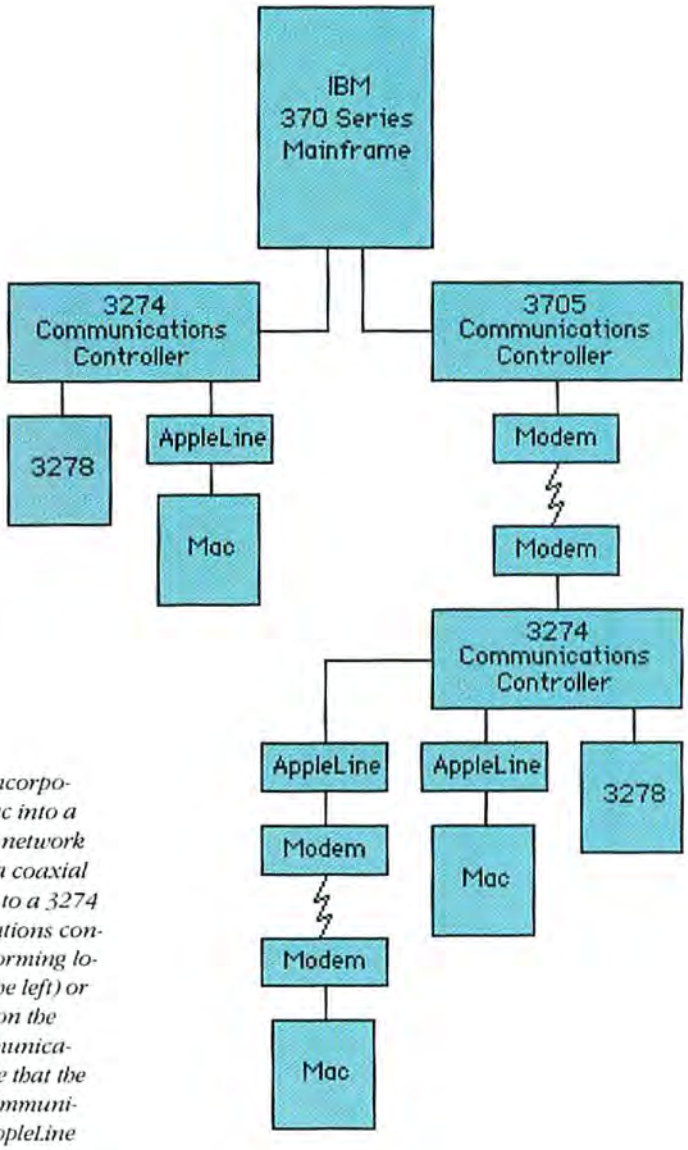



***Figure 1***
*AppleLine incorporates the Mac into a mainframe network by making a coaxial connection to a 3274 communications controller performing local (as on the left) or remote (as on the right) communications. Notice that the Mac can communicate with AppleLine from a distance by modem.*

### Meet AppleLine

Apple Computer recognizes that a large number of IBM mainframes are used by corporations, and Macintosh product developers see the importance of integrating the Mac into the mainframe environment. As different as the Mac and mainframe computers might seem, Apple has built a bridge between the two worlds. AppleLine, an external hardware device used with Apple's *MacTerminal* communications software (see "The Mac Connects" in this issue for a review of the program), allows the Mac to work with IBM 370 series mainframes in two ways.

First, AppleLine enables the Mac to operate on-line like an IBM 3278 Model 2 terminal and completely replace the terminal. The other way is to work on-line only long enough to transfer data from the mainframe to the Mac; once the transfer is done, you terminate the mainframe connection and work with the data off-line using the Mac independently.

The most obvious advantage of replacing a mainframe terminal with a Mac is the space it saves on your desk. Even with AppleLine, the Mac is still less than half the size of an IBM 3278 terminal. Measuring 12 inches long, 10 inches wide, and 2 inches high, the AppleLine hardware fits under the Mac, only slightly enlarging the Mac's footprint. AppleLine is a 3-pound plastic box that contains a fan and a circuit board for transferring data between the Mac and IBM mainframes. When you turn on the power, a red LED (light-emitting diode) lights up as AppleLine performs self-testing diagnostics. The red light goes off with the completion of the diagnostics, and green and yellow LEDs turn on and pulsate continuously to show that AppleLine is working.

After you switch the Mac on, you use *MacTerminal* menus and commands to set communications parameters and log on to the IBM mainframe. AppleLine prevents unauthorized access to the mainframe by requiring a personal password from anyone who tries to log on to the mainframe. Once you're on-line, *MacTerminal* reveals a set of pull-down menus with commands specifically designed to let the mouse duplicate some of the operations normally carried out by the 3278 function keys.

### Data Sharing

The greatest advantage of a link between the Mac and mainframe computers is that information stored and processed on one computer is available to the other. If you regularly use a Mac, AppleLine enables you to tap the vast data banks of a company's mainframe computer, making the information of an entire organization available for analysis and problem solving. Suppose you work for a major airline and want to prepare a report on the cost advantages of routing the company's southeastern flights through Atlanta instead

# Following Mainframe Rules

*With the help of AppleLine, the compact Macintosh arrives in the big leagues, combining its ease of use with the storage capacities of giant mainframes.*

One of AppleLine's most welcome features is that you don't have to understand how it works to use it. Nevertheless, some readers may want to know how AppleLine transforms a Mac into a mainframe terminal.

To connect with a mainframe computer, the Mac must follow the mainframe's communications rules. These rules, called *protocols,* govern every aspect of communications, from the actual hardware connection to the interpretation of unique keys on a specific type of mainframe terminal. The 3270 coaxial protocol is normally used to transfer data over the coaxial cable that connects an IBM 3274 or 3276 communications controller to a 3278 terminal. One function of the protocol allows a terminal to send or receive data at the proper time in response to an instruction called a *poll* from the communications controller. Another function makes sure that the message sent is the same as the message received. AppleLine assumes these functions for the Mac so that information can be sent back and forth on the coaxial cable as usual.

When data and instructions necessary to a mainframe application program must be transferred to or from the Mac, AppleLine must convert the 3270 coaxial protocol into the asynchronous DEC VT100 protocol used by *MacTerminal*. Via the 3270 coaxial protocol, data is transmitted at speeds up to 2 million bits per second (bps). Via the DEC VT100 protocol, the Mac sends and receives data at a maximum speed of 9600 bps. Clearly, AppleLine must make an adjustment to overcome the tremendous difference in data transmission speeds.

In addition to protocol conversion, AppleLine must also perform character conversion because Macs and IBM mainframes use different character codes. Computers use standardized binary codes to represent specific characters of data being transferred. The Mac and most other computers use the ASCII (American Standard Code for Information Interchange) system. IBM mainframes use the EBCDIC (Expanded Binary Coded Decimal Interchange Code) system. Trying to interpret EBCDIC characters with a Mac is like trying to read English words written in Greek letters. AppleLine translates characters between the ASCII and EBCDIC systems by means of tables that show the code equivalent in each system.

By duplicating the characteristics of an IBM 3278 Model 2 terminal, AppleLine allows the Mac to work interactively with IBM mainframes. This duplication process is referred to as *terminal emulation*. A mainframe sends instructions to a terminal to address and format the terminal's screen. AppleLine processes these instructions that the Mac would otherwise interpret as meaningless strings of characters.

In addition to receiving special instructions from mainframes, terminals also send specialized commands (called *escape code sequences*) that control characteristics such as function keys, cursor movement, and formatted screens. When a prescribed sequence of Mac keys is pressed, AppleLine translates those keys into codes the IBM mainframe recognizes.

of New Orleans. After logging on to the company's IBM mainframe, you would use the Mac like a 3278 terminal, searching for the annual fuel cost and other recorded expenses of flight operations to southeastern cities. Keep in mind that once your Mac is operating as a 3278, you must know how to use 3278 commands and whatever mainframe software you need.

As you locate pertinent information, you use the cut and paste features of *MacTerminal* to transfer it. Each time you locate desired information, you put it in the Clipboard or the Scrapbook and continue searching. After you've removed the necessary information, you log off both the system and the AppleLine unit. If you haven't done so already, you load *Multiplan* and prepare a spreadsheet into which you paste the mainframe data held in the Scrapbook or the Clipboard. Once you've pasted in all the information, you can examine it with *Multiplan,* setting up formulas and posing different scenarios to compare the costs of changing the center of southeastern flight operations.

Information originated on the Mac can also be sent to a mainframe. A mainframe can serve as a central data base for consolidating information prepared off-line by a number of other managers using Macs.

Returning to the airline example, the final cost projections of a change to Atlanta could be transferred back into a company-wide report on potential cost-saving measures using the same cut and paste procedures.

Arnie Lapinig, Apple's data communications product manager, points out that the cut and paste editing features of *MacTerminal* solve a major problem confronting all computers that transfer information between applications that have different file structures.

*The Mac isn't fickle about response time because it doesn't have to divide its processing capabilities among a number of users.*

Once the information is received, it must be reformatted so that it fits into an application. Most programs used for reformatting can't account for different file structures used by different programs. To solve this problem, a separate conversion utility usually has to be written for each application. *MacTerminal*'s editing commands enable you to reformat data without having to use a conversion program.

Unfortunately, AppleLine lacks the necessary software for transferring entire files between the Mac and an IBM mainframe. Without file transfer capability, the amount of data that you can send or receive is limited by the size of the Clipboard or the Scrapbook, which is determined by the remaining disk space. For example, if you want to use *MacWrite* and the mouse to rewrite a lengthy report held in a mainframe file, you must cut and paste the file in a piecemeal fashion rather than transferring the complete file in a single operation.

**Mainframe Slowdowns**

Why bother to design a connection between Macs and mainframes, when terminals such as the 3278 have provided such a connection for years? If you're accustomed to working on a mainframe system, you're also probably familiar with the slowdowns that occur when a number of people make demands on the mainframe's computing resources. *Response time* is the time it takes the computer to respond to a command that requires processing, such as when you press the Enter key. During a system slowdown, response time can be 10 to 20 seconds, even slowing to the point where you can work faster with pencil and paper. Unfortunately, most people don't have recourse to pencil and paper because they work with centrally stored data that can only be reached via a computer's data banks. Slowdowns result in employees milling around the office while they wait for the computer to regain responsiveness.

Replacing a terminal with a Mac makes you less vulnerable to slowdowns. Once you log on to the mainframe and remove data, you can use the Mac's processing power and software off-line to manipulate the data. The Mac isn't fickle about response time because it doesn't have to divide its processing capabilities among a number of users. You alone control the Mac's processor, storage, and software.

***Figure 2***
*Using a gender changer, the serial cable connects to the modem port on the back of AppleLine and then to the Mac's telecommunications port. The coaxial cable extends from a 3274/6 communications controller and connects to the controller port. The rightmost port plugs AppleLine into a power source via an AC power adapter.*

***Figure 3***
*At the other end of the coaxial cable, an IBM 3274 communications controller (on the left) directs the flow of traffic between terminals and the mainframe. AppleLine enables the Mac to replace an IBM 3278 Model 2 terminal (on the right).*

Replacing a number of terminals with Macs benefits the entire system, including people who still use terminals. Because the Mac doesn't tax the mainframe's central computing resources, the system's processing overhead is reduced. The mainframe is free to do what it does best: process and store large amounts of data at high speeds.

AppleLine also gives you more software choices. You can build a software library that includes sophisticated mainframe applications and the Mac's powerful, easy-to-use programs. If you need to do something that your mainframe software can't do, instead of waiting for a company programmer to write a program for the mainframe, you may be able to buy it at a computer store. For example, a naval engineer might use a powerful mainframe application written to design ships, but perhaps that application can't represent information in a chart format. The engineer could use *Microsoft Chart* to create a presentation graph.

### Connecting AppleLine

Having no way to make a physical connection with the mainframe, the Mac is like an automobile trying to get onto a freeway system that has no on-ramps. Because AppleLine connects to a coaxial cable as if it were a terminal (see Figure 1), your only concern is getting a coaxial cable; before attaching AppleLine, check with your company's data processing department. The coaxial cable is attached to the back of the AppleLine unit and the Mac is connected to AppleLine by a serial cable in one of the Mac's telecommunications ports (see Figure 2). To make this connection, you must have a small accessory called a *gender changer* to fit the serial cable on the back of AppleLine. You complete the hardware connection by connecting AppleLine to its own power source with an AC power adapter.

The coaxial cable extends from an IBM communications controller. AppleLine attaches to IBM 3274 and 3276 communications controllers (see Figure 3). In a mainframe network the computer may be as near as the same building the terminals are in or as far away as another state. A controller can be directly attached to the mainframe (called local or *channel-attached* communications) for up to 2000 feet in the same building. When the mainframe is more than 2000 feet away or in a separate building, the controller sends information back and forth with a modem to another controller connected to the mainframe (called *remote* communications). AppleLine attaches to both channel-attached and remotely attached controllers.

If you want to connect the Mac to a mainframe but you need to work away from the office and an IBM communications controller, you can communicate by modem with an AppleLine unit connected to a controller. By attaching modems to the AppleLine unit in the office and to the Mac away from the office, you can communicate over telephone lines.

AppleLine demonstrates that Apple is serious about the Mac's role as a business computer. As the benefits of using a personal computer in place of a terminal become recognized, demand for Macs in mainframe settings will increase. With the advent of AppleLine, the Mac (billed as the computer for everyone else) apparently is expanding to include everyone—even IBM mainframe users. □

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ *Adrian Mello is the Assistant Editor of* Macworld.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

*AppleLine*
*Apple Computer, Inc.*
*20525 Mariani Ave.*
*Cupertino, CA 95014*
*408/996-1010*
*List price: $1295*

# Smoothing the Critical Path

MacProject *gives managers a new approach to coordinating and meeting deadlines by combining the graphics and calculation capabilities of the Mac with the standard techniques of project management. Once you create the initial chart, the program generates five additional charts automatically.*

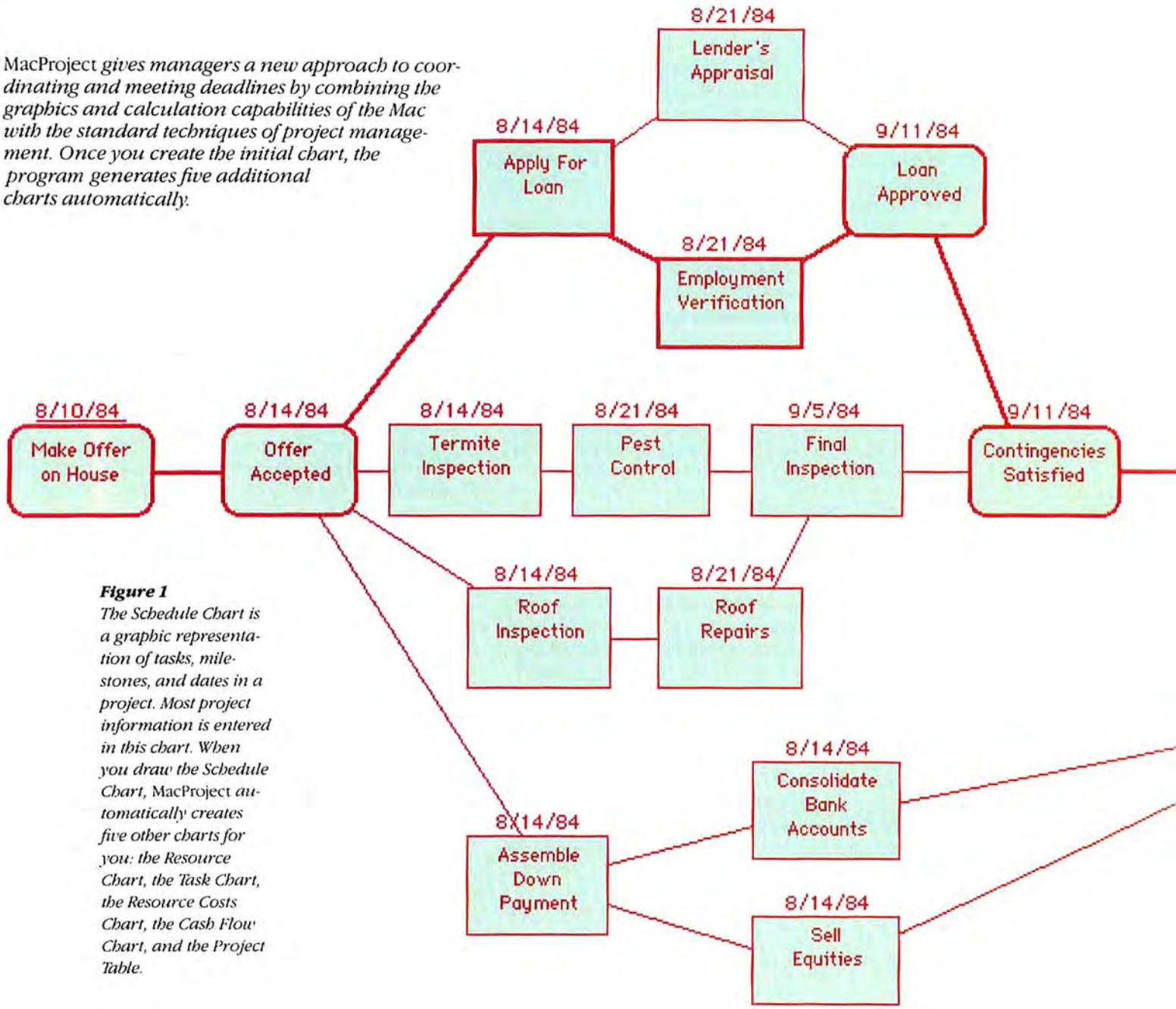
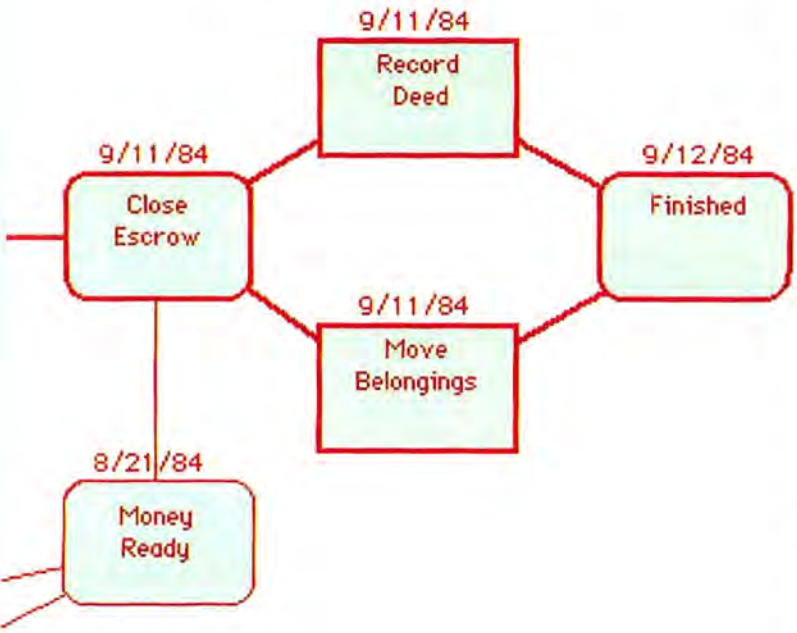



***Figure 1***
*The Schedule Chart is a graphic representation of tasks, milestones, and dates in a project. Most project information is entered in this chart. When you draw the Schedule Chart,* MacProject *automatically creates five other charts for you: the Resource Chart, the Task Chart, the Resource Costs Chart, the Cash Flow Chart, and the Project Table.*

***Kearney Rietmann***

The pressure of a single deadline can be heavy, but when you juggle many deadlines, it can be excruciating. People who work with other people in large projects are accustomed to dividing jobs into tasks, assigning the tasks or parts of tasks to members of the work team, and keeping track of the progress of the project. Some managers use techniques such as the Critical Path Method (CPM) and the Program Evaluation and Review Technique (PERT). These techniques help managers to analyze, plan, and schedule projects. The tasks in a project are organized graphically in flowchart boxes, bar charts, or tables, and include start dates, completion dates, and project resources.

Before computers had graphics capabilities, project managers painstakingly drew their PERT charts by hand. Charts often showed so much information and grew so large that managers' offices became covered with strange "wallpaper" showing the progress of current projects. And since projects nearly always change as a start date slips, one task takes extra time, or equipment costs fluctuate, the carefully drawn charts had to be modified repeatedly. After several changes, managers often gave up trying to maintain neat-looking charts and resorted to inserting scribbled notes, erasing outdated information, and cutting sections of the charts and replacing them with new ones.




**Buying A House**

### From Mainframe to Desktop

Until recently, project management software ran mostly on mainframe computers, which have the sophisticated graphics and calculation capabilities project analysis requires. *MacProject* keeps project charts off the office wall and puts them on the Macintosh, where they can quickly be drawn, modified, stored, and copied.

Like its predecessor, the highly rated *LisaProject*, *MacProject* is a tool for planning and monitoring projects. The program graphically represents tasks, resources, and time frames and shows interactions and dependencies. Like a spreadsheet, *MacProject* is a guide for making "what if" analyses such as what happens if equipment prices escalate, one task gets off to a late start, or new employees are added to the team.

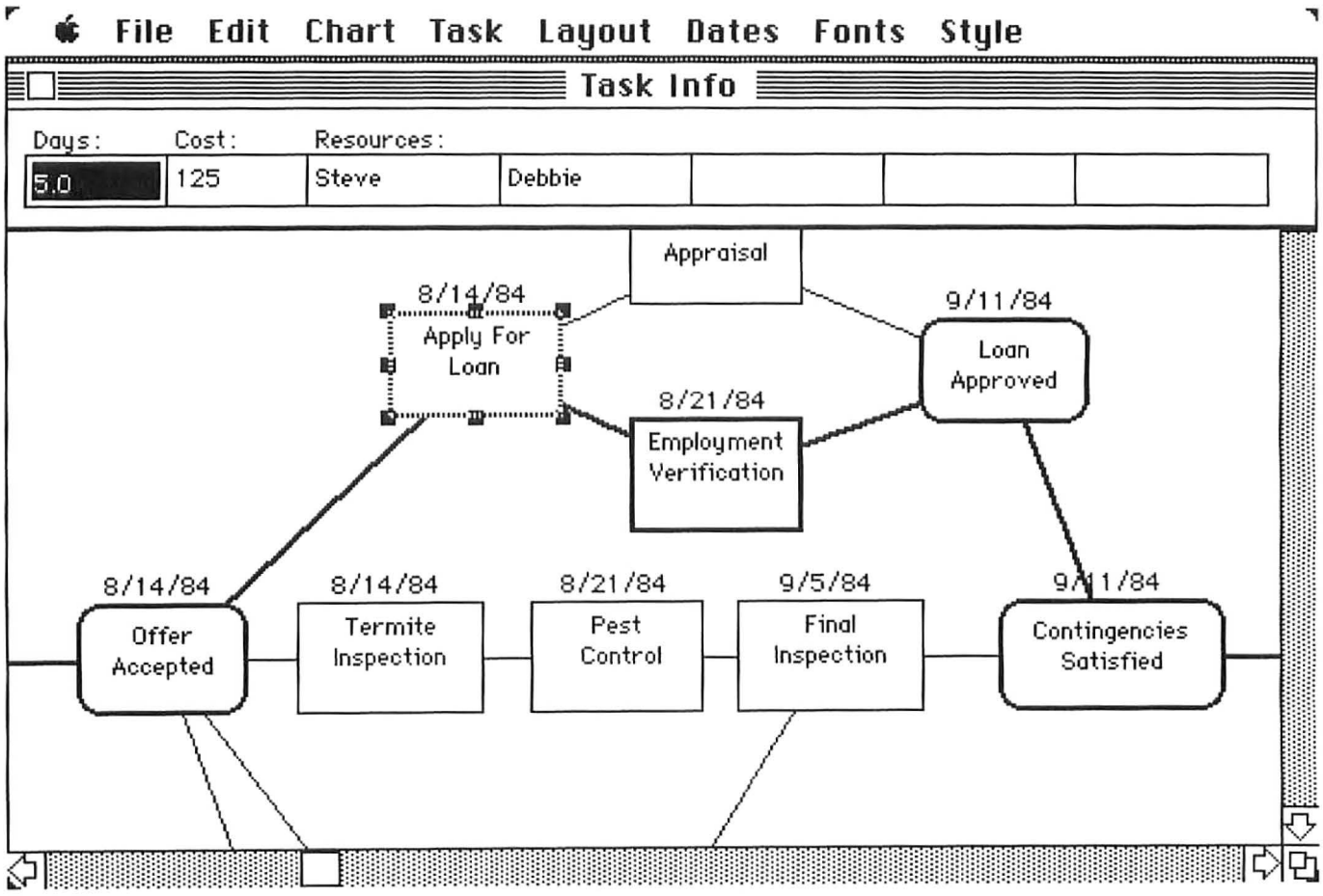



***Figure 2***
*You enter information about a project's tasks in the Task Info window. You select the task and click the Show Task Info command in the Task menu. Then you fill in the task's duration, fixed costs related to the task (such as the fee for making the loan application), and the task's resources.*

### Creating the Schedule Chart

Project management techniques have traditionally been applied mainly to complex projects, largely because of the cost of undertaking the analysis. I chose the example of buying a house to demonstrate that project management software can also be used for smaller projects that last for relatively short periods.

*MacProject* offers six ways to monitor a project. In keeping with the Mac's visual design, each vantage point is a different type of chart: Schedule, Resource, Task, Resource Costs, Cash Flow, and Project Table. When you open the program, a large blank screen appears that resembles the *MacPaint* drawing area. On this screen you draw the Schedule Chart or the boxes and arrows that show the project tasks (see Figure 1). Most of the information about the project goes into this chart. You draw the tasks and the milestones with the mouse and then arrange them in whatever order you expect the events to occur. You can easily change the task order by selecting boxes and dragging them with the mouse.

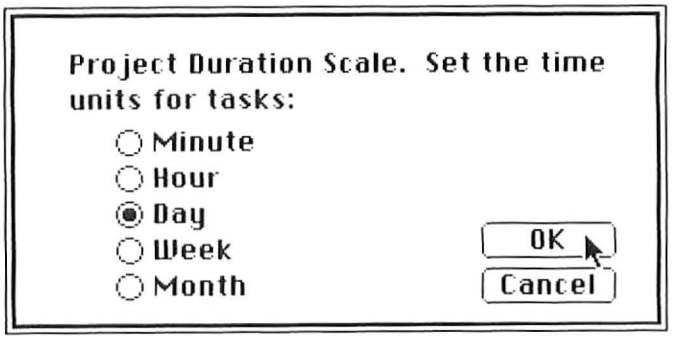



***Figure 3***
*You set a project's duration scale with the Duration Scale command in the Dates menu.* MacProject's *default duration scale is days, but you can also choose to analyze a project in terms of minutes, hours, weeks, or months.*

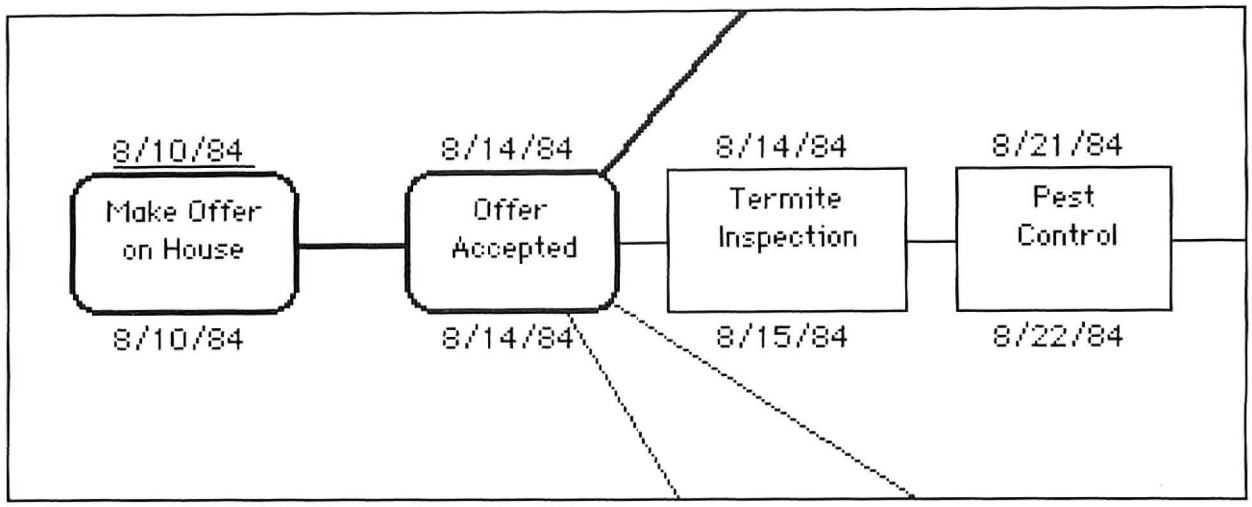



***Figure 4***

MacProject *lets you enter different kinds of dates for each task. This figure shows both Early and Late Start dates. Early Start dates tell you the earliest time to start each task so the project can be completed as soon as possible. Late Start dates let you know the latest date you can start each task and still finish on time. You can also set Early and Late Finish dates.*

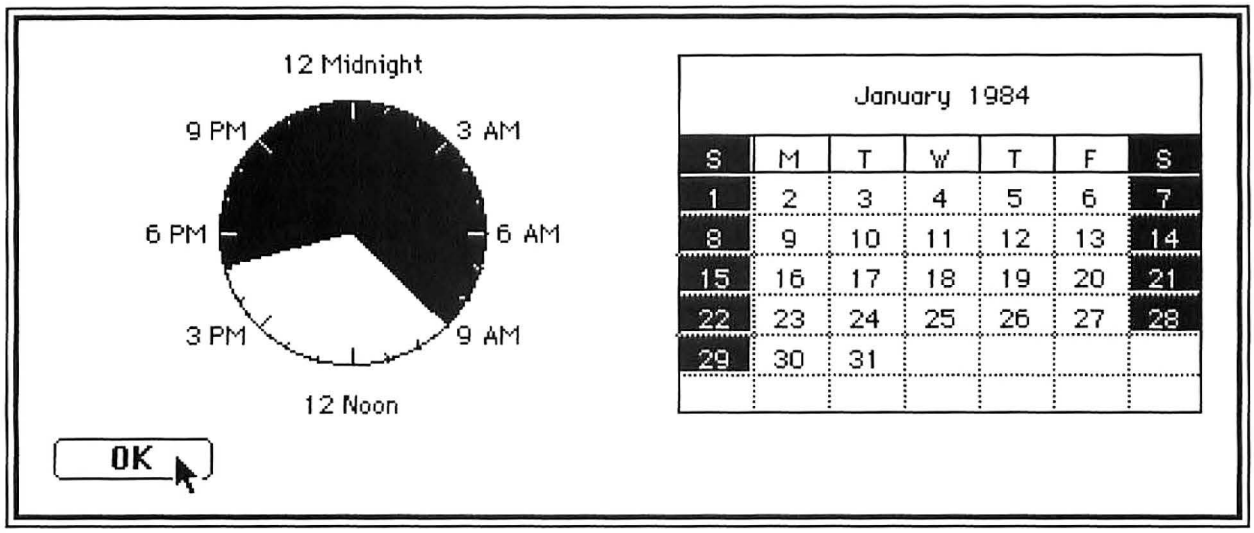


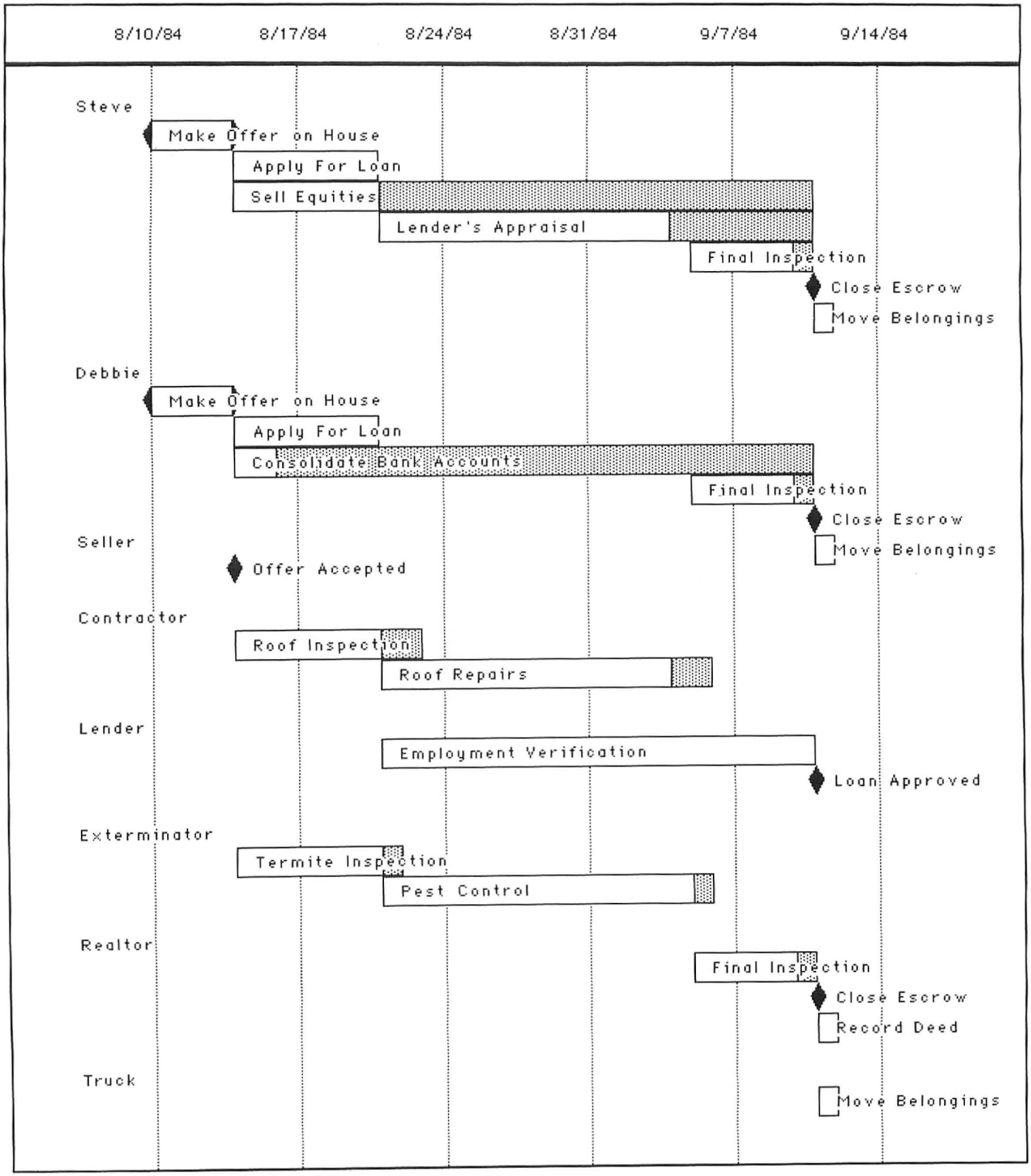

***Figure 5***

*The* MacProject *calendar monitors a project's dates. Weekends and holidays are set automatically, but you can change them, depending on your work schedule. The calendar also contains a clock, the hours of which you can change to suit your workday.*

Depending on the way you want the chart to look, you can also make boxes larger or smaller by selecting them and pulling on one of the eight small "grow handles" along the perimeter. You can use the invisible grid (like the grid in *MacPaint*) to help create boxes of the same size, and line them up vertically or horizontally. When moving boxes around, wait to draw arrows until you are fairly sure that the task boxes are in order. You can move the boxes with the arrows drawn, but if you wait until the boxes are laid out it's easier to draw the arrows in their proper direction (left to right).

Some of the boxes in the Schedule Chart have rounded corners. These boxes indicate milestones. To make a box indicate a milestone, select the box, pull down the Task menu with the mouse, and click on Milestone (if you prefer keyboard commands, you can press ⌘ -m).

Each task gets a label inside its box. Once a box is drawn, the blinking cursor appears inside it, waiting for you to type the label. The program automatically centers labels and wraps words to the next line. When the box is filled with text, it looks as if the program has stopped accepting what you type. If you enlarge the box, however, you'll see the text. It's easy to insert and delete text, and cut and paste within boxes or from one box to another.


8/10/84
8/17/84
8/24/84
8/31/84
9/7/84
9/14/84
Steve
Make Offer on House
Apply For Loan
Sell Equities
Lender's Appraisal
Final Inspection
Close Escrow
Move Belongings
Debbie
Make Offer on House
Apply For Loan
Consolidate Bank Accounts
Final Inspection
Close Escrow
Move Belongings
Seller
Offer Accepted
Contractor
Roof Inspection
Roof Repairs
Lender
Employment Verification
Loan Approved
Exterminator
Termite Inspection
Pest Control
Realtor
Final Inspection
Close Escrow
Record Deed
Truck
Move Belongings

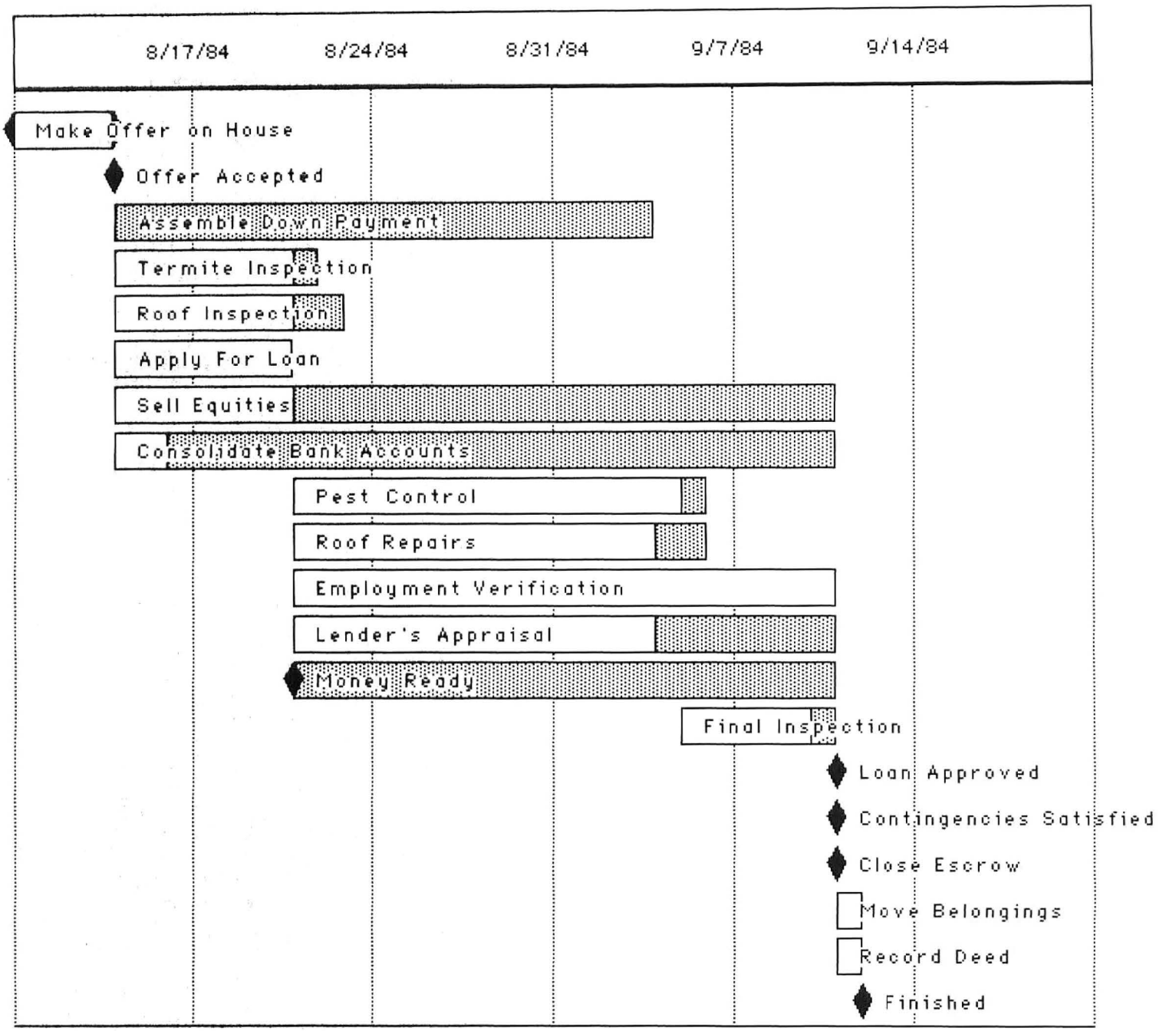



***Figure 7***
*The Task Chart lists all of a project's tasks in the order in which they occur. Critical tasks are shown in white and slack time in gray. Milestones are indicated by a diamond.*

***Figure 6 (opposite)***
*Resources are the people who work on a project and the machines, equipment, materials, and facilities they use. The Resource Chart is a bar chart that lists a project's resources, showing the tasks for which the resources are used and the amount of time that they are committed.*

If you've worked with *MacWrite*, you should have no trouble editing *MacProject* text. The font and style enhancements, however, are somewhat limited. Although the usual Mac font and style options are available, the text in all boxes must appear in the same font and style. Text located outside the boxes, called *annotations,* can be different, however. "Buying a House" in Figure 1 is an annotation; this text serves as the title for the project.

**Setting the Dates**

Once you lay out a project's tasks and milestones and connect them with arrows, you are ready to add dates. Tasks have duration, which means that they are carried out over a period of time. Although milestones usually represent isolated dates or times, you can assign duration to them. You enter dates from the Task Info window, which you select by pulling down the Task menu and clicking Show Task Info or by pressing ⌘-t (see Figure 2). Although the program's default duration scale is days, you can change the duration by pulling down the Dates menu, choosing Duration Scale, and clicking the duration you need (see Figure 3).

*The degree of integration among the different parts of the program is amazing.*

When you change the duration in the Project Duration Scale window (from days to weeks, for example), the duration shown in the Task Info window changes too. The degree of integration among the different parts of the program is amazing.

In the Task Info window, you also enter the cost involved in carrying out the task, and the task resources, which can be people, equipment, materials, or facilities. After you enter the task information, you can review it by selecting the task in question and opening the Task Info window. I referred to that window so often that I finally decided to leave it open while working on the Schedule Chart. And to keep the Task Info window from covering the chart, I resized the Schedule Chart window so I could see both windows at once.

Setting dates is one of *MacProject*'s smoothest features. To display the dates, choose Show Dates from the Date menu. Normally, you select the Early Start dates and show them above the tasks. These dates indicate the earliest time to start each task so you can finish the project as soon as possible. Pull down the Date menu and set the project start date in the Set Early Start window. The program then takes the start date you set and uses the task durations entered in the Task Info window to calculate the start date for each task. Above the last milestone, the completion date for the entire project appears.

| | Resource Name | Unit Cost |
|---|---|---|
| 1 | Steve | 0.00 |
| 2 | Debbie | 0.00 |
| 3 | Seller | 0.00 |
| 4 | Contractor | 0.00 |
| 5 | Lender | 0.00 |
| 6 | Exterminator | 0.00 |
| 7 | Realtor | 0.00 |
| 8 | Truck | 60.00 |

***Figure 8***

*The Resource Costs Chart lists all of a project's resources. You enter the unit cost for each resource, which is the cost of a resource for a particular time period such as an hour, a day, or a week.*

| Start | Incremental | End | Cumulative |
|---|---|---|---|
| 8/10/84 | 395.00 | 8/17/84 | 395.00 |
| 8/17/84 | 700.00 | 8/24/84 | 1095.00 |
| 8/24/84 | 0.0 | 8/31/84 | 1095.00 |
| 8/31/84 | 0.0 | 9/7/84 | 1095.00 |
| 9/7/84 | 460.00 | 9/14/84 | 1555.00 |

***Figure 9***

*The Cash Flow Chart records a project's disbursement of funds. The chart shown here gives the cash disbursements for week-long increments. You can change time increments with the Timeline Scale command in the Dates menu to see how much a project costs during different time periods. The time increments you can choose are: 1 minute, 10 minutes, 30 minutes, 1 hour, one day, one week, one month, or one quarter.*

# Project Management Terminology

Like other specialized professions, project management has its own terminology. A *project* is a piece of work, large or small, that can be divided into a sequence of activities. When all individual activities are completed, the project is finished.

*Tasks* are the activities or events that make up a project. Each task has a time frame, or duration, such as hours, days, months, or years, in which it is carried out. Tasks also have costs and *resources,* which are the people assigned to the task and the equipment they use.

In addition to tasks, projects have *milestones,* the most important events in the project. All projects have at least two milestones—a start date and a finish date—but they can have others as well, such as start and finish dates for groups of related tasks in a large project.

Tasks and milestones can be shown graphically in a flowchart, called a Schedule Chart in *MacProject,* made up of a series of boxes connected by lines. The lines, or arrows, show interdependencies and relationships between one task and another. The Schedule Chart is the project's "road map" and shows the tasks and the milestones and the order in which they occur.

Most projects have certain tasks of such importance that if they aren't finished on time, the entire project will be delayed. These key tasks are called *critical tasks.* They cannot be allowed to *slip,* or fall behind schedule.

A sequence of critical tasks makes up the *critical path* of a project. Because the critical path is so important, *MacProject* automatically shows critical paths in boldface.

Not all tasks in a project are critical, however. Some activities can be delayed without affecting the project's completion. A project that has extra time for completing tasks is said to have *slack time.*

When projects have tasks with slack time, it's useful to show Late Start below the tasks in addition to Early Start above them (see Figure 4). Late Start dates indicate the latest date you can start a task and still finish the project on time.

*MacProject*'s calendar also plays a part in date calculations. You can look at it by choosing Calendar from the Dates menu (see Figure 5). The calendar begins with January 1984, but you can easily change it to the month you need by selecting January and scrolling forward or backward using the arrows provided. The calendar shows national holidays and Saturdays and Sundays in black, under the assumption that people don't work on these days. This default setting can be modified, however, if your schedule calls for work during these times. To set or clear a holiday, simply click on that day.

The Calendar window also contains a clock. Although the clock's hours are set for a 9-to-5 workday, the times can be changed. For the house-buying project, the dates have been calculated from the default calendar's five-day work week.

**MacProject Creations**

The *MacProject* Schedule Chart is the cornerstone of the program, the chart on which most project information is entered and modified. The Schedule Chart is the most flexible of the six charts, because it is the one you create and change to suit your needs. *MacProject* creates the other five charts automatically after you create the Schedule Chart (see Figures 6 through 10). These charts enable you to analyze a project from different perspectives, and with the exception of the Resource Costs chart, in which you input costs, you don't have to draw a single line or add any information.

| | Task Name | Days | Early Start | Early Finish | Late Start | Late Finish |
|---|---|---|---|---|---|---|
| 1 | Make Offer | 2.0 | 8/10/84 | 8/14/84 | 8/10/84 | 8/14/84 |
| 2 | Offer Accepted | 0.0 | 8/14/84 | 8/14/84 | 8/14/84 | 8/14/84 |
| 3 | Assemble Down Payment | 0.0 | 8/14/84 | 8/14/84 | 9/4/84 | 9/4/84 |
| 4 | Termite Inspection | 5.0 | 8/14/84 | 8/21/84 | 8/15/84 | 8/22/84 |
| 5 | Roof Inspection | 5.0 | 8/14/84 | 8/21/84 | 8/16/84 | 8/23/84 |
| 6 | Apply For Loan | 5.0 | 8/14/84 | 8/21/84 | 8/14/84 | 8/21/84 |
| 7 | Pest | 11.0 | 8/21/84 | 9/5/84 | 8/22/84 | 9/6/84 |
| 8 | Roof Repairs | 10.0 | 8/21/84 | 9/4/84 | 8/23/84 | 9/6/84 |
| 9 | Employment Verification | 15.0 | 8/21/84 | 9/11/84 | 8/21/84 | 9/11/84 |
| 10 | Lender's Appraisal | 10.0 | 8/21/84 | 9/4/84 | 8/28/84 | 9/11/84 |
| 11 | Sell Equities | 5.0 | 8/14/84 | 8/21/84 | 9/4/84 | 9/11/84 |
| 12 | Consolidate Bank Accoun | 2.0 | 8/14/84 | 8/16/84 | 9/7/84 | 9/11/84 |
| 13 | Final Inspection | 3.0 | 9/5/84 | 9/10/84 | 9/6/84 | 9/11/84 |
| 14 | Loan Approved | 0.0 | 9/11/84 | 9/11/84 | 9/11/84 | 9/11/84 |
| 15 | Contingencies Satisfied | 0.0 | 9/11/84 | 9/11/84 | 9/11/84 | 9/11/84 |
| 16 | Money Ready | 0.0 | 8/21/84 | 8/21/84 | 9/11/84 | 9/11/84 |
| 17 | Close Escrow | 0.0 | 9/11/84 | 9/11/84 | 9/11/84 | 9/11/84 |
| 18 | Move Belongings | 1.0 | 9/11/84 | 9/12/84 | 9/11/84 | 9/12/84 |
| 19 | Record Deed | 1.0 | 9/11/84 | 9/12/84 | 9/11/84 | 9/12/84 |
| 20 | Finished | 0.0 | 9/12/84 | 9/12/84 | 9/12/84 | 9/12/84 |

***Figure 10***
*The Project Table shows you all the information a* MacProject *document holds about a project.*

The Resource Chart (see Figure 6) enables you to look at the project from a different viewpoint. In bar chart format, this chart shows all the project's resources and the tasks they're assigned to. Dates are listed along the top of the chart so you can see the task's duration and find out for how long a resource is committed. The length of the white area on the bar represents the task's duration. The gray area signifies the slack, the amount of time you can delay the task.

Managers will find the Resource Chart useful for determining whether one staff member (or a department in the case of a company-wide project) has been assigned too much work. The chart also indicates when people are working and not working, and whether their tasks are critical or have slack. Workers whose tasks have slack time can be assigned other tasks. Companies that must schedule resources such as conference rooms, product testing facilities, or company vehicles will find this chart useful, because the resources can be reallocated to different tasks, particularly those on the critical path.

The second bar chart, the Task Chart, shows the project information organized by tasks and milestones (see Figure 7). You can see start and finish dates, as well as which tasks are critical and which have slack. Several bars covering the same time period indicate times of great work activity. If the chart shows too much work occurring at a particular time, a manager can consider rescheduling tasks.

The next three *MacProject* charts—Resource Costs, Cash Flow, and Project Table—are in tabular format. The Resource Costs Chart (see Figure 8) is the only one except the Schedule Chart to which you add information. In fact, there are only three places in the program where you enter project data: the Schedule Chart, the Task Info window, and the Resource Costs Chart. The Resource Costs Chart lets you enter the unit costs of the resources in the project. In our house-buying project, for example, the truck rental cost is $60 per day. Other unit costs might include charges for renting a meeting room, daily fees for a consultant, or expenditures for heavy construction equipment.

| Fixed Cost | Rsrce Cost | Total Cost | Resource 1 | Resource 2 | Resource 3 |
|---|---|---|---|---|---|
| 0 | 0 | 0 | Steve | Debbie | |
| 0 | 0 | 0 | Seller | | |
| 0 | 0 | 0 | | | |
| 75 | 0 | 75 | Exterminato | | |
| 75 | 0 | 75 | Contractor | | |
| 125 | 0 | 125 | Steve | Debbie | |
| 300 | 0 | 300 | Exterminato | | |
| 400 | 0 | 400 | Contractor | | |
| 0 | 0 | 0 | Lender | | |
| 0 | 0 | 0 | Steve | | |
| 120 | 0 | 120 | Steve | | |
| 0 | 0 | 0 | Debbie | | |
| 0 | 0 | 0 | Steve | Debbie | Realtor |
| 0 | 0 | 0 | Lender | | |
| 0 | 0 | 0 | | | |
| 0 | 0 | 0 | | | |
| 0 | 0 | 0 | Steve | Debbie | Realtor |
| 150 | 210 | 210 | Steve | Debbie | truck |
| 250 | 250 | 250 | Realtor | | |
| 0 | 0 | 0 | | | |

The Cash Flow Chart (see Figure 9) monitors disbursements of the project's funds. Like an electrical power meter that registers the flow of electricity, this chart gives you a reading of a project's cash outlay. The program takes the project duration and cost information and records it for an interval measured in different increments such as days, weeks, or months. Figure 9 reveals the project costs for the first week as $395 and for the second week as $700. The column on the far right of the table indicates the project's cumulative cost up to a given date.

*The Project Table makes a good reference card and communications tool.*

The last chart in the Chart menu is the Project Table (see Figure 10), which lists the project's tasks, durations, start and finish dates, and costs. The Project Table makes a good reference card and communications tool. During the planning stages of a project, you can take the table to meetings to determine whether any tasks are missing, whether time estimates are realistic, whether the costs are reasonable, and whether the dates conflict with other projects.

The information from the Resource Costs, Cash Flow, and Project Table charts can be transferred to *Multiplan*. You carry out the transfer by selecting the entire table, copying it to the Clipboard, exiting *MacProject*, opening *Multiplan*, and pasting the table from the Clipboard into the spreadsheet.

**What If?**

Most personal computer owners use spreadsheets to answer "what if" questions about finances and help develop planning strategies. *MacProject* also answers "what if" questions about time and money. You can easily modify a project's dates, durations, costs, and resources, automatically calculate new schedules and cash flow, and update the charts. For example, you can determine the effect on the whole project if two or three tasks take longer than expected to finish. You might want to know what would happen if

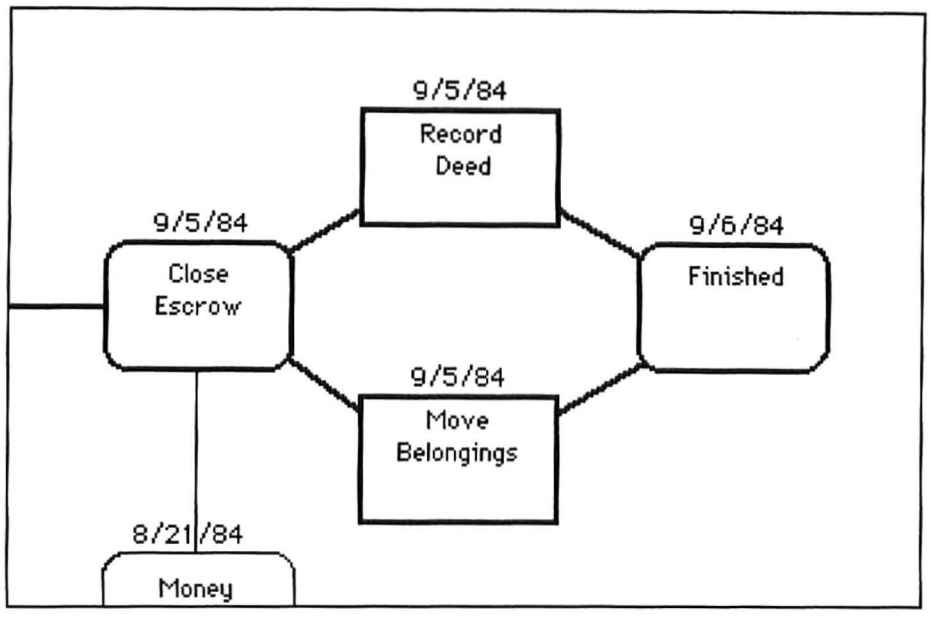



***Figure 11***
*This chart shows one way to do "what if" analyses with* MacProject. *The project's work week was changed from five days to six. As you can see by comparing this Schedule Chart with the one in Figure 1, increasing the number of workdays in the week means that the project finishes six days early.*

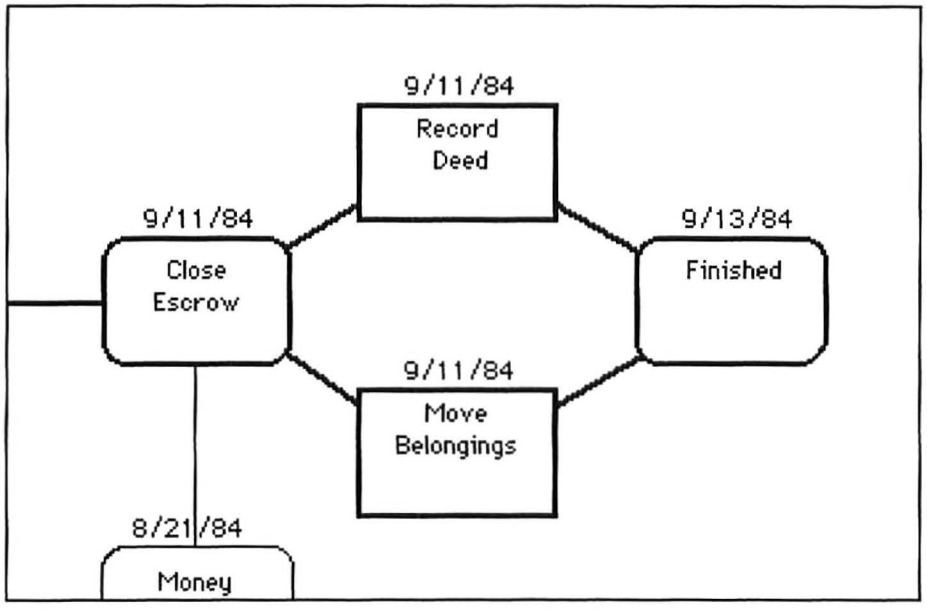



***Figure 12***
*This figure shows the effect on the Schedule Chart of renting a truck for two days instead of one.*

| Start | Incremental | End | Cumulative |
|---|---|---|---|
| 8/10/84 | 395.00 | 8/17/84 | 395.00 |
| 8/17/84 | 700.00 | 8/24/84 | 1095.00 |
| 8/24/84 | 0.0 | 8/31/84 | 1095.00 |
| 8/31/84 | 0.0 | 9/7/84 | 1095.00 |
| 9/7/84 | 520.00 | 9/14/84 | 1615.00 |

***Figure 13***
*This figure shows that changing the number of days a resource is used affects more than just the dates in the Schedule Chart. The Cash Flow Chart lists the truck rental cost for two days, and the program adds the cost to the project's cumulative cash flow total.*

you assigned additional employees to the project, or if bad weather interrupted work. You might even want to see how an increase in the cost of equipment or materials would affect cash flow.

Figure 11 shows the answers to the question, "What if everyone on the house-buying project agrees to work six days a week instead of five?" To see the effect of this change, set the project calendar so that the program calculates the project dates with a six-day work week. Notice that because the calendar has been changed, the dates in Figures 11 and 1 differ.

Taking two days instead of one to move your belongings, for example, will affect more than the project dates in this case. To make this change, modify the

*People who think visually will enjoy tracking their projects with the program's flowcharts and bar charts.*

task duration in the Task Info window. Notice that the finish date is one day later (compare Figure 12 and Figure 1). However, the program has recalculated more than just the program dates. The Cash Flow Chart now shows a truck rental cost of $60 for two days, and the cost has been added to the project's cumulative total (see Figure 13).

**For Your Information**

Some technical information about *MacProject* will help you use the program in your work. The full program takes up about 85K. Not all 85K are loaded into memory from the disk at one time, however, because the program is divided into six segments that correspond to the six charts.

The longest period a project can span is ten years. An individual task can have no more than 5 resources and an entire project no more than 20 resources. *MacProject* places no limits on the number of tasks, annotations, or holidays. A typical chart has room for 200 tasks on a Mac with 128K, and 2000 tasks on a Lisa 2 with 1½ megabytes of storage. However, if you use many annotations with many different fonts and a large number of characters, your projects may hold slightly fewer tasks.

**Ready to Go**

*MacProject* is perfectly suited to the Mac. People who think visually will enjoy tracking their projects with the program's flowcharts and bar charts. It's interesting to note that the Schedule Chart and the first six columns of the Project Table show the same information, but in different ways. The Schedule Chart presents the information with boxes and arrows, and the Project Table uses lists of numbers and text.

Although the visual aspects of *MacProject* distinguish it, a few features could be improved. Many of the charts are more than one page long (charts can be as large as 96 by 48 inches). I was disappointed to see that when I printed large charts, a half-inch margin was left between pages so that the lines didn't meet. Managers will have to tape the pages of their project charts together if they want the lines to connect.

You may have noticed on the Schedule Chart that the start date is underlined. The program underlines this date automatically. When you change the style, however, all the dates change except the underlined date, which remains underlined. The start date does change in font and point size, but I had hoped for greater text consistency to complement the boxes and arrows.

Drawing task boxes, connecting them with arrows, and adding information is fun. How about using *MacProject* to schedule your family's chores? Won't your children be thrilled when they find out they are resources? Charting the future is difficult, but at least with *MacProject,* when the future rearranges your best-laid plans, your charts adjust so easily that they seem to flow into new designs. □

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*Apple Computer, Inc.*
*20525 Mariani Ave.*
*Cupertino, CA 95014*
*800/538-9696, in California 800/662-9238*
*List price: $125*

# The Mac Connects

## *On-line with the Mac's communications hardware and software: the Apple Modem 1200 and MacTerminal*

***Larry Jordan***

Data communications is one of the most popular personal computer applications. Cary Lu's "Communications Primer" in this issue explains the basic concepts of data communications and tells you how communications capabilities enable you to exchange information with other personal computers, mini and mainframe computers, large data bases, and information services. This article takes a close look at the communications hardware and software developed by Apple for the Macintosh—the Apple Modem 1200 and the *MacTerminal* communications program.

### Modem 1200

The Apple Modem 1200 comes in two well-padded cartons that contain all the hardware required to connect your Mac to public telephone lines. The package contains the modem and its external power supply, a data cable, and a telephone extension cable. A well-designed, fully illustrated user manual is also included.

The documentation provides step-by-step instructions for installing and operating the modem; diagrams and photographs illustrate cable and power supply connections. The manual tells you how to configure the modem for a variety of software and hardware combinations using three DIP switches (small toggle switches) located on the back of the modem.

The Modem 1200 provides most of the Apple capabilities of the popular Hayes Smartmodem 1200. Except for the absence of status and activity display lights on the front of the unit and the use of a 9-pin data cable connector instead of a 25-pin connector on the back, the Modem 1200 has all the Hayes command and control features. It switches automatically between 300 and 1200 bits per second (bps) when it receives a telephone dialing command, and it dials numbers using either rotary or touch-tone signals.

The Modem 1200 contains a telephone line monitor and a speaker that provide feedback on the progress of a call. This feature is particularly useful for diagnosing problems with private telephone systems such as company-owned private branch exchange (PBX) equipment. The speaker also detects busy or invalid telephone numbers. The modem has a speaker volume control and an on/off command in case you telecommunicate in an office where the telephone dialing sounds might disturb other people. The volume can be adjusted manually, or can be turned on and off by the software.

The Modem 1200 lets you control operations with keyboard commands or through software commands. For example, the command ATS0 = 1 instructs the modem to answer an incoming call on the first ring. Typing A/ makes the modem repeat the last command, which is a handy way to redial a number that was busy the last time you told the modem to dial it.

The only problem I encountered with the Modem 1200 was its inability to detect data communications activity during file transfers. Because the modem has no reception or data transmission indicator lights, I was unable to perform troubleshooting during file transfers. When file transfer attempts failed between the Mac and another computer, for example, I could not tell which computer in the communications link was not responding properly.

*Apple's new communications products open up the Mac's potential for information exchange with many other kinds of computers. Hurry—your modem's calling!*

### MacTerminal

Apple's *MacTerminal* software provides powerful communications capabilities. It is also easy to use; even a communications novice will find the program easy to start up and operate. *MacTerminal* comes on a single disk. The *MacTerminal* disk window displays the various files, folders, and applications you need to communicate with other computers (see Figure 1). You can select the *MacTerminal* icon to begin a communications session, or select a *MacTerminal* setup file that was created and saved as a document during an earlier session.

When you open *MacTerminal,* the program gives you a default configuration of settings. When you open a predefined setup document, you get customized communications parameters that match those of a remote computer system. You use pull-down menus and dialog boxes to set up the parameters.

*MacTerminal* offers a variety of terminal and file transfer features. You can modify terminal settings, set tabs, select communications settings, select file transfer settings, enter an answer-back message, and enter a telephone number (see Figure 2).

### Terminal Settings

The program can be set up to communicate with just about any remote computer. The Terminal Settings dialog box displays the various options (see Figure 3). The Mac can act as a standard teletype terminal (TTY) or emulate two popular minicomputer and mainframe terminals, the VT100 and the IBM 3278. The VT100 setting enables you to use a host computer programmed to work with Digital Equipment Corporation's VT100 terminal. The host computer can control the Mac's screen and cursor by transmitting certain character sequences called *escape codes.* The Compatibility setting offers two escape code options—ANSI and VT52.

When you choose the IBM 3278 setting, you can use the Mac with AppleLine to communicate with large IBM host computers (see "The Mac Lines Up with Mainframes" in this issue). The Keypad menu provides a mouse-driven keypad on screen that emulates the function keys of a 3278 terminal (see Figure 4).

When selecting terminal settings, you can also choose screen line width: either 80 or 132 columns. The 80-column width provides a standard 24-line by 80-column display, whereas the 132-column option provides an extended 24-line by 132-column mode. You can scroll horizontally to look at all 132 columns.

The options with check boxes in Figure 3 give you additional control during a communications session. The On-Line option, for example, allows you to set the software default to either on-line or local (off-line) mode. In on-line mode, you can communicate directly with the modem and change modem operating characteristics with keyboard commands. In local mode, *MacTerminal* stops communicating with a remote computer but does not terminate a transmission. You can then work off-line using an application, a desk accessory, or the terminal screen area.

*Sockets on the back of the Modem 1200 let you hook up to telephones and a telecommunications cable, and toggle switches enable you to configure various software and hardware combinations.*

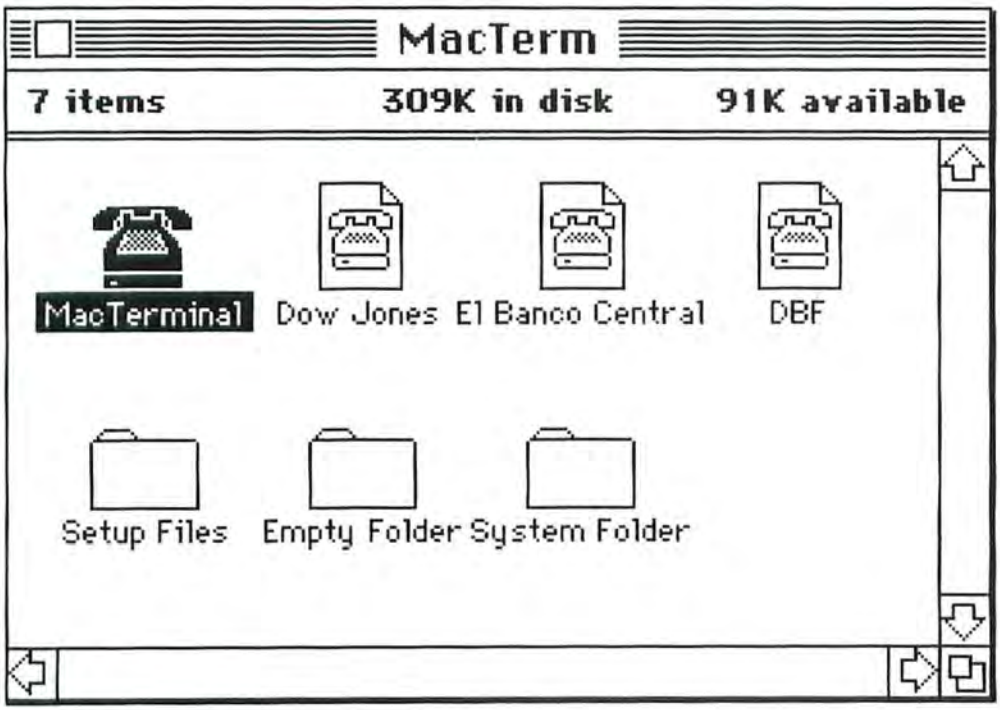


***Figure 1***

*The* MacTerminal *disk window contains icons for the* MacTerminal *program, sample preset files, the System Folder, and the Empty Folder. You'll probably want to have* MacWrite *or another word processing program on your disk so that you can write or edit off-line (the only editing capability in* MacTerminal *is backspacing.) For short messages, you can compose on the Note Pad. The Paste command sends a file when you paste into the* MacTerminal *screen area.*

***Figure 2***

*The Settings menu provides the terminal and file transfer features you'll need to communicate with other computers. Choosing a menu option gives you a dialog box with buttons or check boxes in which you select options, or windows in which you enter data such as phone numbers or answer-back messages.*

### Communications Settings

*MacTerminal* provides the necessary data communications parameters, data flow control speed-matching, and modem connection options (see Figure 5). You can set the data communications baud rate at values ranging from 50 to 19,200, which is more than adequate for both dial-up modem communications and direct connection with another computer.

Character width (bits per character) can be set at 7 or 8 bits, and parity error detection can be set at even, odd, or none. Some computers require one of two additional parity settings, Mark and Space, that do not appear on the *MacTerminal* menu. I experimented with a local minicomputer that uses Mark parity and found that *MacTerminal* could communicate with that computer when set at 8 data bits and no parity, or at 7 data bits and even parity. The absence of Mark and Space parity options should not cause problems.

### File Transfer Settings

*MacTerminal*'s file transfer settings let you select the file transfer method, the remote computer type, and the file transfer time delay options (see Figure 6). File transfer methods include Text mode and the XMODEM protocol. Text mode can be used only to transfer printable text files and provides no file transfer error-checking. This mode is often used for communicating between personal computers and minis or mainframes.

The XMODEM mode can be used to transfer text, graphics, and formatted files. It provides error-free file transfers between the Mac and other computers running communications software that also provides the XMODEM prototcol. The XMODEM protocol uses a checksum to ensure at least 99.6 percent error-free file transfers.

Although the XMODEM protocol gives *MacTerminal* strong file transfer capabilities between personal computers, it limits personal computer-to-mainframe file transfers. The XMODEM protocol requires that a remote computer operate with a character width of 8 data bits and no parity error-

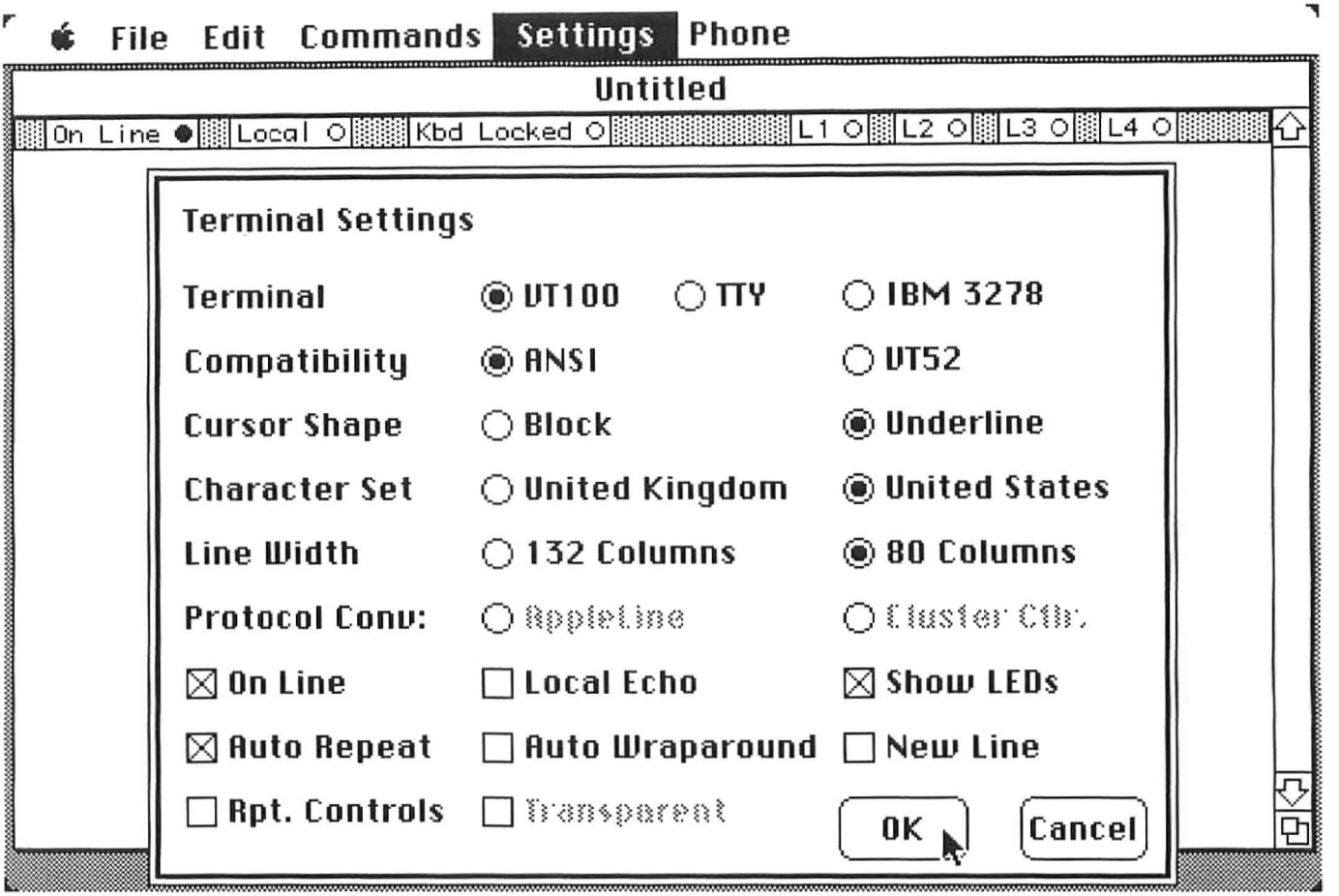


***Figure 3***

*The Terminal Settings dialog box displays the settings that define what kind of terminal* MacTerminal *will emulate. It also enables you to set characteristics for receiving data such as cursor shape, line width, and character set, and offers other options that circumvent the limits of the remote computer. The Show LEDs option displays a panel of buttons at the top of the window that provides status information when the Mac emulates a VT100 terminal.*

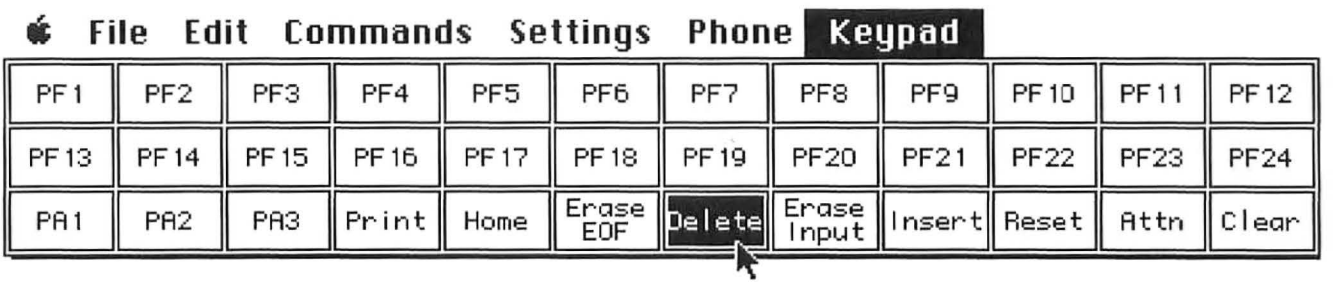


***Figure 4***

*The Keypad is used when the Mac emulates an IBM model 3278 terminal. The 3278 terminal has several extra keys dedicated to special commands such as cursor movement and editing. The Keypad provides equivalent 3278 function key commands, which you implement by clicking the pointer on the appropriate key.*

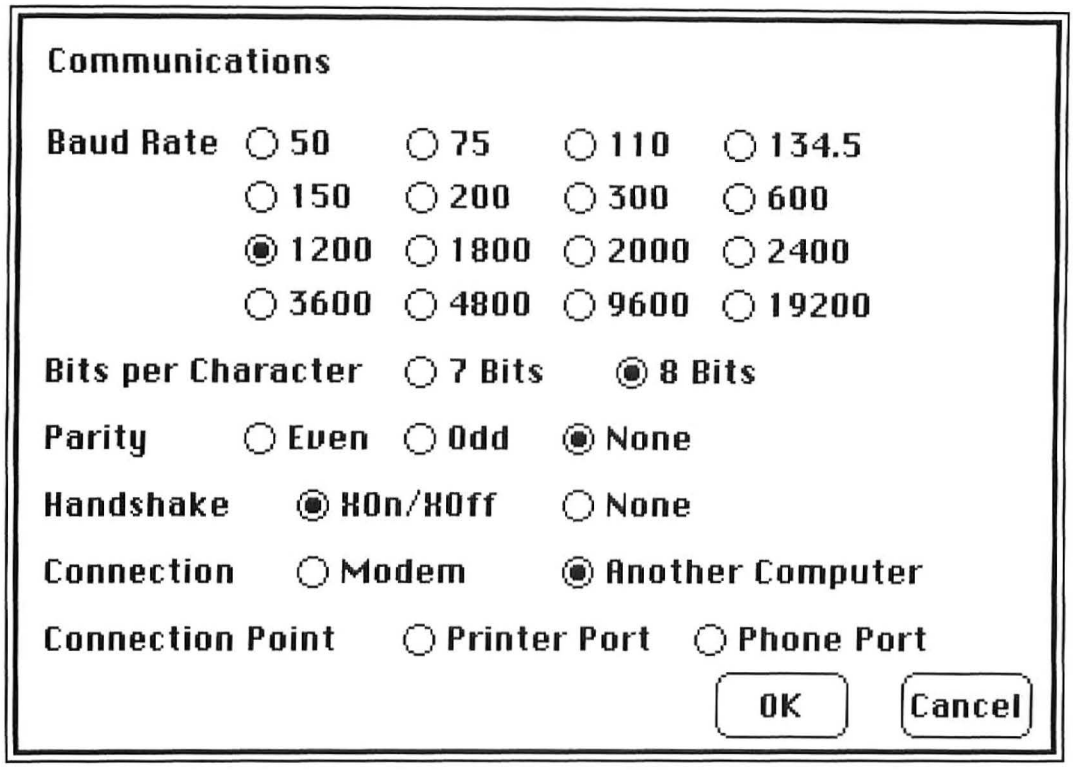


***Figure 5***

*The Communications Setting dialog box sets up compatibility so that information can be transmitted between host computer and* MacTerminal *free of errors.* MacTerminal*'s preset parameters are 1200 bps, none for parity, 8 bits, and XON/XOFF for handshake. The remote computer's configuration usually dictates how the communications parameters will be set.*

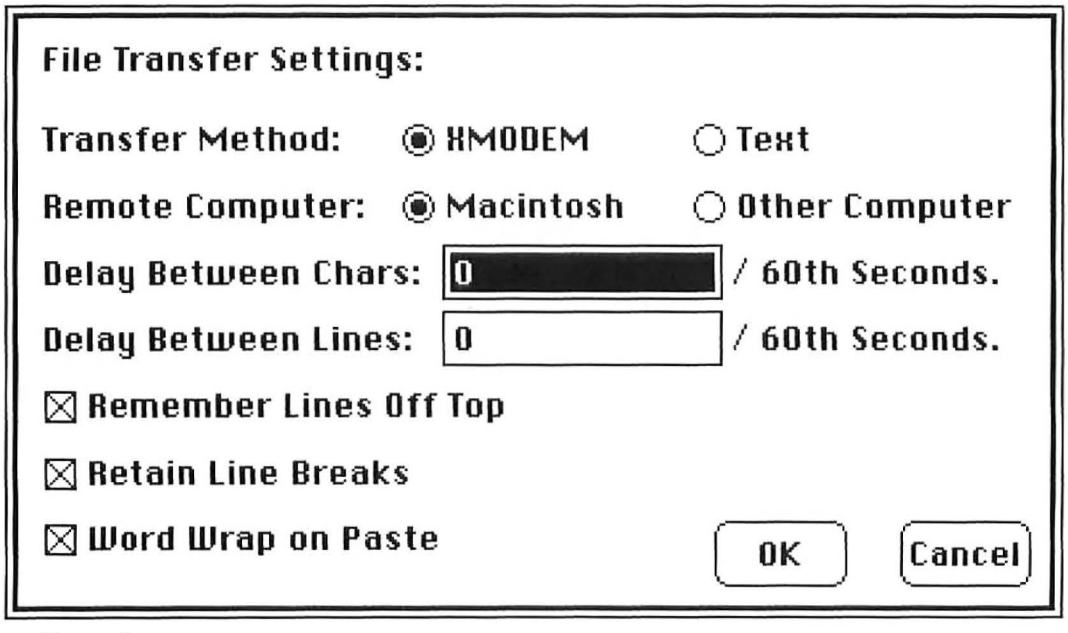


***Figure 6***

*The File Transfer Settings dialog box lets you select the file transfer method, the type of remote computer, and the file transfer delay option. The set of file transfer options with check boxes is associated with how* MacTerminal *stores incoming information.*

checking. Some host computers allow only 7 data bit connections, however, which means that XMODEM error-checking cannot be used.

Although *MacTerminal* provides XON/XOFF speed-matching capability, this condition requires XON/XOFF handshaking at the host computer end of the communications link—a capability that is not always available. *MacTerminal* allows time delays between character and line transmissions so that text file transfers to a host computer can be slowed down to keep from overrunning the host. This feature is useful, but the *MacTerminal* operator must be able to predict the response time of the host and set the optional time delay to match—a process that may result in lost data if the delay time is not long enough, or if the host computer response time lengthens while a data transfer is in progress.

The Remember Lines Off Top option in the File Transfer settings dialog box allows you to store data that moves off the top of the window during transmission and provides a scroll bar for viewing the data. The Retain Line Breaks option retains carriage returns in a document sent from a remote computer to a Mac. Word Wrap on Paste inserts return characters so that words are not broken at the ends of lines. This feature applies to ASCII formatted files only.

Future releases of *MacTerminal* should provide additional file transfer options. A prompted uploading feature is necessary for text file transfers to host computers. This feature causes the personal computer to transfer a line of text only when prompted to do so by the host. Many file editors on large host computers are designed to accept data typed in at remote terminals and cannot handle rapid-fire data uploading from a remote personal computer. These editors provide a prompt symbol whenever they have processed a line of input and are ready for another line.

If *MacTerminal* could reduce the file transfer rate in response to receiving a specified character, it would enhance the Mac's communications with mainframes. The program needs a file transfer protocol for use with remote computers that communicate in characters 7 bits wide. The public domain KERMIT protocol developed at Columbia University provides this capability. KERMIT is available for most large host computers and also for most personal computers, including the Apple II and IIe.

MacTerminal *provides powerful asynchronous communications capabilities.*

KERMIT is similar to the XMODEM protocol but provides superior data transfer transparency and reliability (transparency refers to the ability to transfer data without abnormal interruption). The protocol converts all control characters into printable characters to avoid undesirable side effects, such as terminating the flow of data, that are caused by control characters as they pass through some host computer equipment. KERMIT also provides a scheme for transferring blocks of data that is not altered by packet switching long-distance telephone networks. The XMODEM protocol and its subsets do not provide this protection.

**Successful Partners**

I spent several weeks using *MacTerminal* and the Modem 1200, and found communications with them easy and reliable. Selecting remote host computers from a menu of predefined parameter settings was convenient and efficient. Dialing the host automatically from a phone selection on the menu was also convenient. I used the Mac as a terminal with CompuServe, a large minicomputer, and several local electronic bulletin boards. Each communications session had excellent results.

The only problems I encountered with *MacTerminal* were the small size of letters on the screen and the lack of an automatic redialing feature. Because the period, the colon, and the semicolon are difficult to see at a normal viewing distance, I had some trouble when I used the Mac as a terminal to program a remote host computer. I also found it difficult to log on to local electronic bulletin boards; the bulletin board phone numbers were often busy, and I had to give the *MacTerminal* dial command several times before I got a connection. A feature that redials until it connects is a must for communications with bulletin boards.

*MacTerminal* provides powerful asynchronous communications capabilities. Apple has set a good precedent with the software and the Modem 1200. Communications products from other developers will have to provide a wide variety of features to compete with this combination. □

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*Apple Modem 1200*
*MacTerminal*
*Apple Computer, Inc.*
*20525 Mariani Ave.*
*Cupertino, CA 95014*
*800/538-9696, in California 800/662-9238*
*List price: Modem 1200 $495, MacTerminal $99*

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And not just any 800 number. But one that you'll remember well into the 1990's. Just think of Apple's two most innovative computers. Or a big truck owned by the Long Island Steamship Authority. (Get it?) Either way you'll remember 1-800/Mac&Lisa. And feel an irresistible urge to call us up.

**Who we are. And where. And why it matters.**
We're MacConnection, a division of Micro Connection, Inc.—a wildly successful direct merchant of computer peripherals and software. (Other divisions sell products for the IBM-PC and the IBM-PCjr.) We are well known for our low prices, fast shipping, and pleasant computer-side manner. We also have a reputation for being ruthlessly honest in our evaluations of various products.

MacConnection is located in the rustic metropolis of Marlow, New Hampshire (pop. 542), far from the frenzy of big cities where otherwise normal people tend to suffer from prolonged overexposure to hype and the disease of the fast buck. At MacConnection we'll take the time to talk with you about your Mac and the best ways to crank it up to its full potential.

You'll be talking to our specially trained Mac consultants. They don't earn commissions. They just give good advice.

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# The Word from Microsoft

**Paul Hoffman**

MacWrite, *the Macintosh's native word processing program, introduced Mac owners to the wonders of writing on the Mac. However, for creating lengthy documents that require complex formatting and substantial editing,* MacWrite *has some limitations.* Microsoft Word *takes you quite a few steps beyond* MacWrite. Word *offers sophisticated editing and formatting features that give you the capabilities of a full-fledged word processor, including the ability to create lengthy documents, to merge files, to split windows into two independent sections, and to keep several document windows open at once.*

When the Macintosh was released in January 1984, *MacWrite* whetted buyers' appetites for easy-to-learn word processing. By integrating use of the mouse and the keyboard and offering advanced editing and formatting capabilities in a unique, graphics-oriented word processing environment, the program has shown both writers and program developers the future direction of word processing software.

*MacWrite* was not intended to be an elaborate word processor with features such as file merging, multiple windows, and footnotes. As an efficient, easy-to-use report and memo writer, *MacWrite* is hard to beat. But if you need more word processing bells and whistles, *Microsoft Word* may be the answer.

*Word's implementation of the Mac user interface is exemplary.*

Like the other feature-laden Microsoft application programs already running on the Mac—*Multiplan* and *Chart*—*Word* takes advantage of the Mac's powerful capabilities. Its implementation of the Macintosh user interface is exemplary; the Mac is ideal for using a complex program like *Word.* If you are familiar with *MacWrite,* you'll have no problem adapting to *Word.*

The best way to describe *Word* is in terms of its features. To begin with, it has most of *MacWrite*'s capabilities (see "Word Processing's New Look," *Macworld,* Premier issue). Briefly, these include:

- Automatic word wrap.
- Use of the Clipboard for interchanging text from different applications.
- Advanced searching and replacing of text.
- Inclusion of graphics from other programs (such as *MacPaint*) with text.
- Printed documents that closely resemble the screen display.
- Multiple fonts, styles, and character sizes.
- A selection of printing styles.
- Use of keyboard sequences that duplicate mouse-driven commands.

You can pass documents back and forth between *MacWrite* and *Word* by saving documents as "text only" in the Save As dialog box of one program. Then transfer the documents to the other program by using the standard cut-and-paste procedures or by copying entire files.

### Word's Windows

*Word* uses windows similar to those in other Mac software. All the *MacWrite* document window features are part of a *Word* window, as well as a few additional ones (see Figure 1). The diamond you see in the *Word* document window is the end-of-file marker. As you insert text, the diamond moves to the right; you can never insert text beyond the marker. The page number in the lower-left corner lets you know where you are in your document. Notice that *Word* has both vertical and horizontal scroll bars. You can have text that is almost twice as wide as the screen in *Word.* This feature means that *Word* can use the Imagewriter with a 15-inch-wide carriage.

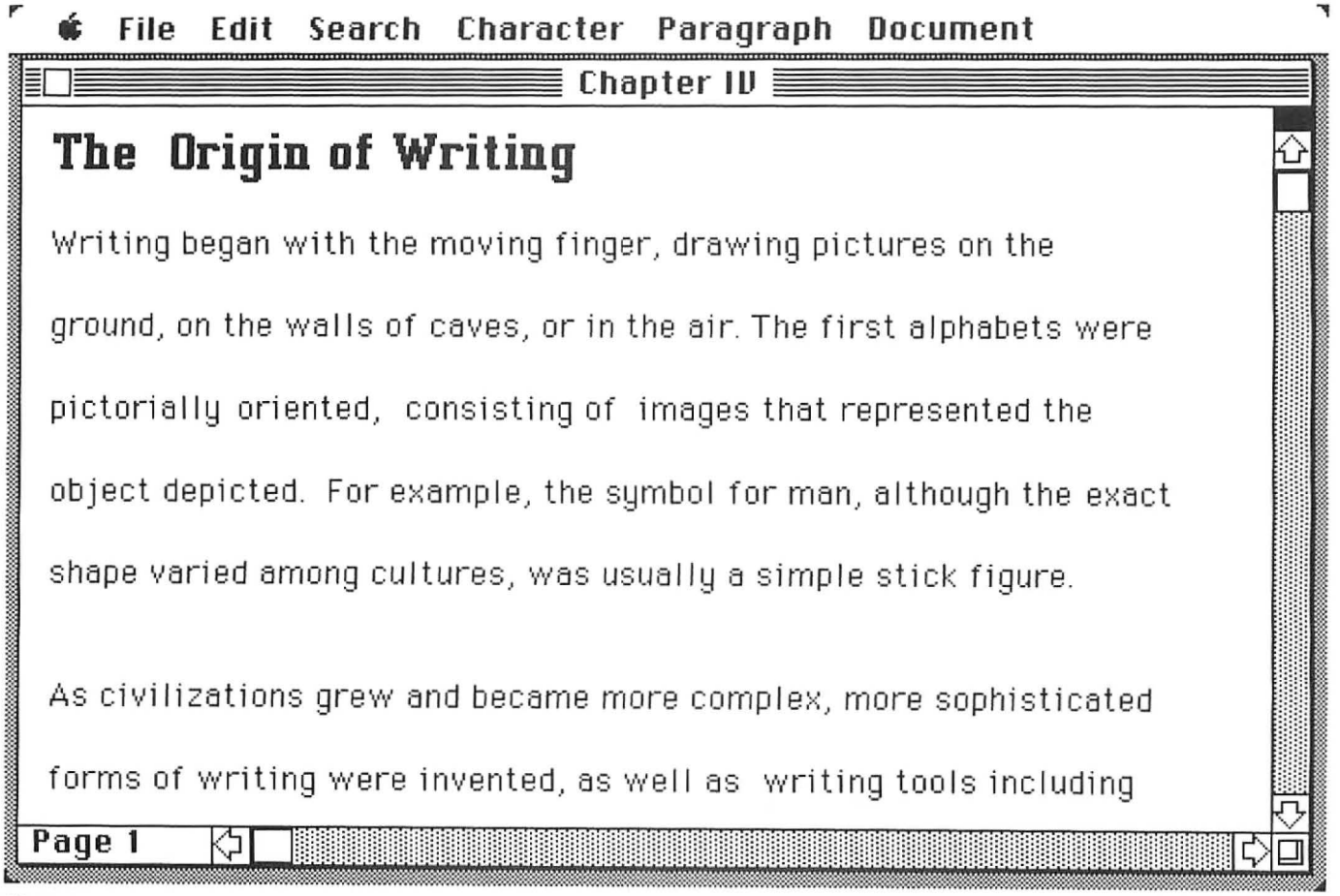



***Figure 1***
*The* Word *document window looks similar to* MacWrite*'s but has some additional window controls. The diamond-shaped marker defines the end of the file, and the current page number is displayed in the page status box in the lower-left corner.* Word*'s windows also support horizontal scrolling for wide documents.*

The Macintosh desk accessories are available in *Word*'s Apple menu. The About Microsoft Word option contains a great deal of information on how to use the program's features. When you click that option, *Word* gives you a dialog box that lists the information topics from which you can choose.

When you edit a long document, such as a report with several chapters or sections, it is often useful to display two parts of the same document at once. You may want to see text from the introductory paragraphs of the report as you write the conclusion, for example. You can split an active *Word* document window into two windows by dragging the small black box (called the *split bar*) in the upper-right corner of the window down the right side of the window. When you release the mouse button, two windows are formed. You can scroll these windows separately with their respective scroll bars (see Figure 2).

One of *MacWrite*'s most glaring deficiencies is that you cannot open more than one document window (or file) at a time. You can display several document windows simultaneously in *Word*. Up to four independent document windows can be displayed, and you can position them on the screen as you wish. Clicking on a document window makes it the active window and brings it to the front. This feature alone

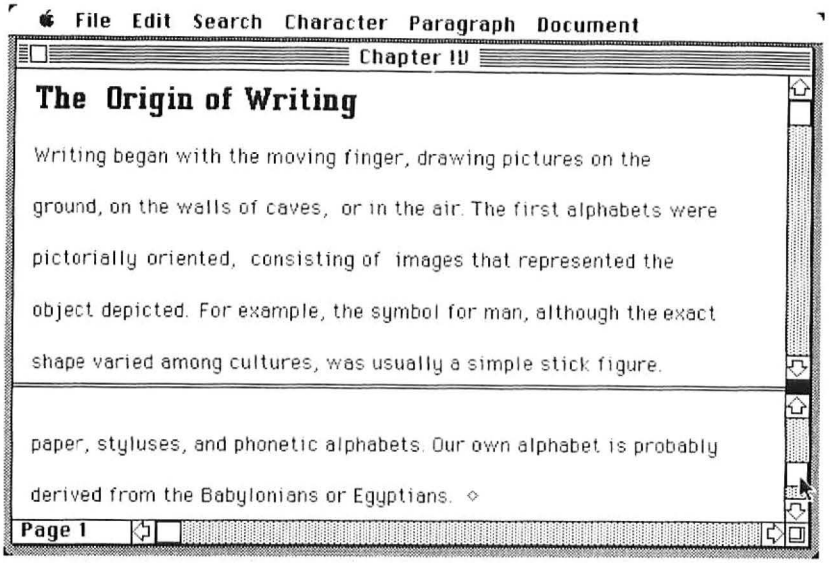



***Figure 2***
*The black window split box in the upper-right corner can be dragged down the side of the window to create two independent windows. Each of the two sections has its own scroll bars so that you can view two parts of a document simultaneously.*

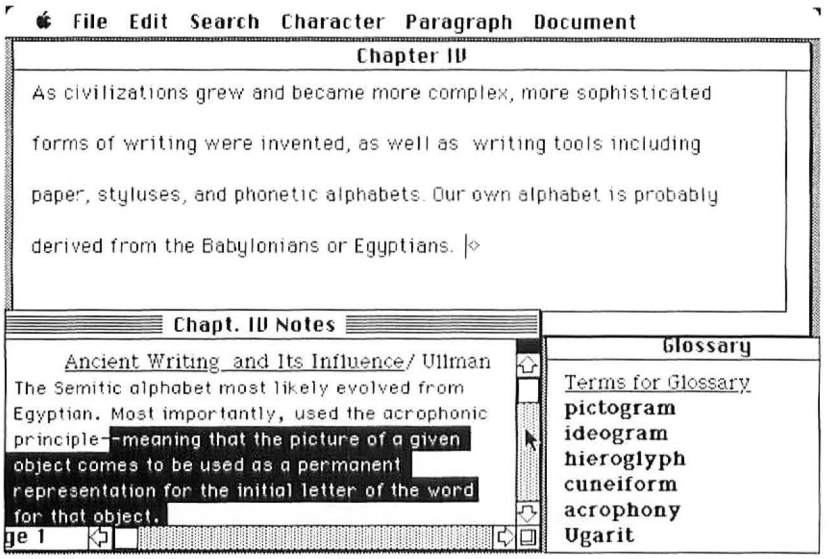



***Figure 3***
*You can have up to four document windows open at the same time. Clicking on any part of a window makes it the active window. This feature is especially useful for cutting and pasting information between documents.*

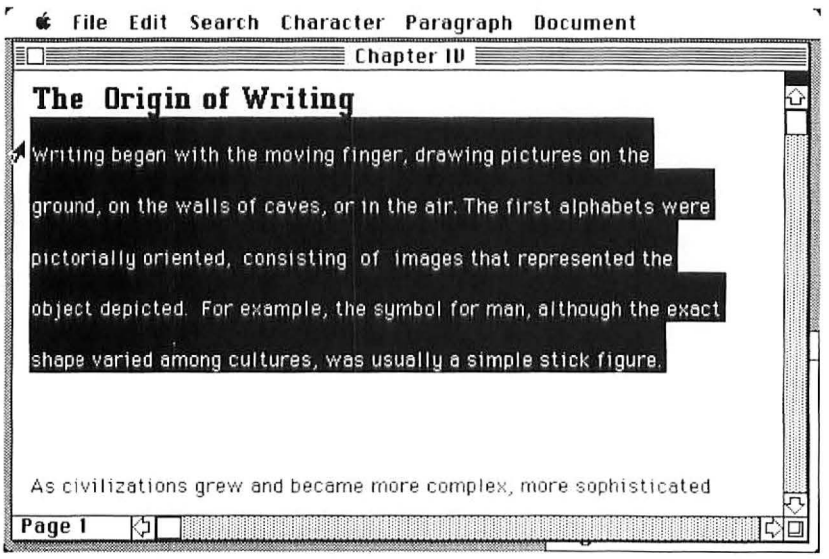



***Figure 4***
*The selection bar doesn't appear on the screen, but when the pointer is in the selection bar, the pointer changes to an arrow pointing up and to the right. You can select lines by clicking in the selection bar, paragraphs by double-clicking, and whole documents by pressing the ⌘ key and clicking.*

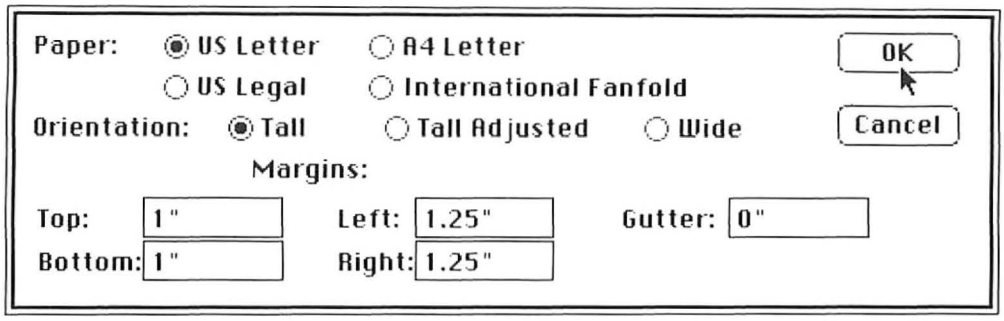



***Figure 5***
*The Page Setup dialog box lets you set text margins and gutter width, which allows you to add space to the page margins to compensate for binding. Word's preset margins are shown here.*

makes *Word* easier to use than most other word processing software. For instance, you can display your notes for a term paper in one window and write the paper in another (see Figure 3). You can use the cut-and-paste editing features without having to open and close files as you do in *MacWrite*; simply cut or copy information from one document, click another document, select the insertion point, and paste.

*Word* also makes selecting portions of text easier than with *MacWrite*. In addition to being able to select individual words and blocks of text, *Word* lets you select lines and paragraphs with the *selection bar*, an area at the extreme left column of the text. The selection bar doesn't show on the screen, but when you move the pointer to the selection bar, it changes to an arrow pointing up and to the right; a single click selects the current line, and a double click selects the entire paragraph (see Figure 4).

You can also select an entire sentence in one move by pressing the ⌘ key, and clicking anywhere in the line. This technique is easier than finding the beginning of the sentence and dragging the pointer to the end as you must with *MacWrite*. To select an entire document, move the pointer to the selection bar, press the ⌘ key and click.

### Big Thoughts, Big Files

*Word* overcomes another *MacWrite* deficiency by allowing your files to be as large as you want. If a file is too large to fit into RAM all at once, *Word* keeps as much of the file as it can in RAM and shuffles parts to the disk as you move around in the document. Clearly, it is convenient, if not necessary, to have a long report or manuscript in one file, so you don't have to open several files when you revise the text. Also, since *Word* has operations such as automatic footnote numbering that apply to entire documents, each document should be maintained as a single file.

The features already discussed may make you want to go out and buy *Word*, but they are only the beginning. A guided tour through the *Word* pull-down menus will show you the ways in which this program really excels.

### The File Menu

Most of the commands in the File menu are the same as the commands in *MacWrite*, but some have additional features. The Save As command, for instance, has an option that enables you to make a backup copy of the file when you save it. If you make changes to a document and save them, and then decide you want to revert to the original version, you'll have the copy available.

The Page Setup command controls the way printed documents look. The Page Setup dialog box lets you set the page margins, which specify the amount of white space that surrounds the text (see Figure 5). Later, you will see that *Word* also lets you set paragraph margins that determine the amount of space from the edge of the text to the page margins.

The *gutter* is the amount of extra space *Word* adds to the page margins to compensate for binding. Gutter width is added to the left margin of odd-numbered

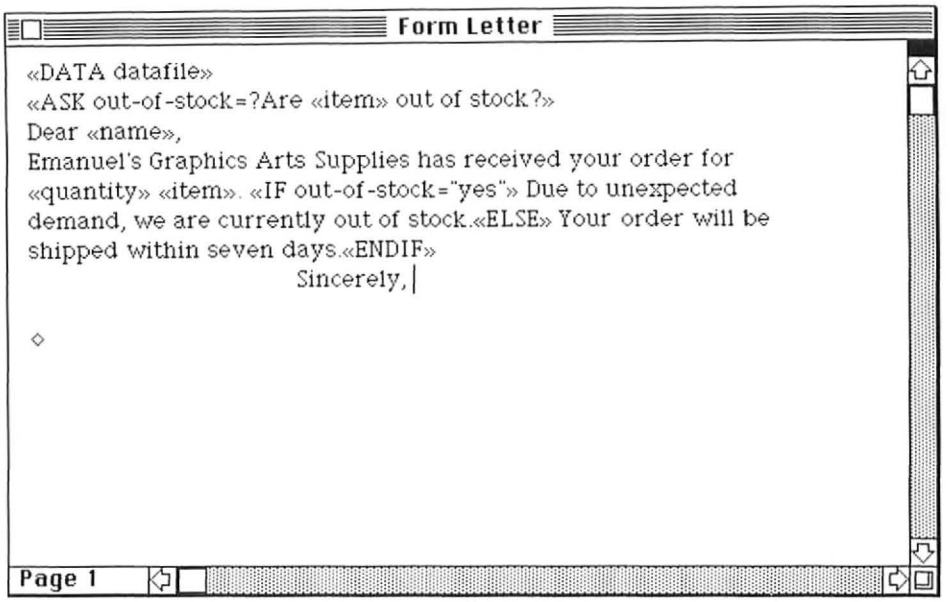



***Figure 6***
*The Print Merge command allows you to merge mailing lists into form letters. The bits of information, or* fields, *and merge instructions are enclosed in special characters (angle brackets). When the document is printed, the fields, such as* quantity *and* item, *are replaced with the actual data.*

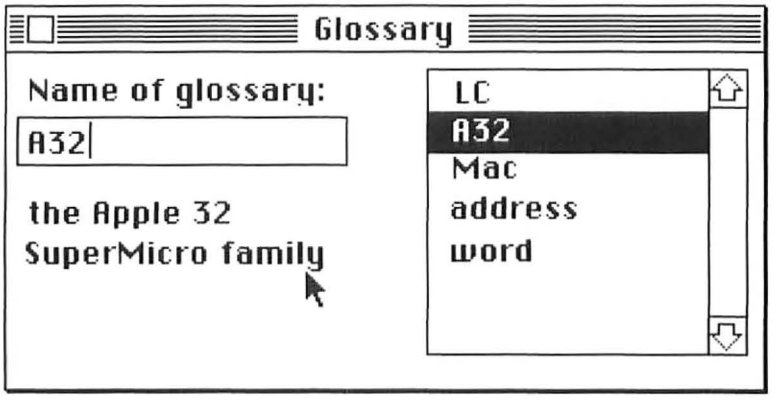



***Figure 7***
*The Glossary is similar to the Scraphook except that you store frequently used text in it. You assign short names to text that you copy into the Glossary. When you want to type in text stored in the Glossary, you type the name, followed by* ⌘-Backspace.

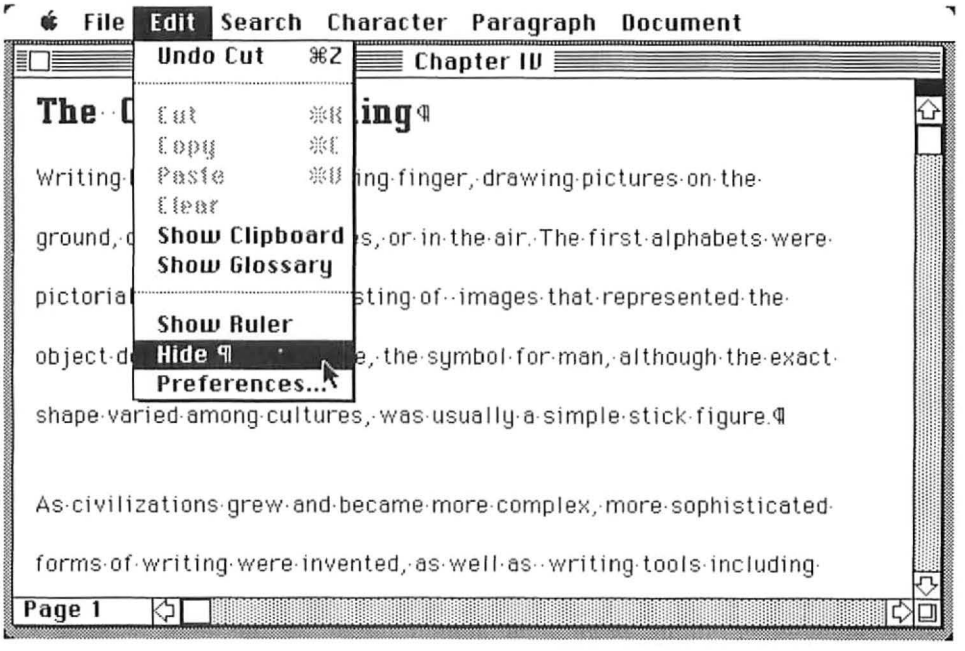



***Figure 8***
*When you choose the Show ¶ command in the Edit menu, formatting characters for paragraph ends, tabs, and spaces between words are shown. Since each paragraph has its own formatting, it is often useful to see where a paragraph ends. You can make the formatting characters invisible by choosing the Hide ¶ command.*

pages and the right margin of even-numbered pages, so that if you later copy your text on both sides of sheets of paper and bind it, the text is still centered on the page.

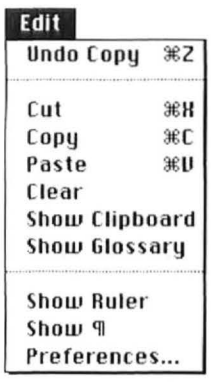
The Print Merge command in the File menu enables you to print several documents at once and to produce different versions of the same document. Many businesses need word processing programs that merge mailing lists and form letters (this operation is often called *mail-merge*). *Word*'s merge capabilities are a standard part of the program, and the operations work much better than those of many other word processing programs. The merge instructions let you include text in word-wrapped paragraphs to personalize a letter. You can also print text based on the values of certain fields in the mailing-list data set. Figure 6 shows a typical form letter with merge instructions embedded. You can also use the merge instructions to insert other documents in your text as you print.

### The Edit Menu

*Word* takes advantage of the usual Macintosh editing features and also includes a few others. There are probably many words, phrases, and paragraphs that you use regularly in your writing, such as company names, addresses, and standard contract clauses. You can store these elements in *Word*'s Glossary. The Glossary works similarly to the Scrapbook; you copy text into the Glossary and give it an abbreviated name. To retrieve a phrase when you edit a document, type its Glossary name followed by ⌘-Backspace.

If you use the phrase "the Apple 32 SuperMicro family" often, for instance, you can save it in the Glossary as A32 (see Figure 7). When you want to use the phrase, simply type A32, and then press ⌘-Backspace; *Word* will insert the phrase for you.

One of *Word*'s basic concepts is that all formatting is applied to one of three elements: characters, paragraphs, or divisions. *Word* lets you produce characters in different type faces, sizes, and styles like you can with *MacWrite*. Unlike *MacWrite*, most of *Word* carries out on-screen formatting at the paragraph level; headings, tables, and other text elements are treated as paragraphs. As you will see, this design makes formatting very easy.



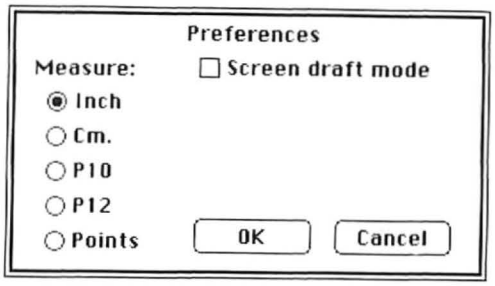




***Figure 9***
*The Preferences dialog box lets you change the unit of measure from inches, which is* Word*'s default setting, to centimeters, 10 or 12 pitch, or points (1/72 of an inch). This feature reflects the international design of the Mac.*

Since all *Word*'s formatting is done from the Character, Paragraph, or Document menu, *Word*'s ruler doesn't have as many formatting features as *MacWrite*'s ruler. (You probably won't use the Show Ruler command as often as you would in *MacWrite*.) *Word*'s interactive ruler allows you to set indents and tabs for a selected paragraph. Since each paragraph has its own formatting, it is often useful to be able to see where each paragraph ends. The Show ¶ command causes *Word* to display formatting characters at the end of each paragraph along with tabs and spaces between words (see Figure 8).

Since the Macintosh is an international computer, *Word* appropriately lets people choose whether the formatting measurements should be in inches or centimeters. The Preferences option lets you select the unit of measure you prefer. You can also choose to measure width in type sizes (either 10 or 12 pitch) or in points (see Figure 9). Changes specified in the Preferences dialog box are reflected in the ruler and in all the dialog boxes that involve formatting. Clicking the Screen Draft Mode check box formats documents on screen exactly as they would look if they were printed in Draft mode.

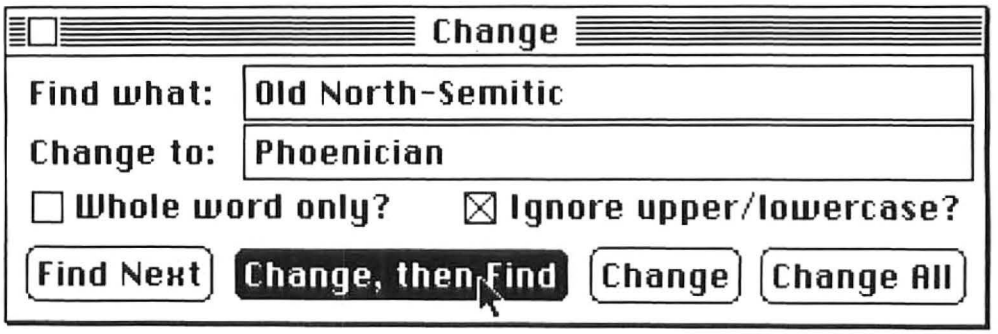



***Figure 10***
*The Change command allows you to choose whether to search for whole words, and whether to ignore case. The Change window controls provide two ways to change text: you can either find text and then change it or change all occurrences of your text automatically.*

**The Search Menu**

*Word*'s Find command allows you to search for partial or whole words. If you search for whole words only, a string such as *the* will only match the word *the* in the text; *Word* will not stop at words such as *there* or *other*. Although you don't have to know the case of letters you search for, *Word* lets you specify the case if you wish. However, like *MacWrite, Word* ignores case by default. The Change command also has these features (see Figure 10).

Search
Find... ⌘F
Change...
Go to... ⌘G

The Goto command enables you to jump directly to a specified page in a document. As documents get longer, this feature becomes increasingly useful. However, *Word* does not keep page breaks current as you edit your text, so you can only use the Goto command in a document that you have printed or repaginated.

**The Character Menu**

*Word*'s character formatting is somewhat different from *MacWrite*'s. Whereas *MacWrite* lists all character formatting commands in pull-down menus, *Word* lists only style options in the Character menu. All other character formats are set in the dialog box you see when you choose the Formats option (see Figure 11). The Formats dialog box enables you to assign several types of character formats at once. However, if you want to use several fonts or font sizes within a paragraph, you'll wish those options were listed in pull-down menus as they are in *MacWrite*.

Character
Plain text
Bold
*Italic*
Underline
Outline
Shadow
Small Caps
Superscript
Subscript
Formats...

In addition to having an extra style option (Small Caps), *Word* has an additional font—Seattle. This sans serif font looks almost identical to Monaco but has 10 and 20 point sizes.

**The Paragraph Menu**

*Word* stands apart from *MacWrite* in the area of formatting paragraphs. The formatting commands for paragraph alignment and line spacing are menu options in *Word,* rather than part of the ruler as in *MacWrite*. To reformat text, simply select the paragraph and choose the appropriate command. The Normal command sets paragraphs to the default format, which is left aligned, unjustified, and single spaced. The Open Space command inserts an extra line space between paragraphs.

When you delve into the Formats command in the Paragraph menu, you see that *Word* gives you much more control than *MacWrite* over the appearance of text: you can select the indentation from the left and right margins, the indentation of the first line (which can be also be "outdented"), the amount of blank space before and after the paragraph, and the alignment of the paragraph (see Figure 12).

Paragraph
Normal
Left
Centered
Right
Justified
Single Space
Double Space
Open Space
Formats...
Tabs... ⌘T

The three measurements on the left side of the dialog box are for indentation from the page margin. The left and right indents apply to the whole paragraph; the first line indent lets you indent the first line of a paragraph separately from the rest of the paragraph. Indentation changes appear on the ruler as you make them.

The second set of measurements sets line spacing (single, double, and so forth) as well as the number of blank lines before or after each paragraph. Since you can specify several blank lines as part of a paragraph, you don't have to press Return to make "empty paragraphs." Because the Paragraph dialog box includes alignment controls that duplicate the controls in the Paragraph menu, you can assign all paragraph properties in one place.

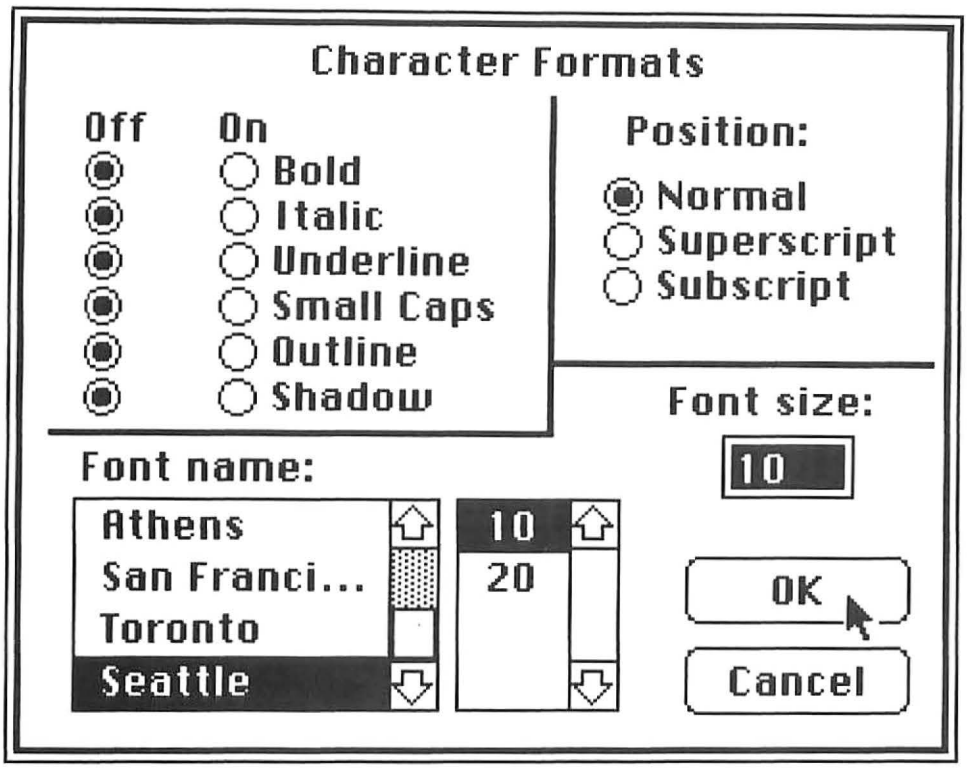



***Figure 11***
*Word's Character Format dialog box displays all the character formatting choices. This feature is convenient if you want to add or remove several formats at once. Alternatively, you can specify character format changes using the keyboard.*

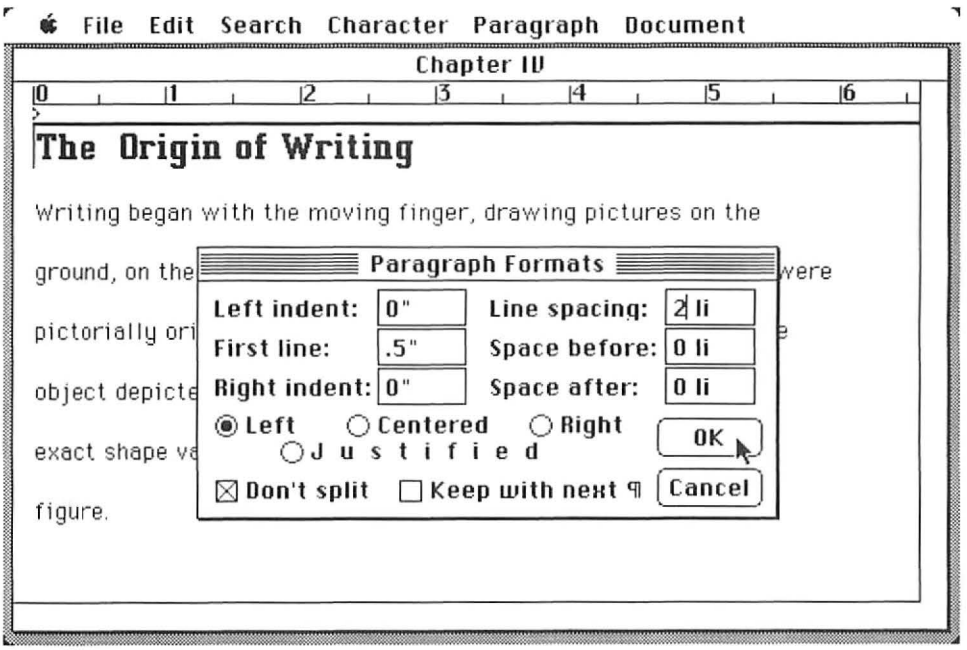



***Figure 12***
*The Paragraph Formats dialog box lets you assign indentation and line spacing as well as alignment. The Don't Split option prevents a paragraph from being split across page boundaries, and the Keep with next ¶ option keeps the current paragraph with the next one.*

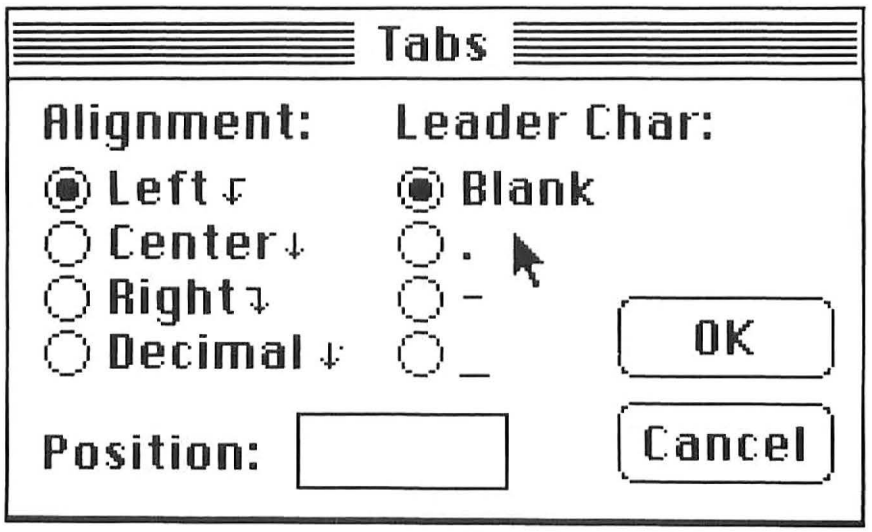



***Figure 13***
Word's *tab settings are more extensive than* MacWrite's. *You can have tabs left or right aligned, centered, or aligned on the decimal. You can set tabs with the Show Ruler command in the Edit menu or by choosing the Tabs command in the Paragraph menu.*

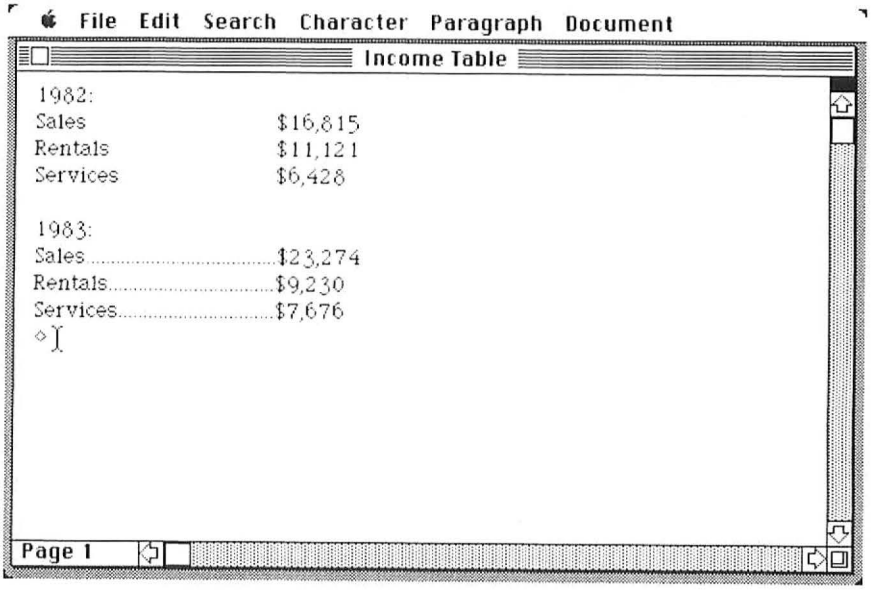



***Figure 14***
*The periods between items (tab fields) are examples of fill, or* leader, *characters. You can specify blanks, periods, hyphens, or underscores as leader characters.*

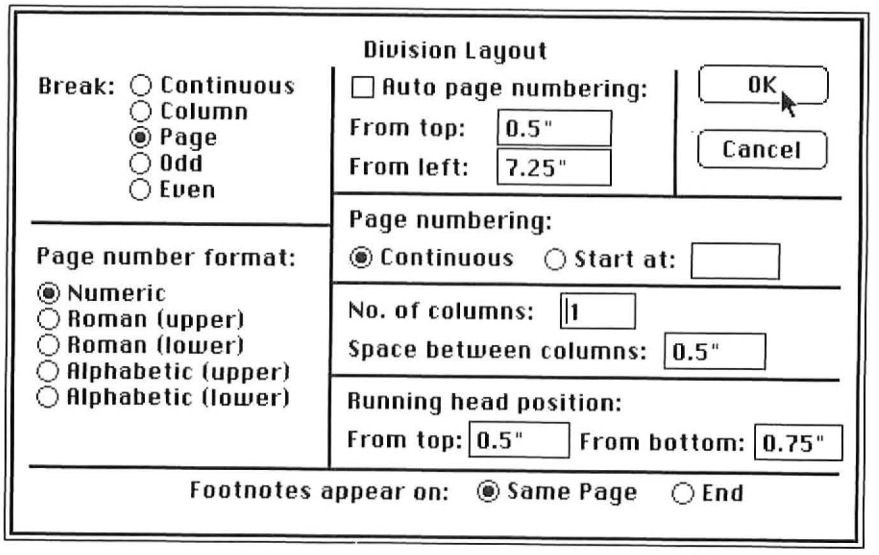



***Figure 15***
*The Division Layout dialog box shows how much control* Word *gives you over the appearance of your documents. You can specify page number placement, the format of page numbers, the position of running heads, and the number of columns on a page.*

You can also tell *Word* not to allow a paragraph to be split across page boundaries (with the Don't Split check box) or to keep the current paragraph with the next one. This feature is handy because it saves you from having to check for bad paragraph breaks each time you move text around in a document. *Word* also automatically prevents a paragraph from leaving its first line alone at the bottom of a page or its last line at the top of a page.

*Word*'s tab capabilities are more flexible than *MacWrite*'s. Instead of choosing between only left- and decimal-aligned tabs, in *Word* you can use right- and center-aligned fields (see Figure 13). You can also specify a fill, or *leader*, character, which is used to fill the blank space between tab positions. Figure 14 shows a chart in which the first set of lines is normal, with blanks between the fields, and the second set of lines has dashes between the fields.

### The Document Menu

To set formatting commands that affect the structures of whole documents, choose the Division Layout command in the Document menu (see Figure 15). A division is a block of text that must be formatted differently from the text that precedes it. Indexes and bibliographies are examples of divisions. The Division Layout dialog box has settings that control the placement of the page number, the format of the page number (for instance, the second page can be numbered 2, II, ii, B, or b), and the position of the running heads. You can also indicate that you wish to print many columns on one page (the columns are not displayed on the screen, however).

*Word* also produces footnotes and gives you some flexibility in the way you print them. No set limit exists for the length of text in a footnote. You can assign a symbol (such as an asterisk) to each footnote, or you can have the program number the footnotes sequentially. Footnote symbols or numbers appear in the document superscripted and in a smaller font size than regular text. Footnotes are stored separately from text, and you edit them in a split window. When you print a document, you choose whether to place the footnotes at the bottom of each page or at the end of the document.

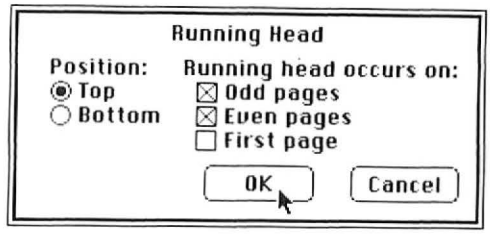
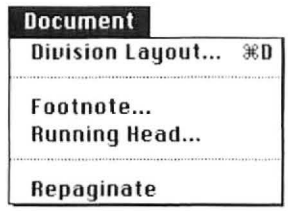



***Figure 16***
*You can put running heads at the top or bottom of the even, odd, or first page of a document. This figure shows a head at the top of all pages except the first in a division.*

Written documents are often easier to follow if they contain headers or footers at the top or the bottom of the page. Figure 16 shows the choices *Word* offers in positioning headers and footers. Simply select the text you want to use (such as the chapter title), format it, and choose the Running Heads command. *Word*'s preset format prints headers or footers on both even and odd pages, with none on the first page.

If your document will be bound, a good practice is to format your headers and footers so that the text is away from the binding (on the right side of odd pages and the left side of even pages). This procedure is easy, since you can format your headers as left- or right-aligned before giving the Running Head command. The Division Layout dialog box lets you specify exactly where headers or footers will print on the page.

The Repaginate command is useful if you make changes in a file and want to see exactly how the page breaks will appear in the text. But repaginating takes a while, since *Word* has to go through the entire document, applying all of the character, paragraph, and division formatting as it goes.




### Beyond Editing and Formatting

As you can see, *Word* offers more editing and formatting features than *MacWrite*. *Word* surpasses Apple's word processor in a few other areas as well.

*Word* lets you give more keyboard commands than you can with *MacWrite*. To carry out most of *Word*'s character formatting commands from the keyboard, you

## Keyboard Shortcuts

| | | |
|---|---|---|
| **Character Formats** | ⌘-Shift-spacebar | Normal |
| | ⌘-Shift-b | Bold |
| | ⌘-Shift-i | Italic |
| | ⌘-Shift-u | Underline |
| | ⌘-Shift-s | Shadowed text |
| | ⌘-Shift-d | Outlined text |
| | ⌘-Shift-= | Superscript |
| | ⌘-Shift-hyphen | Subscript |
| | ⌘-Shift-k | Small caps |
| | ⌘-Shift-< | Make font size smaller |
| | ⌘-Shift-> | Make font size bigger |
| | ⌘-Shift-e | Font change (type a number key to get a particular font) |
| **Paragraph Formats** | ⌘-Shift-p | Normal paragraph |
| | ⌘-Shift-l | Left justification |
| | ⌘-Shift-r | Right justification |
| | ⌘-Shift-c | Centered |
| | ⌘-Shift-f | Set first line indent 5" |
| | ⌘-Shift-o | Set open spaced paragraphs |
| | ⌘-Shift-n | Nest paragraph 5" |
| | ⌘-Shift-m | Unnest paragraph |
| | ⌘-Shift-t | Hanging indent |
| **Special Formats** | ⌘-spacebar | Non-breaking, fixed size space |
| | ⌘-Shift-Return | Hard page break |
| | ⌘-Return | New line (carriage return without starting a new paragraph) |
| | ⌘-hyphen | Non-required hyphen |
| | ⌘-Backspace | Expand abbreviation |
| | ⌘-Enter | Division mark |

use the ⌘ and Shift keys. The table labeled "Keyboard Shortcuts" shows the keystroke combinations for the *Word* character formatting commands.

*Word* is copy protected, but the copy-protection scheme allows you to copy the master disk as many times as you want. However, to run the program you must insert the master disk at the beginning of a work session.

*Word* reads normal ASCII files in two ways. The program pastes text or graphics from the Clipboard into a document with the Paste command. If you have saved text in the Clipboard from another program, you can simply paste it in the document. Alternatively, you can copy text files from other programs into *Word*.

One major complaint about *MacWrite* is that you cannot yet print with a letter quality printer. Microsoft product developers plan to include this feature. However, only the Imagewriter will print exactly the formatting you see on the screen.

Spelling checker programs are missing from both *Word* and *MacWrite*. Since spelling checkers for other word processors have been very popular, you can expect to see these programs soon.

### A Slight Lack of Style

If you are familiar with *Microsoft Word* on the IBM PC, you may notice that style sheets are missing from the Macintosh version. A style sheet lets you set formats for several types of paragraphs. The formats are stored in a style sheet file similar to the Scrapbook or the Glossary file. After you create paragraphs with the properties you want, you label the paragraph with names such as "Main heading" for principal headings and "Lower headings" for lower level headings. As you type a document, *Word* looks at the kind of paragraph you are working on, checks the style sheet you have selected, and formats the paragraph accordingly. Style sheets can be very useful in large companies that have hundreds of people using *Word* for writing documents with different paragraph formats. Standardized style sheets can be created for each type of document, including small details like the number of spaces paragraphs are indented.

Because the Microsoft programmers had difficulty cramming all *Word*'s program code into the Mac's 128K RAM, some features had to be eliminated. Microsoft plans to include style sheets in *Word* when a 512K Mac becomes available.

### Too Much?

Some word processing programs suffer from "feature overload," a disease that is new to personal computers. The advanced features of these programs are often complex, difficult to use, and slow in execution. Since the Macintosh *Word* has many features, it is appropriate to ask whether you will be able to use the advanced capabilities efficiently.

The only disadvantage to *Word*'s advanced features is that they run slowly on the Mac. Certainly, if your word processing needs don't require the advanced capabilities of *Word*, *MacWrite* is adequate and less expensive. But since Microsoft implemented Apple's user interface so well and did such a good job of organizing and documenting *Word*'s features, most people will find that it's worth taking the time to learn the program. □

*Paul Hoffman is a freelance writer in Berkeley, California. Two of his forthcoming books,* Microsoft Word Made Easy *for the Macintosh and for the IBM PC, will be published this fall by Osborne/McGraw-Hill.*

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*Microsoft Corporation*
*10700 Northup Way*
*Bellevue, WA 98004*
*206/828-8080*
*List price: $195*

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# The Macintosh Between Covers

## *A review of five introductory books published soon after the Mac's release*

***Evelyn Spire***

A few years ago, computer books were usually found stuffed below the science or math sections in obscure corners of bookstores. Today, computer books are advertised and displayed prominently in bookstores, and they account for a significant share of book publishers' sales. The publishing industry has set out to take advantage of the booming personal computer market by turning out books for both novices and experienced users on every computer-related topic. The Gold Rush is on as publishers vie for space on the bookshelves.

The "media blitz" that accompanies the introduction of a computer like the Macintosh not only gives the computer industry (especially software developers) a shot in the arm, it also gives book publishers another subject to capitalize on. In the first few months of the Mac's public life, several books have appeared on the market, and many others are scheduled for publication this year.

### In a Hurry

The rush to press has produced some books that are genuinely helpful to users, but it has spawned others that should never have seen the light of day. Two of the first books published about the Mac—Cary Lu's *The Apple Macintosh Book* (Microsoft Press) and Doug Clapp's *Macintosh! Complete* (Softalk Books)—are useful introductions to the Mac. Three other books currently available are superficial overviews : *Introducing the Apple Macintosh* by Edward S. Connolly and Philip Lieberman (Howard W. Sams & Co., Inc.), *Presenting the Macintosh* by Merl K. Miller and Mary A. Myers (dilithium Press), and *The Apple Macintosh Primer* by William B. Sanders (Datamost).

All five books were written before the Mac was introduced or shortly thereafter. They primarily describe the procedures for working in the Mac's desktop environment, applications including *MacPaint* and *MacWrite,* and the Mac's hardware.

### Premature Birth

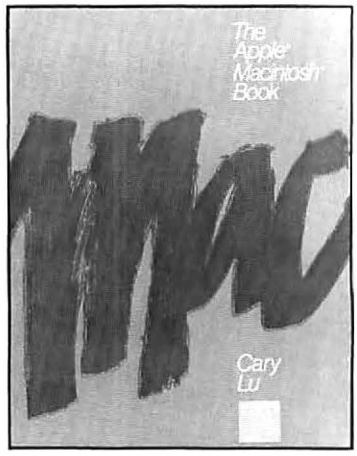
The books under consideration here were somewhat outdated before they reached bookstore shelves; publishers and authors take this risk when they deal with unfinished products. Even the first printing of Apple's Mac manuals contained errors such as the presence of the "Alternate Disk" icon, which never made it into the release version of the software. Unlike Apple, however, book publishers are not likely to expend the costs of revision until their books have been on the shelves long enough to test the market and prove financially successful.

Some of the descriptions and evaluations in the books reviewed here are based on incomplete versions of products. For example, *Microsoft Word* was in a preliminary version when each of the authors reviewed it. The books rave about the program's features but cannot cover them in much depth. This praise seems incongruous, considering that many of the program's features had not been implemented or were untested.

It seems that the authors of these hurried books are unwilling to admit the limits of their knowledge or the inadequacy of their information on certain topics. One sentence acknowledging the prerelease nature of a product might serve to warn readers.

### The Apple Macintosh Book

The procedures for copying disks on the Mac and the hassle of disk swapping with a one-drive system were noticeably absent of mention in all but one of the books—Cary Lu's. With Apple's new Disk Copy utility, copying a disk now requires only four swaps, but the issue of swapping was avoided entirely in the other four books. I kept wondering why they avoided such an obvious and important issue. The authors




*The Apple Macintosh Book*
*Cary Lu*
*Microsoft Press*
*Bellevue, Washington, 1984*
*383 pages; $18.95*

probably didn't want to mention so negative a feature as the tiresome process of single-drive disk swapping using the first release version of the Finder.

It seems negligent for an author to go into explanations of programming and other matters without discussing the ease and time savings that a second disk drive offers. Although you don't have to know programming to use a computer, you do have to know how to duplicate disks and transfer files between disks. As Cary Lu candidly informs readers, "Think seriously about getting a second disk drive. If you use the Macintosh for business, consider the second drive essential."

Lu's book is the only one up to date enough to be rid of the "Alternate Disk" icon, which was purged from the software just before it was finalized for production. The screen shots and descriptions of the Finder in all but his book are based on prerelease versions of the program.

The Macintosh manuals cover mostly procedural information and reference material; they cannot include every possible detail. Books aimed at novices can offer supplementary information and another perspective from which to view the Mac. They can provide tutorials that take up different kinds of tasks than the manuals and offer the critical expertise of a source unaffiliated with Apple or third-party developers. To give an idea of the spreadsheet capabilities of *Multiplan,* for example, Lu presents a practical tutorial that analyzes the costs of buying and owning a car. This approach is much more helpful than a wordy description of a program's features.

*The Apple Macintosh Book* also devotes several chapters to broader topics, such as a comparison of the Mac and the IBM PC. The last section contains more specialized, technical material, including an in-depth discussion of communications issues, photographing the Mac screen, and moving information between computers. The chapters that describe the inner workings of the Mac and its accessories are particularly informative.

I appreciated both the thoroughness and the technical accuracy of Lu's book. Although the writing style is rather dry, like a textbook or a series of articles from *High Technology* magazine (of which he is the Microcomputer Editor), it is clear and easy to follow.

*Macintosh! Complete*
*Doug Clapp*
*Softalk Books*
*North Hollywood, California, 1984*
*329 pages; $19.95*

**Macintosh! Complete?**

*Macintosh! Complete* has deserved its place on B. Dalton's best-seller list. Not because it is so complete; Lu's is more thorough. But Clapp is a very engaging writer (somewhat like an entertaining, well-informed talk show host) who literally kept me laughing while I read. He has a refreshing writing style that made me reevaluate other computer books. His book is appropriately as friendly and exciting as the Mac itself.

From the first chapter on, Clapp entices you in a friendly manner similar to the Mac's welcome screen: "Welcome. Come on in...get comfortable. . . . What is the proper attitude to take in relation to an Apple Macintosh computer? Zest!" Clapp imparts such a feeling of zest throughout the

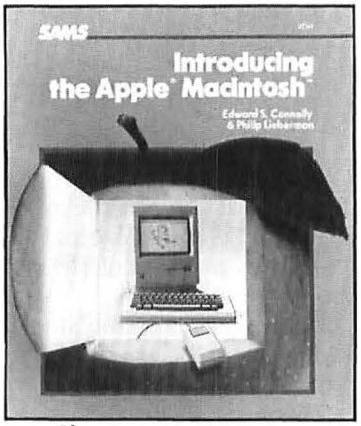
book. It is filled with comments like, "With computers, memory and money are inversely proportional; the more you have of one, the less you'll have of the other."

Clapp's book contains a potpourri of information that ranges from a brief paragraph on data structures to a list of the people who made the Mac. Although he recommends practice, his approach isn't task oriented, and he assumes that readers will do their own experimenting: "Practice renaming, removing, and every possible way of moving anything to everywhere. . . . Spend a bit of extra time using keyboard commands rather than selecting from menus. . . . Double-click whenever possible. . . . Give each font a workout."

### The Others

The other three books lack the comprehensiveness of Lu's book and, to a lesser extent, Clapp's. Apparently, the other authors didn't get as much assistance from Apple or outside software developers. Mostly, they rehash the information in the manuals, without extensive integration of text with graphics (especially screen shots) to explain the Mac's features.

Sometimes their organization of material is not well thought out. For example, Lieberman and Connolly cover the Hide Rulers command before the various ruler uses. And they never address shortcuts or double-clicking techniques except by referencing an almost illegible screen shot of the Short Cuts option from the *MacPaint* Goodies menu. Also, their writing tends to anthropomorphize the Mac in an irritating way. Attempting to be



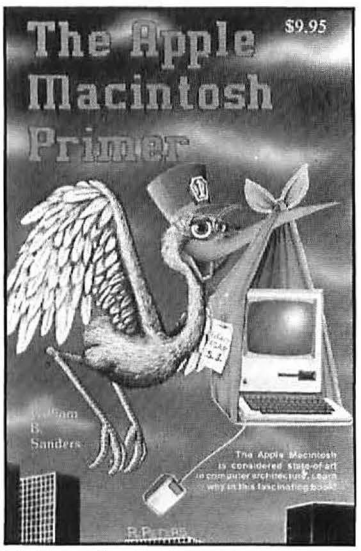

*Introducing the Apple Macintosh*
*Edward S. Connolly and Philip Lieberman*
*Howard W. Sams & Co., Inc.*
*Indianapolis, Indiana, 1984*
*188 pages; $12.95*

friendly, they use too many apple orchard metaphors and invent silly terms such as *MacMouse, MacEngine, MacPersonality, MacVironment,* and even *MacSpecific.* The list goes on, but I won't.

Miller and Myers gloss over the Mac's features, leaving many gaps in their descriptions. For instance, they devote 13 pages to discussing *MacWrite,* but never explain the procedures for selecting text in a document. Some of the authors' stylistic quirks were annoying and made it difficult to follow the text, such as, "The fastest way to open a window is to stick the mouse's tail in it and hit the mouse button twice. . . . You can also hit the mouse button once and then choose to open from the File menu. This is a little more cumbersome, but the SPCA likes it better." Several photos of the Mac screen are of such poor quality that I strained my eyes looking at them.

The Sanders book shows all the earmarks of hasty preparation. It is of poor quality in both form and content.

An important part of any reference book is the "back matter," which includes index, appendix, glossary, notes, and bibliography. Both Lu's and Clapp's books include an extensive glossary and a comprehensive index. Clapp also provides a useful Further Reading section, as well as appendixes including font samples, the 68000 microprocessor instruction set, and other reference material. Miller and Myers, and Connolly and Lieberman offer much briefer glossaries and indexes, as befits their modest scope and length. Sanders has neither an index nor a glossary.




*The Apple Macintosh Primer*
*William B. Sanders*
*Datamost*
*Chatsworth, California, 1984*
*117 pages; $9.95*

*Presenting the Macintosh*
*Merl K. Miller and Mary A. Myers*
*dilithium Press*
*Beaverton, Oregon, 1984*
*119 pages; $5.95*

### Imagewriter Controversy

All five books agree that you can get typset-quality printing on the Macintosh. Many people would argue that the Imagewriter offers high-quality printed output—but not typeset (or typewriter) quality. The authors should tell readers what fonts to print in to achieve near letter quality printing.

Clapp says, "Macintosh can produce camera-ready copy that your printer will relish." Sanders says, "Your word pro-

cessor is very close to being a typesetting machine. With the use of multiple fonts, styles, and font sizes, you can produce high-quality printing that up to now has been available only from a professional printer." In fact, Lu is the only author forthright enough to admit that "*MacWrite* does not have the elaborate functions necessary for major word processing jobs."

**More Than Words**

Lu's book has an outstanding design that makes it attractive and readable. Several figures and the short, step-by-step tutorials on *MacPaint, MacWrite, Multiplan,* and *Microsoft Chart* are printed in a shade of purple that makes those elements stand out clearly in the text. The design also incorporates a large area of white space that is filled, when necessary, with appropriate examples and screen shots next to the text—no numbered figures to track down on other pages. Microsoft Press has set a new standard for writing, editing, and design qualities that readers will come to expect from personal computer books.

Since the Mac's work environment is graphics oriented, the quality and quantity of screen shots are crucial. The screen shots in Lu's and Clapp's books have the highest quality of the lot. Clapp's book also uses an innovative design element that I found appropriate: its section title pages emulate the pull-down menus, highlighting the current title in black as on the Mac screen.

**Further Considerations**

For people who are considering buying a Mac and want more information than can be gained from a brief hands-on demonstration of the Mac or a cursory look at the manuals, a comprehensive introductory book written by a knowledgeable author can be a wise investment; a $20 paperback may save you hundreds of dollars. People who want detailed technical information about the Mac and available application programs will have to turn to subsequent books or magazines.

In fact, the majority of hands-on tips and discussions of state-of-the-art technology appear first in magazines. Cary Lu puts it aptly: "Books inevitably take longer to produce than magazines, so you shouldn't look to books for the latest information. . . . There will be dozens of books on the Mac, many quickly written and superficial. The introductory-level books are less useful for Mac than for other computers since they won't tell you much more than you'll find in Apple's excellent manuals." □

*Evelyn Spire is a freelance writer and editor in San Francisco. She has written for* PC World *and currently edits for PC World Books/Simon & Schuster.*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# Macware News

*The latest developments in Macintosh software, hardware, and accessories*

***Edited by Erfert Nielson***

Macware News *announces new Macintosh products. Those listed here are available now or will be in the near future. We will keep you informed of developments as the number of products for the Mac increases.*

## Software

### ■ *Aardvark/ McGraw-Hill*

***1020 N. Broadway***
***Milwaukee, WI 53202***
***414/289-9988***

**Personal Tax Planner**
A federal income tax planning program that can be used to figure short- or long-term capital gains/losses, purchase or sale costs of real estate, and business expenses. The program automatically calculates federal tax liability, capital losses, capital gain deduction, and taxable social security benefits, and automatically performs income averaging and alternative minimum tax. Users can cut text from the program and paste it into *MacWrite* documents. List price: $99.

### ■ *Blue Chip Software, Inc.*

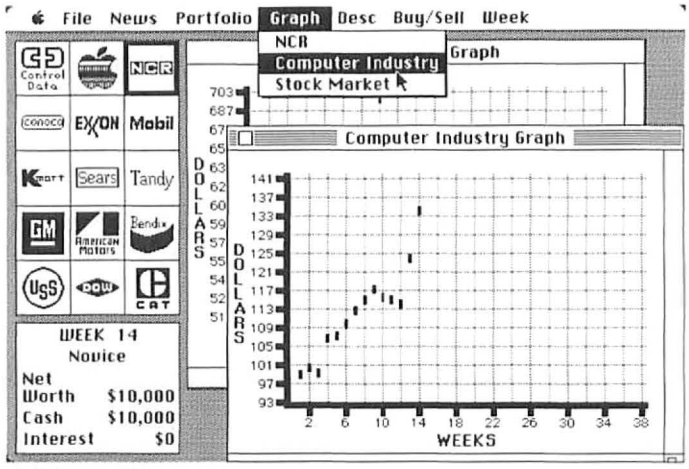
***6744 Eton Ave.***
***Canoga Park, CA 91303***
***818/346-0730***

**Millionaire**
A stock market simulation game for one player. The player begins with $10,000 and buys or sells stocks over a period of "weeks," basing decisions on a steady stream of business information. Information on 15 stocks is presented as an overall stock market graph, industry group graphs, news headlines, corporate histories, individual stock performance graphs, and weekly stock price tables. Transactions become progressively more sophisticated as the player's net worth increases. List price: $59.95.

### ■ *Chang Labs*

***5300 Stevens Creek Blvd.***
***San Jose, CA 95129-1088***
***408/246-8020***

**Ledger**
One module in the *Rags to Riches* business software series, which is designed for companies with 20 or fewer employees. The program continually displays a company's income, expenses, assets, liabilities, estimated profits, and net worth and updates the display each time a transaction is posted. Individual transactions are documented by submenus, which guide the user through making payments, adjusting transactions, creating and editing accounts, and printing reports. Reports include audit trails, charts of accounts, and transaction backup reports. The program provides three levels of on-screen help: learn, show, and expert. List price not available.

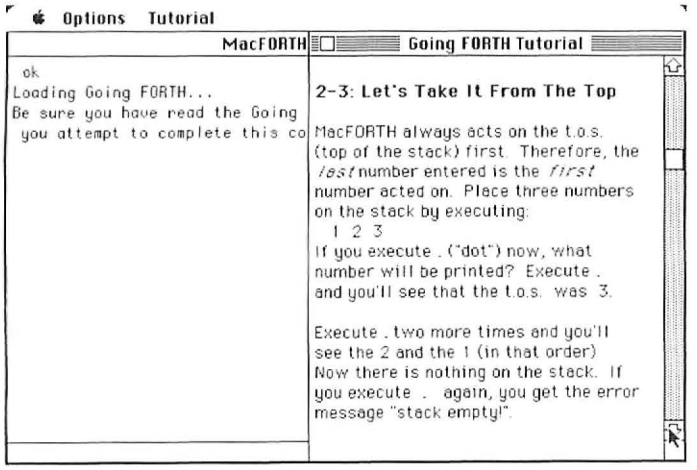



*Millionaire, Blue Chip Software*

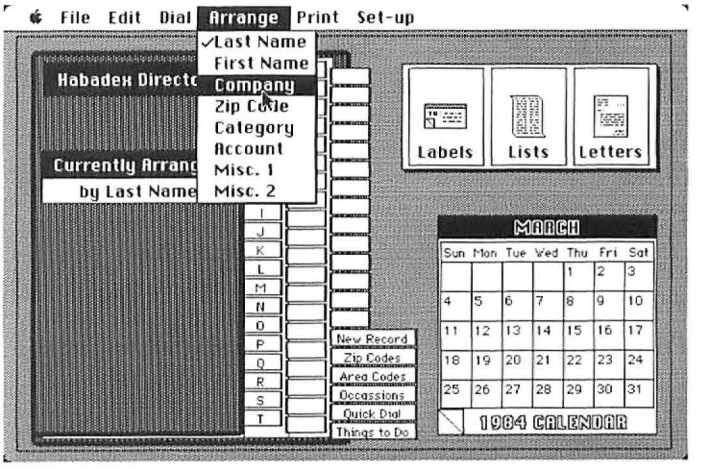
### ■ *Continental Software*

***11223 S. Hindry Ave.***
***Los Angeles, CA 90045***
***213/410-3977***

**Home Accountant**
A personal financial planning package for home use that enables users to track all aspects of individual financial transactions on monthly and yearly bases. Features include checkbook transactions, tax planning, budget/actual comparisons, graphing capabilities, and investment calculations. List price: $99.95.




*MacFORTH, Creative Solutions*




*Habadex, Haba Systems*

## ■ *Creative Solutions, Inc.*

***4801 Randolph Rd.***
***Rockville, MD 20852***
***301/984-0262***

**MacFORTH**
An interactive FORTH development system designed to assist programmers in developing applications on the Macintosh. A computer-aided instruction course is included with the system, which supports access to most Macintosh toolbox features. The system features user-definable menus and windows, use of QuickDraw graphics routines, trace and debug capabilities, and user-specified error handlers. MacFORTH is available in three levels. Level 1 is for hobbyists and novice programmers. Level 2 includes enhancements such as advanced graphics, assembler, and floating point. Level 3 is for program developers who are either converting existing programs to run on the Mac or writing new programs. This level includes a developer's kit, full support from Creative Solutions, a 350-page manual, and a right-to-execute license for 250 copies. List price: Level 1 $149, Level 2 $249, Level 3 $2500.

## ■ *Dreams of the Phoenix, Inc.*

***P.O. Box 10273***
***Jacksonville, FL 32247***
***904/396-6953***

**Cut 'N' Paste**
A series of disks that contain clip art that can be pasted into documents. Each disk features a specific subject, such as people, nature, or computers, and comes with documentation explaining how each drawing was designed. List price: $39.95 per disk, $199 for a one-year subscription (6 disks).

## ■ *FactFinder Software*

***P.O. Box 206***
***Deer Harbor, WA 98243***
***206/376-4912***

**FactFinder**
An application for storing and retrieving text and graphics that don't warrant being stored in files of their own. Information is stored in "folders," each of which can contain text, pictures, or both. Text can be entered directly or pasted from *MacWrite*, and pictures can be pasted from the Clipboard or the Scrapbook. Search strategies include a number of options such as soundex, pattern analysis, and the use of relational operators. List price: $99.

## ■ *Haba Systems, Inc.*

***15154 Stagg St.***
***Van Nuys, CA 91405***
***213/901-8828***

**Habadex**
A telephone dialer and directory with an appointment calendar. Users enter names, ad-

dresses, phone numbers, and other information into a data base. The program finds a record and automatically dials the number through a modem or an adapter box. Records can be arranged by a number of fields, including last name, company, zip code, and category. Users can view the calendar by clicking on a month and then zooming in on a day. The program's report generator prints lists, letters, forms, and mailing labels; text can be merged from *MacWrite*. Other features include a Quick Dial list for important numbers such as police and fire departments, and a Things to Do list. List price: $199.95.

## ■ *Harris Technical Systems*

***624 Peach St.***
***P.O. Box 80837***
***Lincoln, NE 68501***
***402/476-2811***

### AgDisk Agricultural Programs

A series of agricultural and financial management programs. *Multiplan* templates include *Business Management, Crop Management, Feedlot Cattle Management, Cow/Calf Management, Swine Farrowing Management, Swine Finishing Management,* and *Swine Machinery Management*. List price: $95 each.

The following programs are also available:

*Profit Projector* is designed to project profits for specific enterprises based on expected production costs and probable market conditions. The program answers "what if" questions based on market prices, yields, and costs. List price: $120.

*Financial Management* provides five money management programs: Land Purchase Analysis, Depreciation Schedules, Farm Profit Analysis, Loan Cost Calculator, and Interest Income Calculator. List price: $170.

*Machinery Management* helps calculate the total fixed and variable costs of machinery. Users can determine the total operating costs per year, per acre, and per hour. List price: $170.

*Swine Management* contains four programs for pork producers: Swine Ration Analysis, Feeder Pig Analysis, Hog Selling Decisions, and Sow Productivity Calculator. List price: $170.

## ■ *Hayden Software Company*

***600 Suffolk St.***
***Lowell, MA 01853***
***800/343-1218, 617/937-0200***

### Sargon III

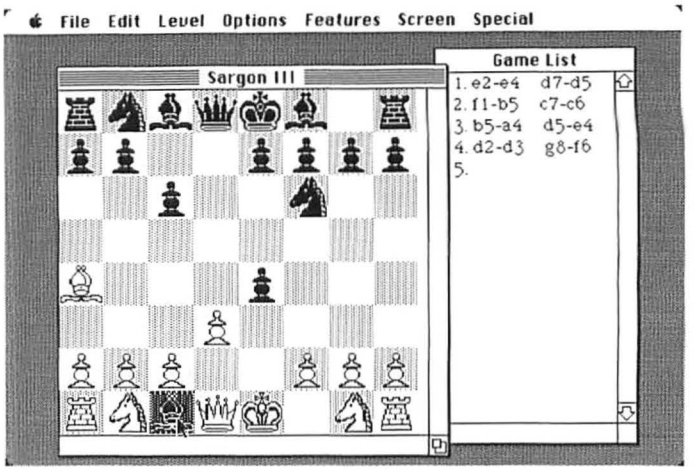
A chess game with nine levels of difficulty. Pieces are selected and moved using the mouse. Players can save a game in progress, play either white or black, print out a list of moves, and take back a move at any point. The disk includes 45 chess problems and replays 107 great chess games. Solutions to the problems and the commentary on the historical games are included in the documentation. List price: $49.95.

## ■ *Human Edge Software*

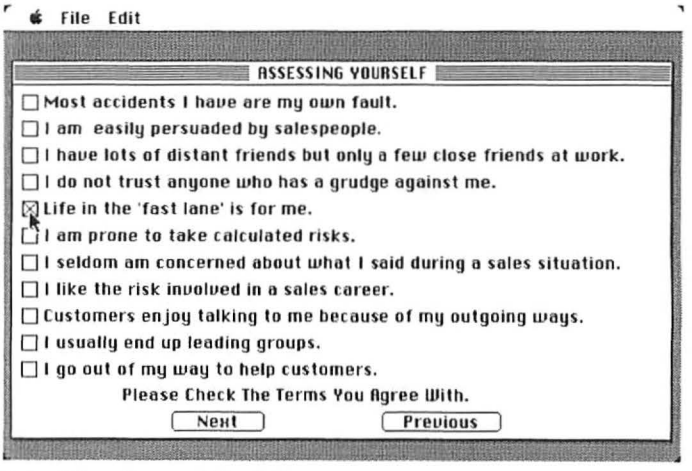
***2445 Faber Pl.***
***Palo Alto, CA 94303***
***415/493-1593***

### Business Strategy Software

A series of programs that enables professionals to practice business tactics in simulated situations. The programs question users about themselves and the people their decisions will involve. Then the factors that affect the decisions are evaluated. *The Sales Edge* helps users prepare strategies for




*Sargon III, Hayden Software*




*Sales Edge, Human Edge Software*

opening, presenting, and closing sales negotiations. *The Management Edge* evaluates users' management skills and presents recommendations for handling specific situations. *The Negotiation Edge* analyzes negotiators' personalities and enables them to anticipate their opponents' maneuvers. List price: $195 each.

## ■ *Infocom, Inc.*

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

### Adventure Games

Twelve interactive text adventure games in which players participate in a story, using clues to solve mysteries in a variety of settings: the underground empire of Zork, the depths of an Egyptian tomb, hostile alien worlds, the bottom of the sea, and the detective era of the 1930s. The games include the *Zork* trilogy, *Enchanter, Infidel, Deadline, The Witness, Sorcerer, Starcross, Suspended, Planetfall,* and *Seastalker*. List prices not available.

## ■ *Main Street Software*

***700 Larkspur Landing***
***Larkspur, CA 94939***
***800/824-8757, 415/332-1274***

### Main Street Filer

A filing system and report generator that can handle up to 65,000 records of up to 36

fields in every user-designed file. Files can be arranged in alphabetical or numeric order on four different key indexes. Users can change the file design or indexing system after data entry without sorting, reentering, or losing any existing data. List price: $249.95.

## ■ *Mark of the Unicorn*

***222 Third St.***
***Cambridge, MA 02142***
***617/576-2760***

**Professional Composer**
An interactive music notation editor that enables musicians to compose, edit, and print out musical scores on the Macintosh. *Professional Composer* functions much like a word processor, but users enter and edit notes rather than characters with the mouse. Music text appears on the screen as it would on sheet music, including notes, rests, accidentals, beams, chords, ties, n-tuplets, time signatures, clefs, measure lines, and note embellishments. The program can display single or multiple voices and can transpose scores into different keys. List price: $495.

*Era 2, Microcom*

## ■ *Microcom, Inc.*

***1400A Providence Hwy.***
***Norwood, MA 02062***
***800/322-3722, 617/762-9310***

**Era 2**
A communications system that uses the Microcom Networking Protocol (MNP) communications language to enable the Macintosh to access other personal computers, mainframes, and public data networks. Computers that support MNP include the IBM PC, PC XT, and PCjr, the TRS-80 Model 3, and the Apple II family. The system consists of communications software and a 1200-baud modem, and provides automatic dial and answer, unattended transmission of data, pulse or touch-tone dialing, and half- or full-duplex transmission. Menu options allow users to specify communications settings such as baud rate, parity, and phone number. List price: $599.

## ■ *Microrim, Inc.*

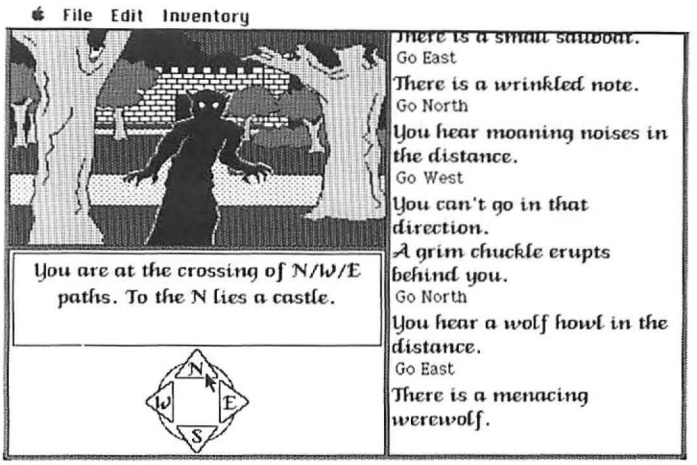
***1750 112th NE***
***Bellevue, WA 98004***
***206/453-6017***

**R:base 2000**
A data base management program for personal or small business applications. The program includes searching, sorting, and computational capabilities. On-screen prompts aid users in formatting data bases and designing customized report forms. List price: $295.

## ■ *Odesta*

***3186 Doolittle Dr.***
***Northbrook, IL 60062***
***800/323-5423, 312/498-5615***

**Helix**
A forms-oriented data base with search, sort, calculation, and report generation capabilities. There are no restrictions on fields per record, characters per field, or keys per sort. Files can contain numeric information, text, or pictures. Users can restructure forms by rearranging icons that represent information types, and can move icons from one form to another. List price: $395 through September 15, 1984.




*Transylvania, Penguin Software*

## ■ *Penguin Software*

***830 Fourth Ave.***
***P.O. Box 311***
***Geneva, IL 60134***
***312/232-1984***

**Transylvania**
An adventure game in which players search through Transylvania for a kidnapped princess. The mouse is used to select a direction, and the resulting location is shown on the screen. Players then type responses to displayed questions in order to gather clues and rescue the princess. List price: $39.95.

## ■ *Rio Grande Software*

***P.O. Box 77***
***West Liberty, IA 52776***
***319/627-2272***

**Softmaker II**
A data base program generator and report generator written in Microsoft BASIC. Users can modify the program, which has search and sort capabilities, 14 digits of precision, and a maximum record length of 32,767 characters. List price: $195 (not including Microsoft BASIC).

## ■ *Scarborough Systems*

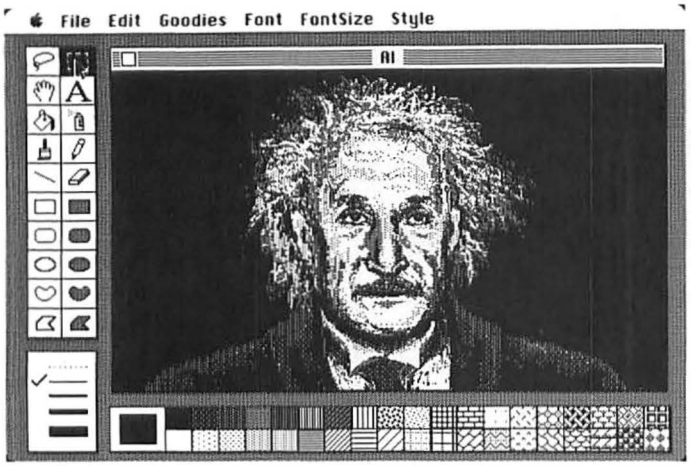
***25 N. Broadway***
***Tarrytown, NY 10591***
***914/332-4545***

**Run for the Money**
An educational game in which players are stranded on a strange planet with very little cash in their possession and must develop a business that will provide the profits necessary to repair their spaceship. Players learn business skills as they determine how much to spend for raw materials, whether to spend money on advertising, and how much to charge for products. List price: $49.95.

## ■ *Sentient Software, Inc.*

***P.O. Box 4929***
***Aspen, CO 81612***
***303/925-9293***

**Cyborg**
A text adventure game in which the player is a character in a science fiction story. The player has been transformed by NASA II surgeons into a creature who is half human and half machine, and must solve a number of puzzles as the story's plot unfolds. List price: $39.95.




*ClickArt, T/Maker*

### ■ *Think Educational Software*

***16 Market St.***
***Potsdam, NY 13676***
***315/265-5636***

**Mind Over Mac**
A package of five games. In *MasterCode,* players must break a secret code consisting of symbols, shapes, or numbers. In *Destroyer,* players must find and destroy enemy ships on a grid layout. *Third Dimension* is a three-dimensional tic-tac-toe game. *On the Contrary* tests players' memories, and *Trivial Intrigue* is an array of trivia questions in several categories. List price: $49.

**MacEdge**
An educational package designed to enhance children's math and reading skills. The mathematics programs progress step by step, emphasizing concept development and numeral recognition. The programs use sound, graphics, and game formats. In the reading portion, children complete sentences by selecting words using the mouse. Vocabulary can be developed through various games. The primary level introduces compound words and contractions. Advanced levels identify synonyms and antonyms. List price: $49.

### ■ *T/Maker*

***2115 Landings Dr.***
***Mountain View, CA 94043***
***415/962-0195***

**ClickArt**
A collection of approximately 100 drawings that can be pasted into documents. Pictures include symbols, borders, phrases in custom-designed lettering, and people in various environments. List price: $49.95.

### ■ *TNT Software, Inc.*

***34069 Hainesville Rd.***
***Round Lake, IL 60073***
***312/223-8595***

**The Creator**
A data base program generator and report generator written in Microsoft BASIC. The program provides a template in which users set up a data base. *The Creator* handles up to 32,767 records per file; record length is limited only by available memory. The program includes search and sort capabilities and performs operations on numeric and character data. List price: $35.

# Hardware

### ■ *Micro-Design*

***6301B Manchaca Rd.***
***Austin, TX 78745***
***800/531-5002, 512/441-7890***

**Hard Disk Drives**
Removable hard disk cartridges and Winchester hard disks in a variety of configurations. The SQ Series 5-megabyte drives are available as single, removable devices, or they can be paired with 10-megabyte or larger hard drives. The PRO Series offers a choice of 10- or 20-megabyte hard drives with automatic locking heads and an internal power supply. List prices not available.

**Floppy Disk Drive**
An external floppy disk drive that uses 3½-inch microfloppy disks. The drive includes all hardware and cables necessary for installation. List price not available.

# Accessories

### ■ *Anchor Pad International, Inc.*

***3224 Thatcher Ave.***
***Marina del Rey, CA 90292***
***213/306-3881***

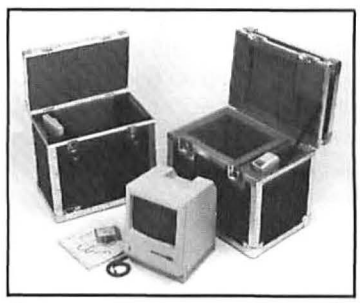
**Anchor Pad**
A security system that locks the Macintosh to a desktop or tabletop. "Adapter feet" are bonded to the bottom of the Mac, which is then secured to a metal plate that is bonded to a double-faced adhesive mat. No holes are drilled in either the computer or the desktop. A swivel adapter allows the screen to be rotated 360 degrees. The Mac may be unlocked from the Anchor Pad and transported. Also available is a Computer Access Control System that prevents unauthorized people from turning on the computer. List price: Anchor Pad and swivel $190 including installation, Access Control System $125.

*Anchor Pad, Anchor Pad International*

### ■ *ATS Cases, Inc.*

***25 Washington Ave.***
***Natick, MA 01760***
***617/653-6724***

**Carrying Case**
A hard-shell case for transporting the Macintosh. The exterior is made of plastic laminated to plywood; the foam-lined interior has pockets for the Mac,



*Carrying case and shipping case, ATS Cases*

keyboard, mouse, disks, and power cord. The case weighs 12 pounds, measures 18 by 11½ by 16½ inches, and comes in gray or beige. List price: $159.

**Shipping Case**
A hard-shell case similar to the ATS carrying case but made of thicker plywood and having more foam padding. The case has steel corners and recessed latches. It weighs 21 pounds and measures 19¼ by 15¾ by 17 inches. List price: $235.

### ■ *Braun-Cooper*

***207 Gough St. #38***
***San Francisco, CA 94102***
***415/621-4909***

**Totem Pack**
A nylon carrying case that can be used as a tote-bag or as a backpack. The padded case has separate compartments for the Macintosh and its keyboard, mouse, external disk drive, disks, and cables. The pack collapses for easy storage and comes in blue, beige, black, camouflage, red, or green. List price: $90.

### ■ *Justin Case*

***334 Main St.***
***Port Washington, NY 11050***
***516/883-2299***

**Basket Case**
A hard-sided, plastic, foam-lined carrying case that has compartments for the Macintosh, keyboard, mouse, numeric keypad, and power cord. The case has two locking front latches, metal corners, and a carrying handle on top. It measures 15½ by 12½ by 15½ inches. List price: $100.

### ■ *Kensington Microware*

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

**Maccessories**
A variety of accessories for the Macintosh, including a surge suppressor ($49.95); a swivel that revolves 360 degrees and fits into the Mac carrying case ($29); a disk case that stores up to 36 disks ($30); a printer buffer; a 300 baud portable modem; and a cleaning kit.

# Books

*The Easy Guide to Your Macintosh*
Joseph Caggiano
280 pages, softbound, $12.95
Sybex Computer Books
2344 Sixth St.
Berkeley, CA 94710
800/227-2346, 415/848-8233

*The Introduction to MacBASIC*
Scot Kamins
224 pages, softbound, $17.95
Hayden Book Company
10 Mulholland Dr.
Hasbrouck Heights, NJ 07604
201/393-6306

*Mac Multiplan*
Carol Ramsay and Joan Lasselle
224 pages, softbound, $19.95
Hayden Book Company
10 Mulholland Dr.
Hasbrouck Heights, NJ 07604
201/393-6306

*Mac Revealed: Programming with the Mac Toolbox*
Steve Chernicoff
400 pages, softbound, $27.95
Hayden Book Company
10 Mulholland Dr.
Hasbrouck Heights, NJ 07604
201/393-6306

*The Macintosh Apple: A Comprehensive Reference Guide*
Kenneth C. Green and Rika van Dam
256 pages, softbound, $14.95
dilithium Press
8285 Nimbus #151
Beaverton, OR 97005
800/547-1842

*MacWork/MacPlay*
Lon Poole
352 pages, softbound, $18.95
Microsoft Press
10700 Northup Way
Bellevue, WA 98004
206/828-8080

*Understanding the Macintosh*
Rick Dayton
204 pages, softbound, $18.95
Reston Computer Group
11480 Sunset Hills Rd.
Reston, VA 22090
703/437-8900

*Using and Programming the Macintosh*
Frederick Holtz
256 pages, $10.95 softbound, $16.95 hardbound
TAB Books Inc.
P.O. Box 40
Blue Ridge Summit, PA 17214
717/794-2191

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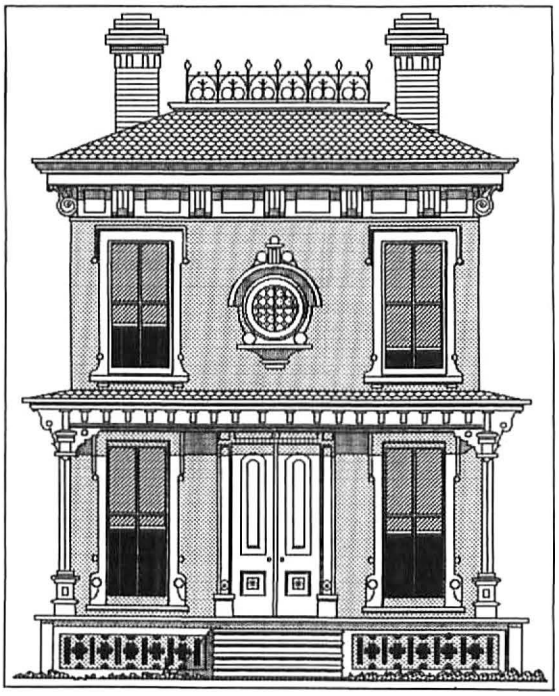
# BUILDINGS, LANDSCAPES, INTERIORS: DA VINCI HAS GRAND DESIGNS ON YOUR MAC.



## NAIL DOWN YOUR DREAM HOUSE. ONLY $49.95.

Hayden's three new daVinci graphics packages—Buildings, Landscapes and Interiors—let you use your Macintosh to design a house or an office, landscape it, and arrange the interior.

DaVinci works with your MacPaint program. Each daVinci package gives you hundreds of design selections. Use them as is, or alter them to suit your own ideas. Deletions or additions are no harder than a sweep and click of your mouse.

*SEE THE FOREST OR THE TREES.*

The daVinci packages cost only $49.95 each. You can use them separately or in any combination.

If you're a professional landscape architect, office planner, interior designer or office manager you'll easily pay for your package in time savings with the first design you do.

If you're an amateur, you can generate and evaluate scores of interior and exterior designs without worrying about hefty consulting fees.

Or perhaps you just like to draw. DaVinci gives you the perfect opportunity to create a world of imagination.

*REARRANGE YOUR FURNITURE WITHOUT HURTING YOUR BACK.*

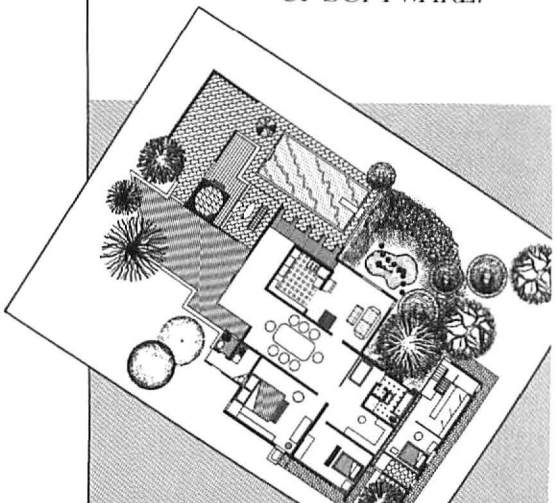
The components in daVinci were designed by noted professional artist, sculptor and printmaker David Adamson, a Fulbright Fellow, and Professor of Art at the Corcoran School of Art in Washington, D.C. He formulated them to be both artistically pleasing and functional in construction terms.

The daVinci components are scaled to give your designs true professional quality.

Of course you can print out your designs on your Macintosh Imagewriter.™

To put daVinci to work, see your local software dealer, or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01853, telephone 800-343-1218.

*HAYDEN.*
*AMERICA'S FIRST FAMILY OF SOFTWARE.*



# HAYDEN

# YOUR MOVE: SARGON III TO MACINTOSH, TOO.

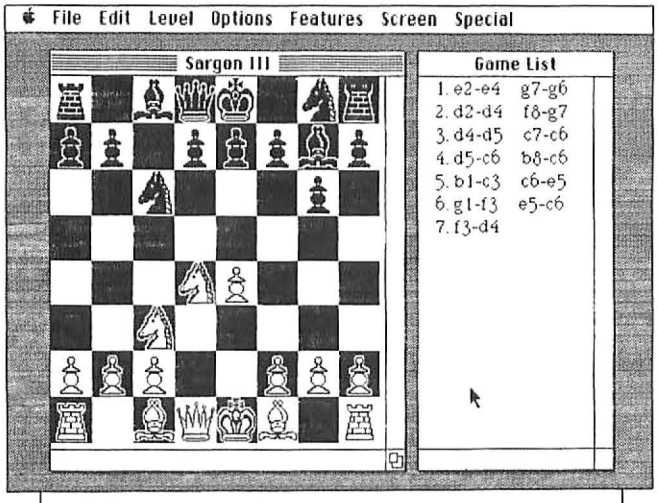
## SARGON III COMPUTER CHESS GAME NOW AVAILABLE FOR MACINTOSH.

Now you can play Sargon III, the world's finest microcomputer chess program, on your Macintosh.

No need to type in your moves manually. Use the mouse to move your pieces. Pull-down menus make it easy to select the game's different options and features. With just a sweep and click of the mouse you can choose one of 9 playing levels, change board size, change the colors of your squares, save a game in progress to disk, or print out your game in high-quality Macintosh graphics.

*HOW MACINTOSH AND SARGON III CAN RAISE YOUR GAME TO A HIGHER LEVEL.*

The intuitive operating style of the Macintosh combined with the perfect playability of Sargon III make for the best chess instruction anyone at any level of play could ask for.




Sargon III will play at precisely the level of difficulty you desire. Ask Sargon III for a hint, take back a move you've already made, replay a sequence, change sides, or set up your own board for customized learning. Sargon III lets you study in detail more than 100 great games of history or review 45 classic chess problems, all on screen. Sargon III also includes a complete library of opening moves.

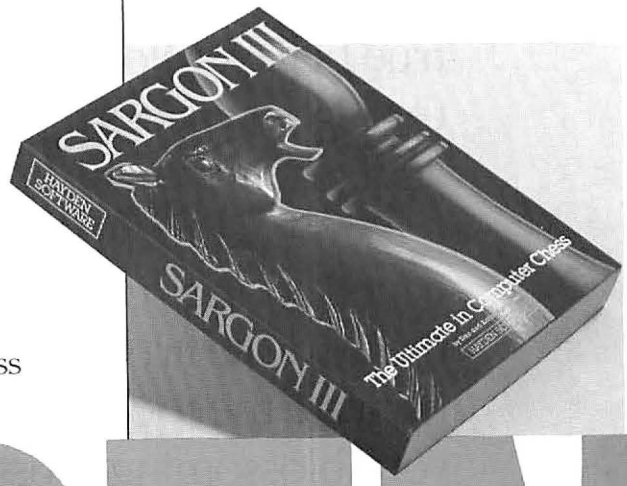
*SARGON III WRITES CHESS HISTORY*

In a recent tournament sanctioned by the U.S. Chess Federation, Sargon III beat a master rated 2209. That makes Sargon III the only microcomputer program ever to defeat a player at that level.

Sargon III. The Macintosh version. Only $49.95. See your local software dealer, or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01853, telephone 800-343-1218.

Hayden will award the Sargon Cup and $4,000 to the winner of this year's U.S. Chess Open. Watch your local paper for tournament results.

*HAYDEN. AMERICA'S FIRST FAMILY OF SOFTWARE.*




HAYDEN

# Stepping Into the Paint Bucket

*Jeffrey S. Young*

You've had your Macintosh for weeks now, maybe even months, and you think you're really starting to get the hang of it. The mouse no longer feels like a pencil from outer space, and the variety of choices that confront you each time you fire up *MacPaint* is not so much bewildering as beguiling. Your friends and relatives are impressed with your newfound painterly dexterity, and you've got the demo down pat; with a gentle smile and just enough exuberance to show that, while a true believer, you're still objective, you can take the program through its paces and enthrall all but the most indifferent audience.

You've spent the better part of an hour perfecting an elegant drawing, forming and reforming section after section of the intricate artwork; pleased by the ease with which you manipulate the tools on your palette, you begin to take pride in your blossoming artistic skill. Maybe you were smart enough to save the image once, half an hour ago, but in any case that's no problem because you know about the Undo key (the uppermost left key), the Undo and Clear commands in the Edit menu, and even the last resort, the Revert option in the File menu. You're in full control of your drawing. Or so you think.

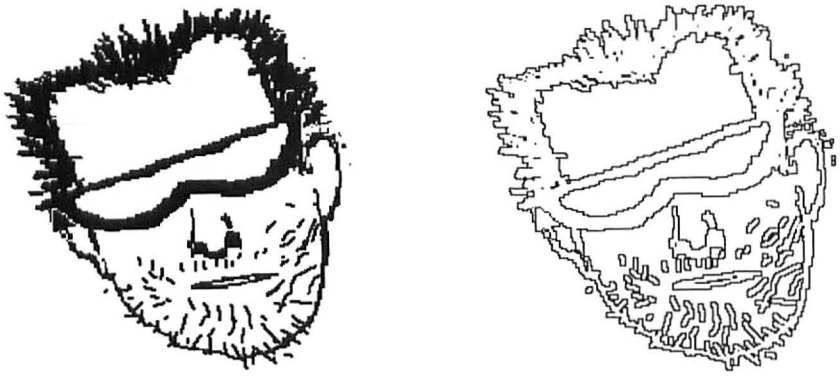


***Figure 1***
*You can select Trace Edges either from the Edit menu or by pressing ⌘-e. Note that black areas are changed to white when an object is outlined.*

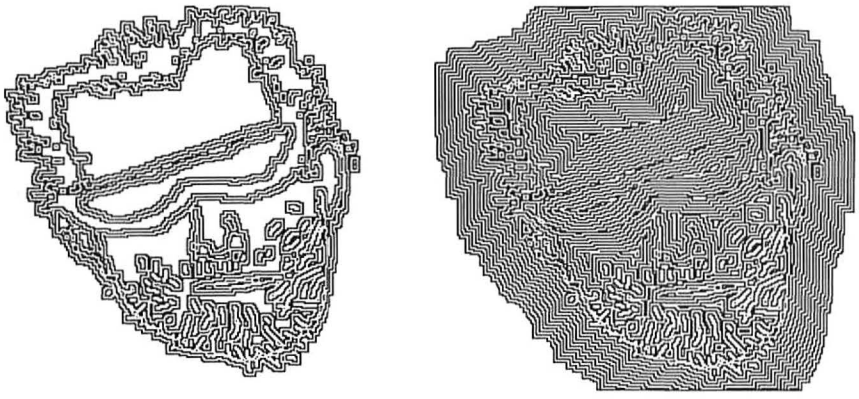


***Figure 2***
*A series of outlines will grow quickly as you hold down ⌘-e. With each outline, patterned areas will be alternately positive and negative.*

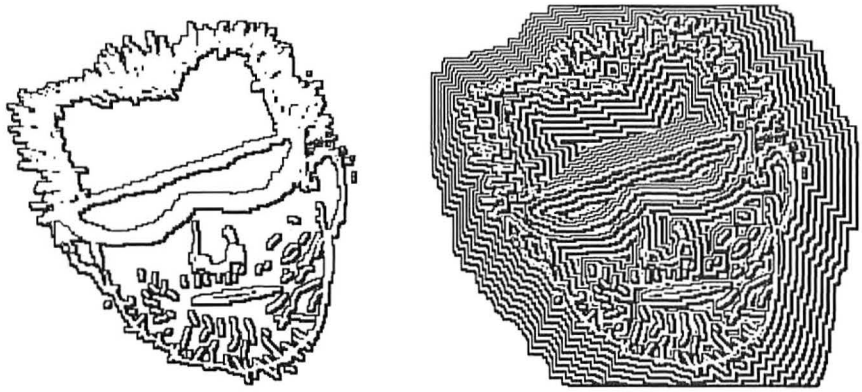


***Figure 3***
*Using the Shift key with Trace Edges produces a more striking effect than Trace Edges alone. You can create multiple shadowed outlines by holding down Shift-⌘-e, or combine occasional shadowed outlines with plain Trace Edges outlines by pressing Shift at intervals.*

You decide to fill an area with a pattern. You've drawn in the outline pretty well (you can't see any missing dots in the border), so you bring out the paint bucket to pour in a pattern. You carefully position the leading edge of the pouring paint inside the space you want to fill, but when you click once, nothing happens. You aggressively click the mouse once more, thinking that maybe the program didn't register the first attempt.

Now it's too late. There was a hole in the border of the area you wanted to fill, so the paint spills out across the entire screen. Because the paint bucket takes several seconds to cover an area that large, and because you were too impatient to listen for the machine working after that first click, you've now indelibly covered the screen with paint.

At first you're not worried as the Mac hums and splashes the pattern across your drawing. Casually you press the Undo key. Nothing happens. You stab at all the other keys and search through the menus that have never failed you before. Nothing changes. The screen is still awash in a sea of patterned dots, and only the faintest hint of your fine artwork peers through the spaces between the dots. Finally, you use the Revert command and discover that it was another picture you remembered to save. All you get this time is a vast expanse of empty screen. You've lost your last hour's work.

You've learned how it feels to put your foot into the paint bucket. Sorry to say I can't help you recover that drawing, but I do have some other tips to pass along. They should prove to be useful additions to your *MacPaint* repertoire.

### Instant Shadows

You've probably discovered the Trace Edges command in the Edit menu (see Figure 1). This command builds an outline around any object you select with the marquee (the selection rectangle). If you click Trace Edges several times in succession, or simply keep the ⌘-e key combination held down, the edges will progressively grow to fill the marquee; Bill Atkinson, the program's creator, calls this tool "crystal growth" (see Figure 2). If you think about it, Trace Edges is very similar to the Style menu options Outline and Shadow, which are used with text.

You're not the only one who thought about this. Atkinson saw an opportunity to add the "three-dimensional" text capability for shadowing to drawings. He happened to have an unused Shift key ("I just can't re-

sist an open spot on the keyboard," he says, explaining why he programmed in this particular enhancement) and slipped the additional choice into *MacPaint*. But he never told anyone about the feature, so it's not included in the documentation. You can make it work by selecting a drawing with the marquee, holding down the Shift key, and selecting Trace Edges from the Edit menu, or by pressing ⌘-e in combination with the Shift key (see Figure 3). A shadow instantly surrounds your drawing. Try this tip with any image; it adds an almost three-dimensional effect.

### Fast Paste Hints

*MacPaint*'s Cut and Paste options have a few unusual features worth mentioning. The first is a simple rule: "However it's cut, so will it return." This means that if you cut an image with the lasso, either to the Scrapbook or the Clipboard, when you paste it back into your document it will come back in the lasso. This fact can be important because several options are not available to an object selected by the lasso (stretching, tracing edges, rotating, and flipping, for example). You'll have to reselect the object with the marquee to perform any of these operations on it.

But the lasso has a major advantage over the marquee: if the image you're pasting is not an enclosed shape, you can put the lassoed image on top of anything on the screen, and the background will show through unfilled portions of the image (see Figure 4). The lasso works differently than the marquee, which always surrounds what is selected with a rectangle of white paint. The white rectangle travels everywhere with the marquee and obliterates whatever is underneath it once you click the mouse button.

There's one other trick you can use with the marquee to influence the way images are pasted in. Whenever you paste an image from the Clipboard to a marquee on the screen, the image conforms proportionally to the size relationship between the selector size when the image was cut and the size of the marquee currently on the screen (see Figure 5). This technique also works for an image cut with the lasso, although you can't use the lasso to select the area where the image will be pasted in; you must use the marquee.

The size of the marquee on the screen when you paste in an image determines not only the location of the image, but also its proportions and size. The maximum size of a Paste location is one entire screen (easily selected by double-clicking on the marquee icon); the minimum is about a half-inch square— selections smaller than that size render an image unrecognizable. Although you can paste the full-sized image to the screen and then change its proportions with the ⌘ key, the method just described is a quicker and more accurate way to select the size and destination of a pasted image.

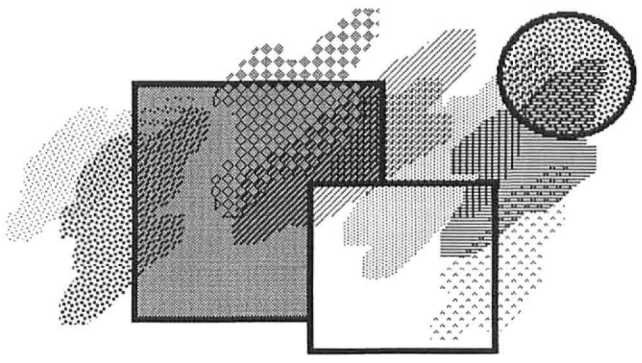


***Figure 4***

*When you drag one image on top of another with the lasso, the image underneath shows through unfilled portions of the top image. This technique doesn't work with patterns that contain enclosed spaces, such as the grids in the pattern palette.*

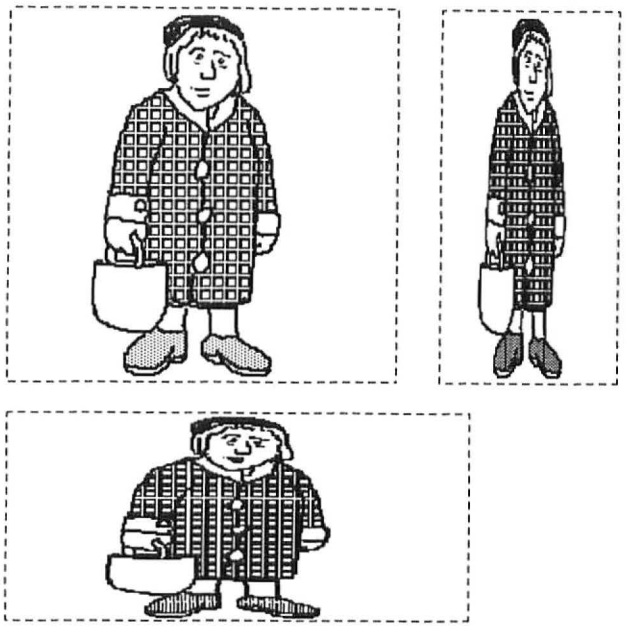


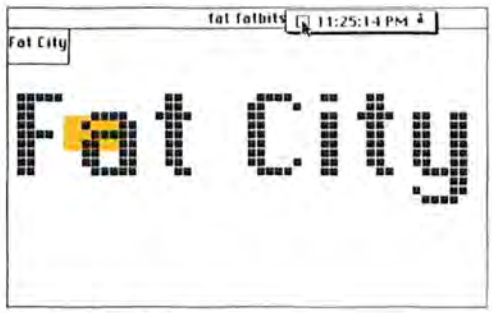
***Figure 5***

*The proportions of an object change to conform to the shape of any marquee into which it is pasted. The Undo command allows you to try out marquees of different shapes and sizes until the object's proportions are as you want them.*

# FatBits Gets Fatter

You may have accidentally discovered a quirk in the FatBits window. Named "Fat FatBits" by the program's creator Bill Atkinson, it is an inadvertent "window in the code" that allows you to glimpse the dot-by-dot makeup of an individual dot; in effect it lets you zoom in on a FatBit (itself the product of a zoom-in onto a full-screen image) and sail even deeper into the interior of the program. There's not much you can do with a Fat FatBit once you've come face to face with it, but looking at Fat FatBits is something you might want to try just because it's there. (The procedure described here works only with the original version of *MacPaint*—version 1.0. If you have version 1.3, skip to the last paragraph.)

Start with any image on the screen and zoom into FatBits. Position the expanded image along the upper edge of the screen, then open any Apple menu option except About MacPaint. At this point, make sure that part of your image is within the highlighted area shown in the figure labeled "Getting Fat FatBits." The highlighted area shows the piece of the drawing that will be exploded. Now click the close box on the desk accessory.

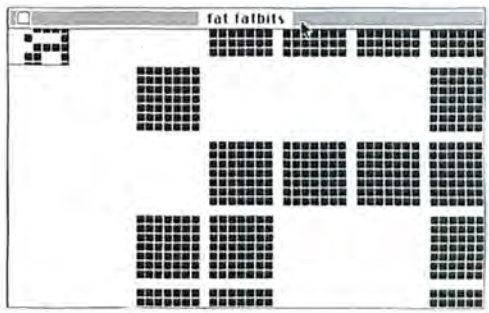



***Getting Fat FatBits***

*To take a closer look at FatBits in* MacPaint *1.0, first make sure that part of your drawing is in the small highlighted area shown here. If your screen is blank when you close the desk accessory, choose Undo, move the image slightly, and try again.*

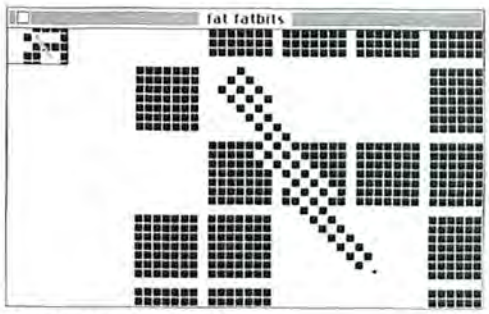
Voilá! Each FatBit has turned into a 7- by 7-dot expanded grid that shows its structure inside the program code (see the figure labeled "FatBits Up Close").

As soon as you try to do anything with this curious screen representation, you'll discover that the first click of the mouse makes the image disappear. Your image reverts to the FatBits image that you started with, unless you selected either the paintbrush, the spray can, or the eraser prior to opening the Apple desk accessory. These tools alone (all others return you to the FatBits image) enable you to capture




***FatBits Up Close***

*Each magnified FatBit is itself seven FatBits high and seven FatBits wide. If you feel like straining your eyes, peer closely at the faint lines that run horizontally across the Mac's screen; you will see that a single FatBit is seven lines high.*




***Capturing Fat FatBits***

*When you have the elusive Fat FatBits on your screen, you can trap them by means of the paintbrush, the spray can, or the eraser. Once you touch them with one of these tools, the Fat FatBits appear as FatBits, rather than single dots, when you return to your drawing.*

the Fat FatBits on the screen by painting or erasing at least one set of dots (see "Capturing Fat FatBits"). This new brushstroke or erasure will be in its "true size," but the Fat FatBits left on the screen will remain FatBit-sized even when you leave FatBits and return to the original active screen window (see "Fat FatBits Digested"). These enormous dots then become like any other part of a *MacPaint* image.

If you have *MacPaint* version 1.3, the same effect can be created in a more controllable manner. Take a snapshot (⌘-Shift-3) of any drawing expanded to a FatBits screen. Close the document you're working on and then open the document you created with the snapshot. Take the snapshot into FatBits and you get instant Fat FatBits! You can take snapshots of snapshots ad infinitum like the mirrors in a carnival funhouse, but doing this is pointless because the 7- by 7-dot grid is all you get—it's the underlying structure of each dot.

***Fat FatBits Digested***

*The Fat FatBits you captured show up as FatBits in your original drawing. Now if you repeat the steps for viewing and capturing Fat FatBits, you can display even fatter Fat FatBits.*

### Custom Patterns

Although there are 38 pattern choices available on *MacPaint*'s palette, one of the program's more intriguing features is its ability to capture and store any pattern that you create. Double-clicking on an existing pattern in the pattern palette brings out an Edit Pattern window containing the design. Selecting the Edit Pattern option from the Goodies menu gives you the Edit Pattern window for the currently selected pattern. By positioning the arrow on the dots in the FatBits version of the pattern (the left-hand box), you can redesign the existing pattern and see what it will look like in the right-hand box. When you get the pattern right, click OK and the new pattern will replace the old one in this *MacPaint* document.

What if you really like the new pattern you've created and want to use it in other drawings? Fortunately, you don't have to recreate the pattern for each new document. You can create a "pattern collection" document that has samples of each pattern you've designed painted onto the screen, and then pick up these new patterns and deposit them into your document's pattern palette.

Once you've learned to create a custom pattern, it's easy to build a pattern collection. Create a *MacPaint* document called Pattern Collection (or perhaps simply Patterns), and place patterns you want to save in this document. When you create a pattern you like, draw a filled rectangle in that pattern. Then cut the rectangle to the Clipboard, open your Patterns file, and paste in the pattern. Whenever you want to use the pattern again, open the Patterns file, scroll through the file until you find the pattern, and copy it to the Clipboard or the Scrapbook. You can move several patterns at once if you wish; just use the lasso or the marquee to move the patterns into a group, and copy the whole group to the Clipboard or the Scrapbook.

### Position and Paste

When you paste a pattern rectangle into a document, make sure the rectangle doesn't cover anything on the screen. Since the pattern is already surrounded by the marquee, you can move it to the proper position before clicking it into place. (There is another restriction on where you can paste the pattern rectangle: for reasons that will be explained soon, you shouldn't paste the rectangle in the space where the Edit Pattern window appears.)

Now that the new pattern is pasted into your document, how do you place it on the palette? The *MacPaint* "pattern pickup" technique comes in handy here. Once the Edit Pattern window is displayed, you can pick up any pattern showing on the screen simply by placing the arrow on some portion of it and clicking. The pattern in the Edit Pattern window is replaced with the one you selected (see Figure 6). It takes some practice to position the arrow so that you end up with

the complete pattern and not some bizarre hybrid (although by aiming at the boundaries you can create a collection of intriguing patterns that you may wish to keep).

When the Edit Pattern window is on the screen, you can pick up the new pattern by clicking on it and replace an existing pattern with the new one (don't replace a pattern you might want to use later). You've now created a working library of patterns for your drawings and can easily store 30 or 40 pattern rectangles on a single *MacPaint* document.

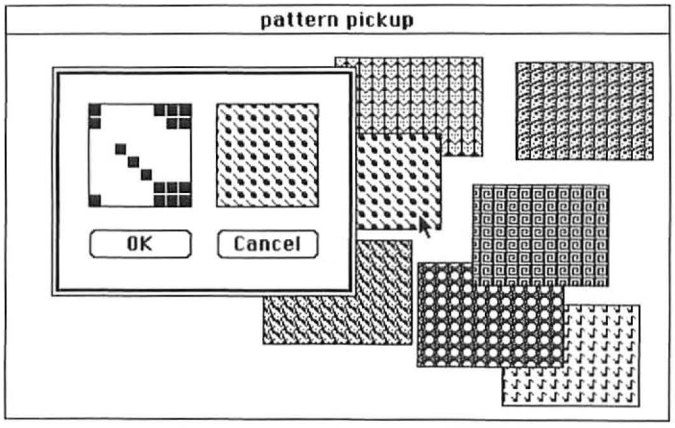



***Figure 6***

*You can pick up any pattern on the screen by clicking the arrow on it when the Edit Pattern option has been selected. The center of the arrow, rather than the point, determines the spot where the pattern is recorded.*

### Full-page Expansion

Sooner or later every MacPainter wants to work on a full-page image. The fundamental drawback of *MacPaint* is that painting can take place only in the active window, which represents less than one third of a standard 8½- by 11-inch page. How can you get around this hindrance? Unfortunately, you can't do it in one step. But with a touch of patience and a little practice, you can transform single-screen images into full-page ones, or conversely you can reduce full-page drawings to single-screen ones.

Expanding single-screen images is more difficult than reducing full-page drawings. Start expanding an image by using the marquee to enclose the top third of your drawing (you might want to draw a ruler on the left edge of the screen to help you divide the drawing into sections of equal size). Then choose Cut from the Edit menu (see Figure 7). Because you're going to cut three segments, you want to save the first cut in the Scrapbook. Select Scrapbook from the Apple menu and choose the Paste command. Now go back to the original drawing and repeat the procedure for the

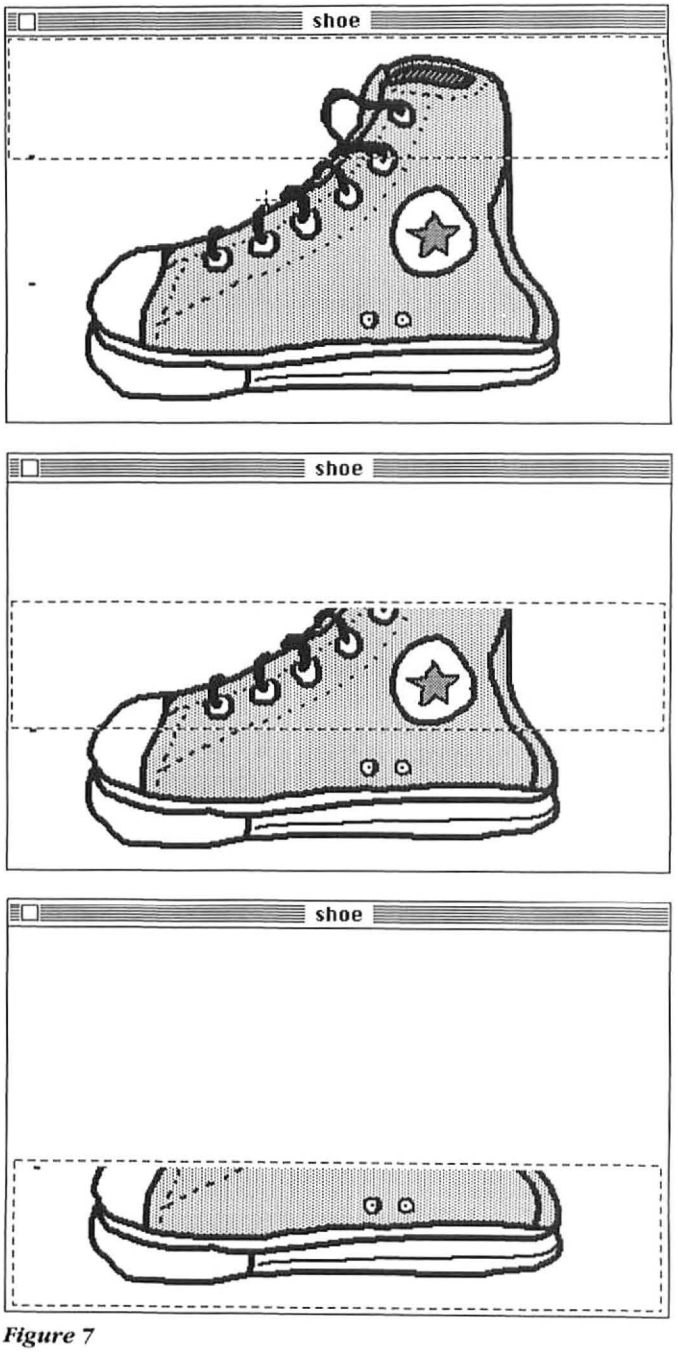



***Figure 7***

*To enlarge a single-screen drawing to a full-page one, you must cut the original drawing into thirds. If the segments are of equal size, you won't have to change the proportions of the enlarged versions when you merge them.*

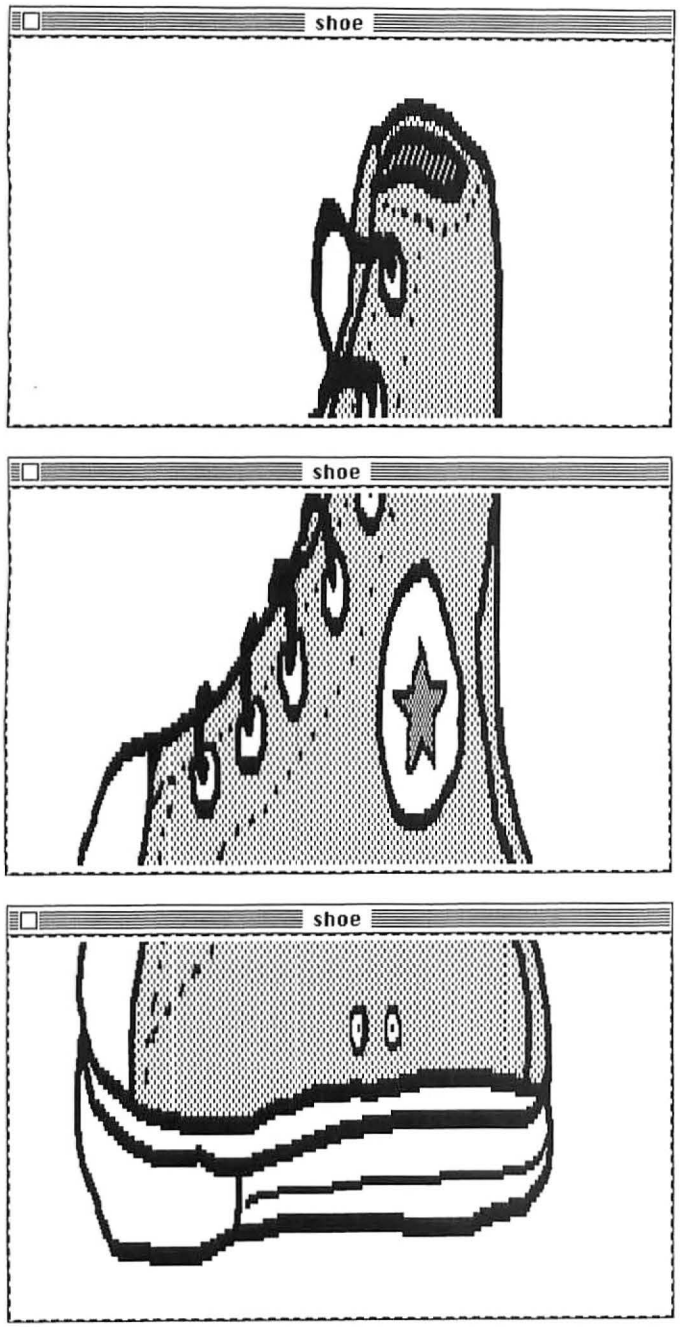



***Figure 8***

*Paste in the enlarged segments from bottom to top; remember to leave enough space between sections to allow you to surround them with the lasso. The full-page drawing will be somewhat elongated, but you can stretch the sections out a bit before piecing them together.*

middle section, being sure to use a marquee of almost exactly the same size as for your first cut. Once again, cut the image from the screen and paste it into the Scrapbook for safekeeping.

You're now ready to piece together the drawing. Go back to the final third of the original drawing and surround it with a marquee of about the same size as the other two (this minimizes having to stretch or shrink the images later on). Then cut the image but don't paste it into the Scrapbook. With the screen now empty in front of you, select Show Page from the Goodies menu (or by double-clicking on the grabber icon) and carefully position the active window frame at the bottom of the page. Return to the active window, double-click on the marquee to select the entire empty screen (as Bill Atkinson says, surround it with "marching ants"), and choose Paste from the Edit menu. The most recently cut third of your original drawing will be pasted into the document in proportion to the size of the marquee (see Figure 8).

Now that you have the bottom third of the drawing expanded and pasted in, go to the center of the page on the Show Page screen. Leave a bit of space between the bottom of the active window and the top of

*You'll be able to transform single-screen images to full-page ones in a minute or so.*

the drawing segment. Cut the middle image from the Scrapbook and paste it into the full screen. Then go back to the Scrapbook, cut the top image, use Show Page to position the active window at the top of the page, and again select the entire active window and paste in the image. The three parts of the original drawing are now expanded and separated by thin bands of white space.

To put the pieces together, go back to Show Page and see whether the proportions of all three parts are correct. They probably will need a little adjusting, but

*(continued on page 106)*

# Touching Up MacPaint

One sign of a creative mind is that it can't leave well enough alone. A writer makes "just a couple more changes" on the morning after finishing an article, or an architect sees something on the way to meet a client and decides to revise a design at the eleventh hour. An eternal dissatisfaction with even the best work separates the very good from the good.

Such an attitude characterizes Bill Atkinson, the creator of *MacPaint*. In the months immediately following the release of the Macintosh, he received daily fan letters from all over the world and might have been excused for resting on his laurels. It had taken two years of wizardry and dedication to make *MacPaint* work, and now most of the computer world is trying desperately to figure out his still-secret programming code. But Atkinson isn't just designing software; he's on a crusade to bring the Mac into the lives of people who don't think of themselves as computer users. He believes that by continually refining his brainchild, he is doing his part in the crusade and honoring the social contract he considers he has with all MacPainters.

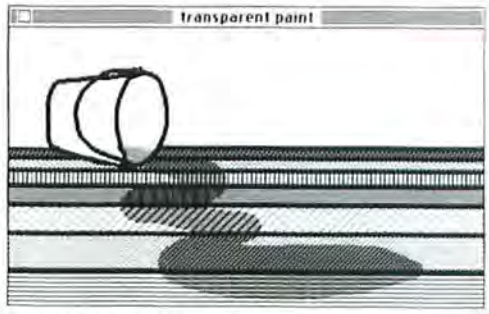
In May, Apple began shipping a new version of *MacPaint* called *MacPaint* 1.3. (The original was *MacPaint* 1.0. To find out which version you have, open a *MacPaint* document, choose About MacPaint from the Apple menu, and read the information box beside Atkinson's portrait.) There are no earthshaking changes; the document window looks the same, and the patterns and the tools haven't changed. But there are a number of subtle improvements and enhancements that make the program do even more for you.

If you have *MacPaint* 1.0, to get the enhanced version take your disk during the upgrade period (May 15 through July 15) to your Apple dealer, who will copy the new version onto your disk free of charge.

### Transparent Paint

In the original version of *MacPaint*, when you painted over an area with a new pattern, only the second pattern would show. Now if you hold down the ⌘ key with any of the painting tools (paintbrush, spray can, or paint bucket), you don't obliterate the underlying pattern. Instead, the new pattern "washes" over the original one (see the figure labeled "Transparent Paint").

*MacPaint* 1.3 puts the dots that make up the second pattern into the spaces between dots in the underlying one. The only limitation is that black and the darker designs tend to cover lighter patterns. This technique makes it easy to paint a pattern right up to the black border of a drawing or shape; since the black or darker pattern dominates, the new pattern does not obliterate the border.




***Transparent Paint***

*This new option adds watercolors to* MacPaint's *list of tools. Now you can paint over an existing pattern and produce a blend of the old and new patterns. You can also overlap filled shapes by pressing the ⌘ key while opening up one shape on top of another.*

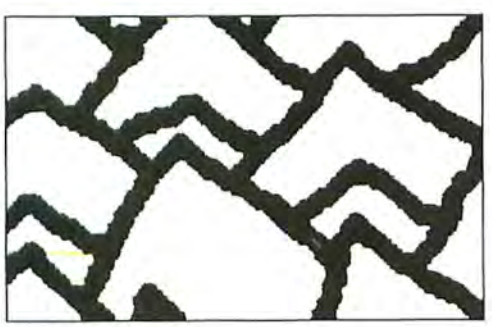
### Draft and Final Prints

The new File menu has an additional print command. Previously, *MacPaint* had only a single printer option, which has been renamed Print Draft. Atkinson has added Print Final as a way to produce high-quality printouts. The figures labeled "Draft Print" and "Final Print" show the difference in quality between the two modes.

"I figured out a way to smooth off mountains and fill in valleys," he explains. "For example, because of the pixel character of the bit map, when you draw a line at 45 degrees or so, it's jagged. The line still looks edgy on the screen, but now when you print in Final mode it looks a lot better."

***Draft Print***

*This print option was the only one available in the original version of* MacPaint. *Note how ragged the diagonal lines look in comparison to those produced by the Print Final command.*



***Final Print***

*The printer makes two passes when this option is selected and deposits more ink on the paper, creating a darker, more solid printout than when Print Draft is chosen.*

### Fill Command

There's a new command in the Edit menu as well, called Fill. This command works with enclosed shapes or sections of patterns selected by the lasso. (Fill also works with the marquee, but it fills the entire marquee instead of just the selected object.) Unlike the paint bucket, Fill can be used to paint over existing patterns. When you use Fill, the selected area is filled with the current pattern. The command can be used to replace segments of a drawing with a different pattern quickly and easily.

### 10-point Geneva

A new 10-point font size has been added to *MacPaint*'s standard set of fonts. Also, 12-point Geneva is now the default font (the font selected when you start up the program). The 10-point size looks best in Geneva; there is a 20-point Geneva tucked away in the Fonts File. (When a font size listed in the Style menu is outlined, it means that a version twice that size also exists.) When you print in 10-point Geneva, the printer creates the image by shrinking the 20-point version to 10-point, which makes the dots denser and the characters better looking. The other fonts in *MacPaint* lack the corresponding conversion and consequently don't look as good as 10-point Geneva.

*(continued from page 103)*

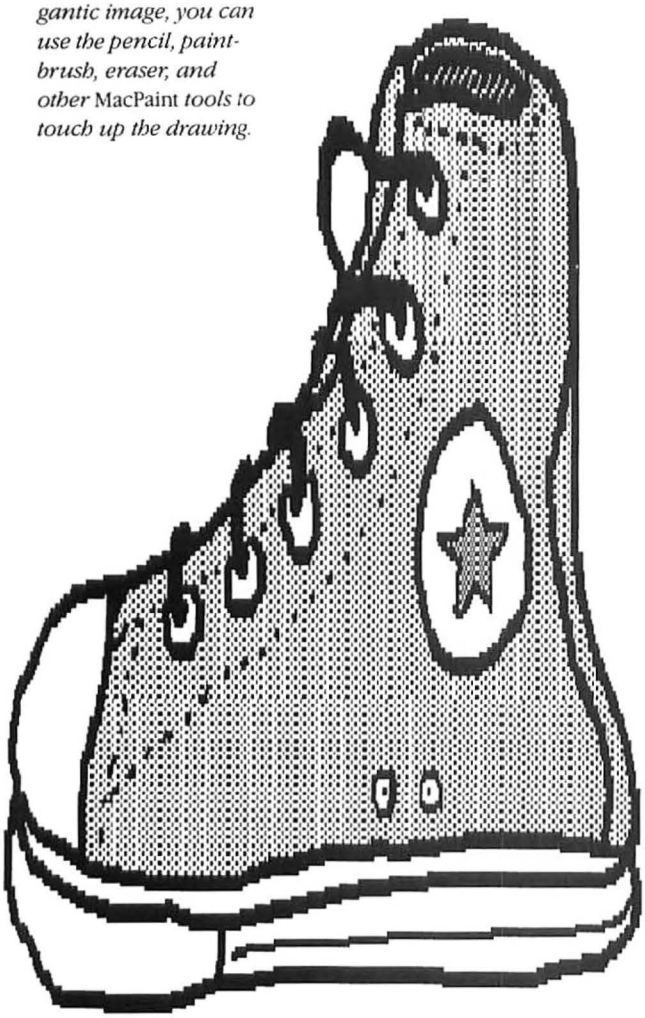


***Figure 9***
*Once you have joined the sections of the gigantic image, you can use the pencil, paintbrush, eraser, and other* MacPaint *tools to touch up the drawing.*

you can make changes with a marquee along with the Shift and ⌘ keys to keep the proportions intact. You can return to Show Page to check the proportions after each adjustment. Once the proportions of each section are correct, be sure to save the drawing so you can always revert to this spot.

Now that you've sized the segments correctly, it's time to fit them together. You want to be able to move the active window so that just enough of the top of the middle section shows to allow you to line up the first two sections exactly (use Show Page and the grabber for this). If the top image had been too large, you couldn't have both the entire top section and the top of the middle section in the same active window.

Now lasso the top portion, very carefully move it into place, and drop it. Go back to Show Page to see how the drawing looks; if you made a mistake, choose Revert and start again. Repeat this procedure until the top segment looks right, then move to the bottom and do the same thing (remember to save your work between moves). When you have the drawing right, print it out (see Figure 9). You've converted a single-screen image to a full-page one.

Although this procedure may sound complex, it isn't difficult once you try it a few times. After a little practice, you'll be able to transform single-screen images to full-page ones in a minute or so. While your expanded image may show signs of the stretching (jagged edges, fat dots, or sparsely filled patterns), remember that once you've brought the picture up to the full-page size, all the tools and patterns of *MacPaint* will be at your disposal to clean up and fine-tune the work.

### Shrinking a Page

Shrinking a drawing is considerably easier than expanding it, and there are at least two methods you can use to shrink a drawing from a full page to a single screen. You can simply reverse the procedure just described for the expansion of a drawing: use full-screen selections (double-click on the marquee) for each one-third sized portion of the drawing, cut and paste them all to the Scrapbook, and then bring the segments back into the drawing by using small selection

rectangles to paste all the segments into a single active window. Then, when the proportions are correct, use the lasso to piece the segments together.

But this process is somewhat tedious. There's a better method if you're in a hurry, have a simple drawing, and don't mind a slightly skewed image that you can reproportion with the marquee and the "stretch" (⌘) key. Start by putting the full-page image on the Show Page screen. Show Page gives you a compressed picture of the full document, which you will use as the basis for the miniaturized version. You'll only want to use the compressed picture for drawings that are relatively simple since the Show Page screen representation can't handle complex patterns and intricate artwork. Then make a "snapshot" (⌘-Shift-3) of the Show Page screen, close the file where the full-screen image resides, and open the Screen file.

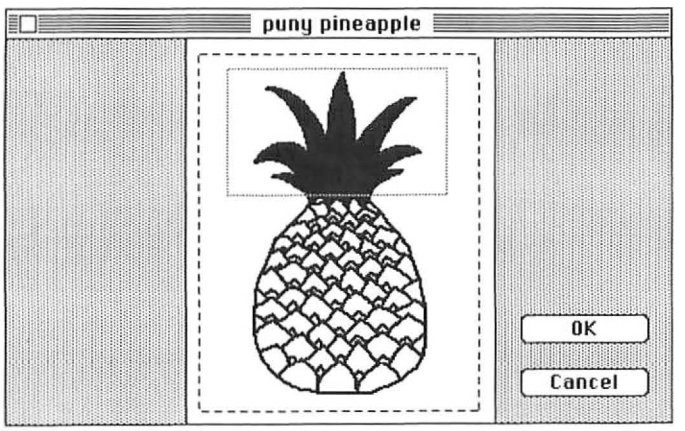
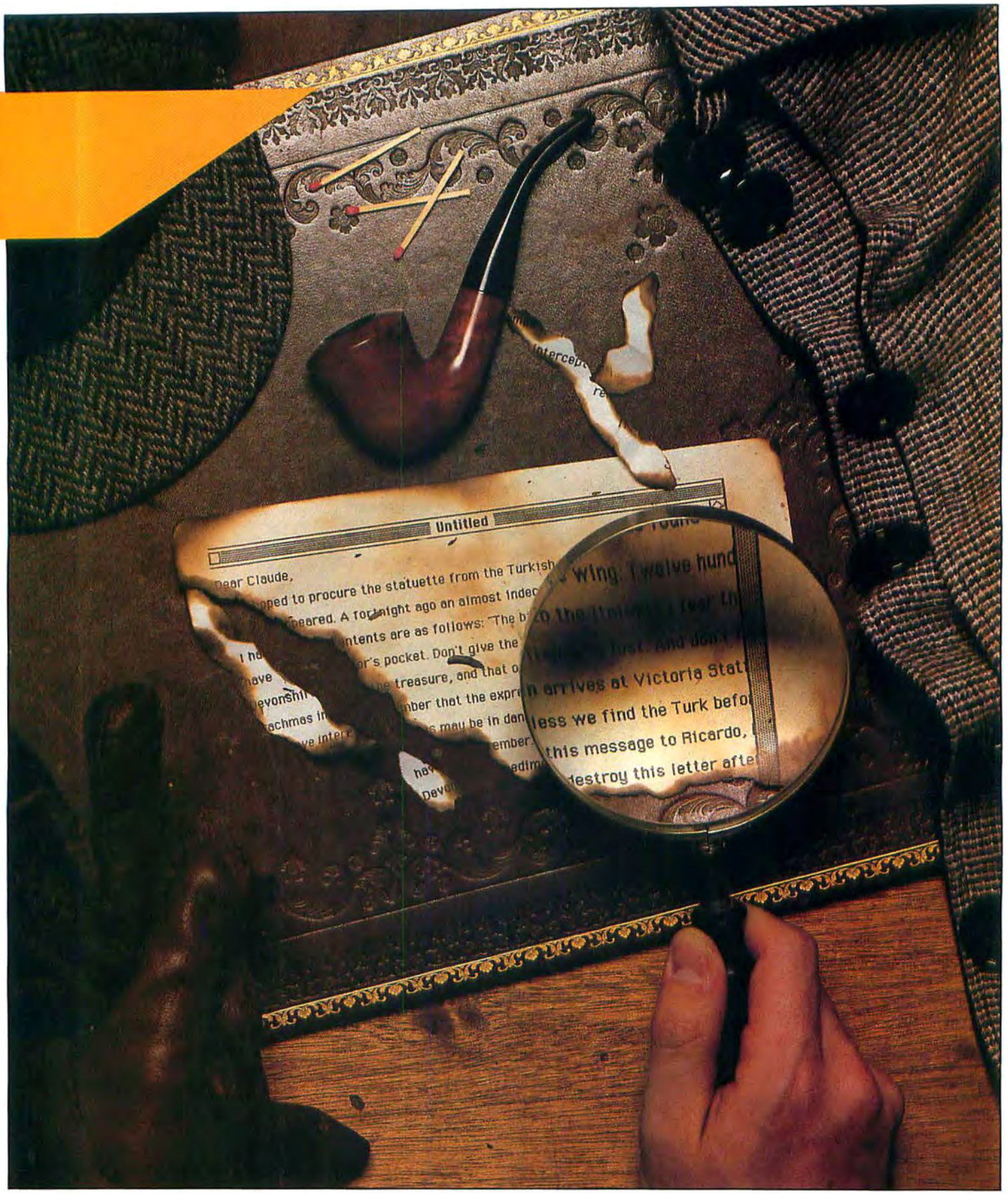



***Figure 10***
*The Show Page screen provides a quick and simple way to shrink a full-page drawing to a single-screen one. You can use this technique to create a reference sheet showing all the drawings on a particular disk.*

The next step is to surround the small version of the image that you captured by means of the snapshot with either the marquee or the lasso (see Figure 10) and cut it to the Clipboard. Now paste the new, compact picture into a file. You must erase the dotted line that outlined the active window in the Show Page snapshot. You've now created a miniature version of your drawing. You can put it in the Clipboard for immediate use, or store it in the Scrapbook for later access.

Now you know enough to keep your foot out of the paint bucket, right? You'll always save your drawings as you do them and keep an ear to the Macintosh when you use the paint bucket. And you can easily put a three-dimensional shadow around a drawing you've filled with a pattern from your own library. Best of all, when some smart aleck with an old-fashioned computer mocks you because your drawings are limited to a single small screen, you can have the last laugh—and remember to smile as you create a full-page picture. After all, part of the MacPainter's makeup should be modesty. When you're so far ahead of the pack, who needs arrogance? □

*Jeffrey S. Young is a Contributing Editor of* Macworld *and a freelance journalist who has written for several national publications including* Esquire. *He is currently working on a book about* MacPaint *for Microsoft Press.*


Untitled
Dear Claude,
wing. Twelve hund
arrives at Victoria Stat
less we find the Turk befo
this message to Ricardo,
destroy this letter afte

# The MacWrite Sleuth

*An intrepid investigator applies uncanny intuition to exploring MacWrite*

***Amanda Pellio***

*One day late in the winter, I sat before a warm fire pondering the vicissitudes of commerce. The metropolis was astir with news of the Macintosh; its many partisans esteemed it vociferously. Notwithstanding, the new mechanism's program for word processing had drawn withering fire in some early reviews. As I mulled over the conundrum, I grew exceedingly curious to look into these attacks.*

*After a month of interrogating* MacWrite, *I have found it to be both better and worse than its detractors inveigled me to believe. On one hand, it is innocent—more wieldy and powerful than I expected. Although I am a veteran touch typist, I see nothing criminal in momentarily dislodging my hands from the keyboard to use the mouse, and enough key-driven commands exist to moderate my need for it.*

*On the other hand,* MacWrite *is guilty of misconduct that has escaped notice by most inspectors. For instance, if I labor at a lengthy document and maintain several accessories on my desk—let us say, the clock, the Note Pad, and the Scrapbook—*MacWrite*'s editorial functions become suspiciously sluggish. After I cut and paste a passage, my next attempt to select some text provokes the disk to spin, and I am rendered helpless until it desists.*

*Compelling* MacWrite *to work efficiently on a cluttered desk as yet remains beyond my powers of deduction, albeit I have observed a few methods of increasing its operability. Allow me to present five clues for* MacWrite *detectives.*

### The Case of the 8¼-inch Ruler

Reviewers have reported that *MacWrite* limits documents to a width of 6½ or 7 inches. In fact, a *MacWrite* document is slightly more than 8¼ inches wide. To see the missing 1¾ inches, drag the document window to the left side of the screen, then expand the window by dragging the size box to the right. Lo and behold, a longer ruler appears. You can move the right margin marker to the 8¼-inch mark (see Figure 1).

Of course, the left margin now extends off screen; if you drag the document window back to the right to catch sight of the left margin, the right margin runs off screen to the right. Nevertheless, you can still fit more of the page on your screen.

*You can make your document even wider if you're willing to lose sight of a few letters.*

When you open a document, you'll observe small strips of the desktop showing on both sides of the document window (see Figure 2). The first step is to convert the left edge of the screen from useless desk space into useful document space. Begin by moving the left margin marker from its initial position at the 1⅛-inch mark to the 1-inch mark—flush with the left side of the document window. Then move the whole window until its left side meets the left edge of the screen. You have recovered an area of the screen that was formerly desktop.

The next step is to convert some of the right edge of the screen into even more document space. The rightmost ¼ inch is normally occupied by the scroll bar, but you don't need the entire visible ¼-inch of the scroll bar to use it. Drag the size box as far as you can to the right, while leaving some of the scroll bar showing. (The pointer can get a foothold in the scroll bar even if less than half of it remains visible.) Then move the right margin to 7¼ inches (see Figure 3). The result is a document ⅜ inch wider than the initial *MacWrite* "Untitled" document. You can make your document even wider if you're willing to lose sight of a few letters at the end of your longest lines.

Another technique is to widen a document after you have finished typing and editing it. Once you're ready to print, you no longer need to see the whole document. Drag the document window to the left, expand it to the right, and move the right margin to the 8¼-inch mark. The text is automatically reformatted to fit the wider margins.

### A Study in Headers and Footers

*MacWrite* headers and footers contain three icons that represent the page number, the date, and the time. Dragging one of these icons below the ruler causes the header or footer text to appear at the top or bottom of every page. Unfortunately, the header or footer information is not necessarily displayed in the type font and style that you specified for the body of the docu-

ment. The default font and style (12-point Geneva plain text) remains in force regardless of the font and the style you use in the document.

The technique for changing the font and the style of the page number, the date, and the time is rather tricky; you have to select the corresponding icons in the header and footer windows. But for some reason, the ordinary method for selecting icons doesn't work with headers and footers. Double-clicking on these icons, or dragging the cursor from left to right over them, doesn't select them (that is, doesn't highlight them on the screen). You can select them backward, however. Press the Return key so that the cursor moves to the line below the one the icons have been placed on. Then drag the cursor up—that is, back to the line that contains the icons. The whole line is now highlighted, and selections from the Font and Style menus change the way the corresponding information is displayed (see Figure 4).

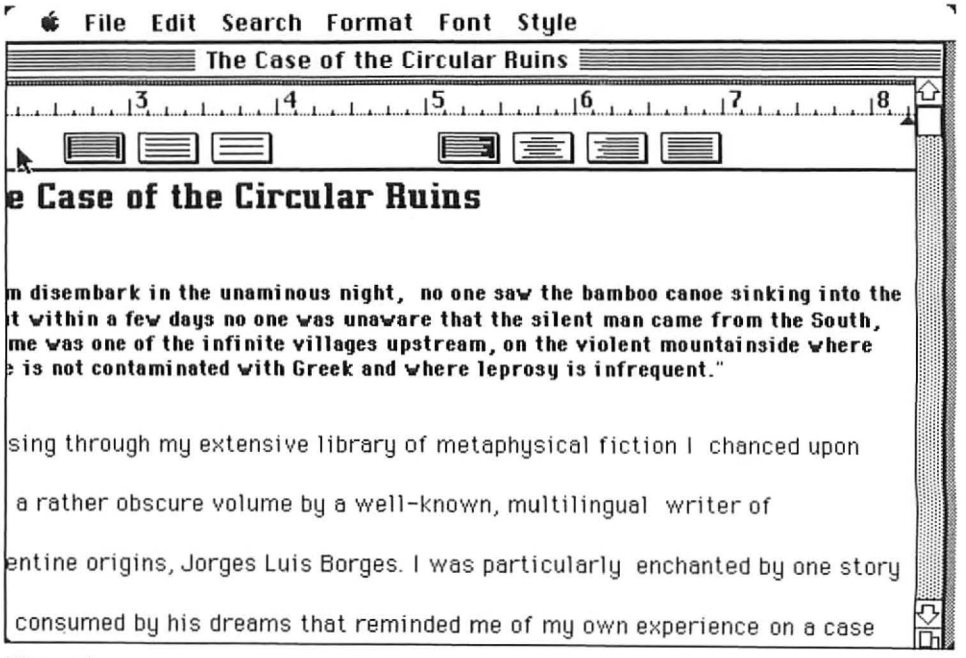



***Figure 1***

*Many MacWriters will have discovered that* MacWrite*'s ruler has more inches than it first appears to have. Simply drag the document window to the left and expand the window to the right to expose the hidden inches.*

### The Mysterious Invisible Rulers

If a document requires frequent changes of margins and indentation, you may want to use "invisible" rulers. Suppose, for example, that the document is an outline. Each different heading level in the outline requires a different margin and hanging indent. (You could insert and adjust a new ruler every time you changed outline levels, but you'd be adjusting rulers all day.) You can avoid adjusting the rulers by copying and pasting preformatted rulers within the document. Each time you reach a new main heading, copy the ruler above your last main heading and paste it above the new one. However, you may have to scroll through the document to find the appropriate ruler.

A solution to this problem is to "carry" the rulers with you as you type. Format the appropriate number of rulers in advance, and then place them below the cursor. The rulers will travel ahead of you as you type, so they are never farther away than one touch of the scroll bar. Even so, your document soon becomes filled with rulers. Each screenful of your document contains more rulers than text, and it looks nothing like the page you'll get when you print it.

The ultimate solution is to hide the rulers. To keep track of them, you have to give them visible labels (such as I, A, and

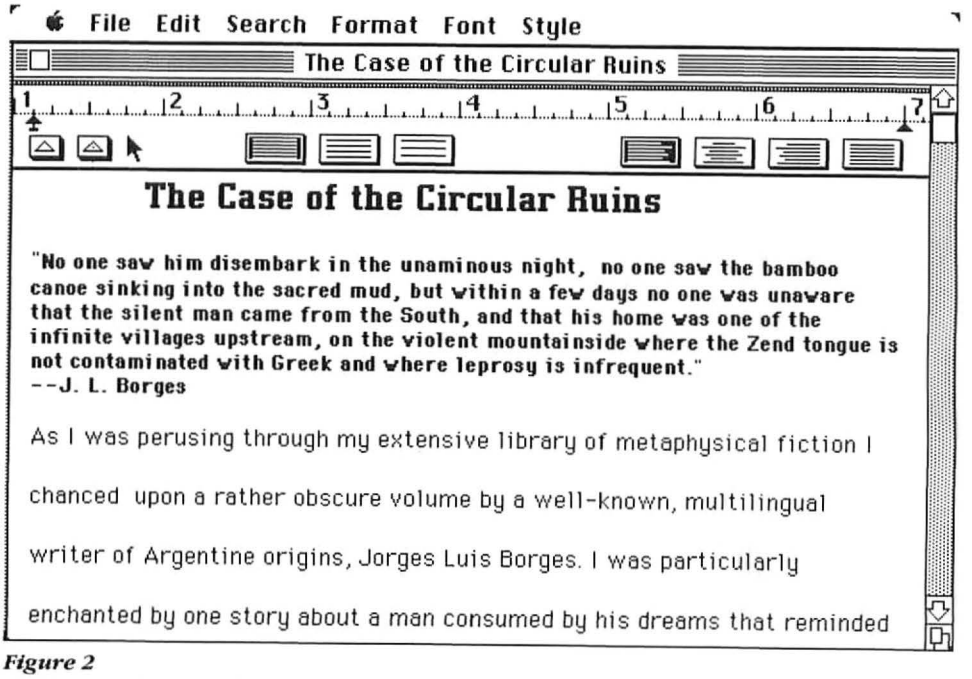



***Figure 2***

*You'll notice that a small section of the desktop shows on the left side of the document window. You can transform this unused ⅛ inch of the desktop into useful document space by dragging the window to the left edge of the screen and moving the margin marker to the 1-inch mark.*

1), but the rulers themselves can remain invisible while you work with them. An invisible ruler resides at the end of the line after which the ruler is inserted. You can select that ruler by selecting the empty space at the end of the line. If you end the line by pressing Return before inserting the ruler, the empty space at the end of the line contains both Return and the ruler. (Therefore, if you double-space before inserting the ruler, the ruler and the second Return reside on the empty line.) By selecting these seemingly blank portions of your screen, you can cut and copy the invisible rulers they contain. The rulers can then be pasted elsewhere in your document while remaining invisible.

Begin your document by inserting a ruler and adjusting it to the specifications of your main headings. If you then type "I.," the result will be a sample outline heading. Now insert another ruler, adjust it to the specifications for subheadings, and type "A." When you've made enough samples for your outline, you can hide the rulers (see Figure 5). To retrieve a particular ruler, place the cursor directly to the left of the corresponding sample heading and drag straight up. You will then have selected the end of the preceding line, where the appropriate ruler resides. The selected ruler can be copied and pasted into the document, without littering the screen. The outline unfolds in front of you just as it will look on the printed page (see Figure 6).

### The Adventure of the Backspace Undo

The Macintosh documentation points out that when you delete text by backspacing over it, the deleted text is not copied into the Clipboard. What the documentation doesn't tell you is that the deleted text is not entirely lost. Suppose that you hold down the Backspace key to delete an entire phrase, but because you don't release the key in time, you erase more than you wanted to. In such a case, you need only hold down the ⌘ and Backspace keys simultaneously. The cursor travels forward,

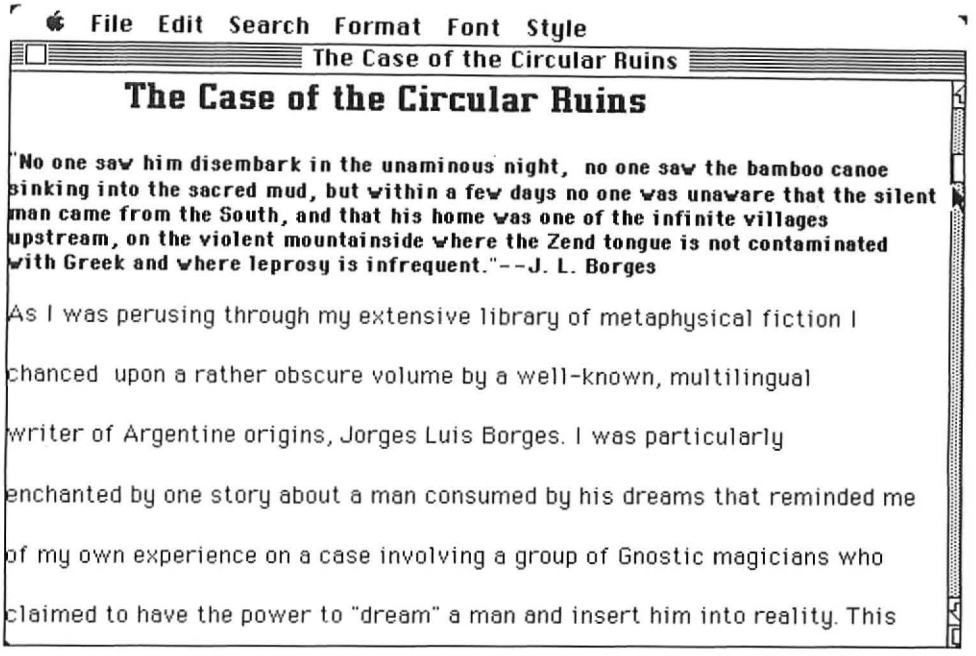



***Figure 3***

*You don't need to have the entire scroll bar visible to use it. By dragging the document window to the right so that only a portion of the scroll bar is visible, you can gain ¼ inch of document space.*

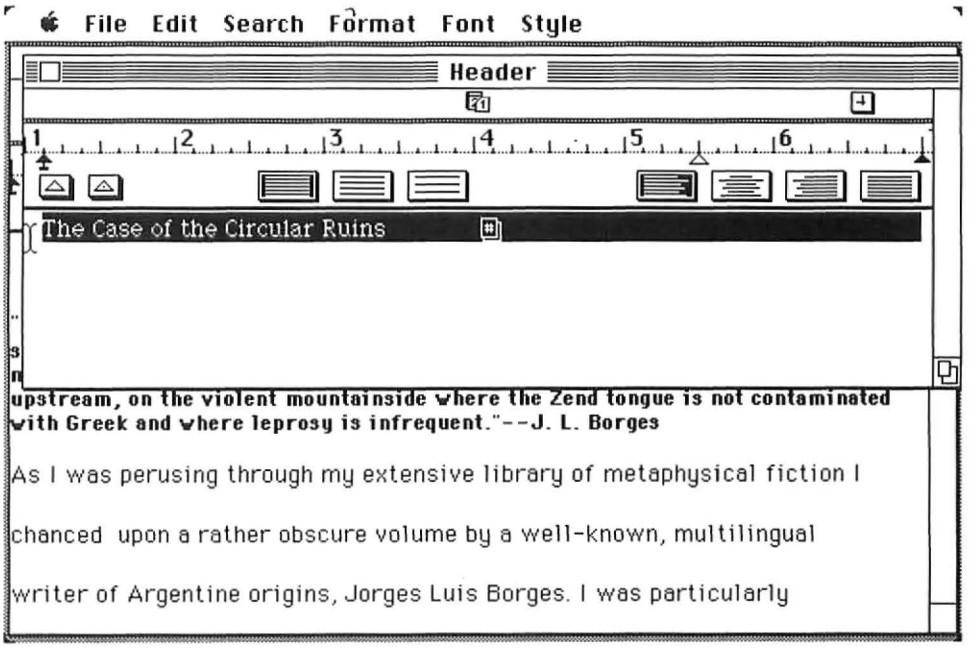



***Figure 4***

*To change the font and style selections in a header or footer window, you must place the cursor on the line below the one that contains the icons. Dragging the cursor up selects the line with the icons, allowing you to choose other fonts and styles.*

leaving behind it the characters you have just erased. Up to 50 characters can be replaced using this method. (If you inadvertently erase more than 50 characters, the first ones erased will indeed be lost.)

### The Tab Indent Secret

Suppose that you are writing a report in which you want to indent new paragraphs and place section headings flush left. How can you place the headings where you want them? Whenever you want to insert a heading, you must break off the line you're typing and start a new one. The only way of starting a new line seems to be by pressing Return. But every time you press Return, the cursor moves to the indent position on the next line. You can't backspace out to the margin, because a Backspace cancels the preceding Return and brings you back to the end of the previous line.

An obvious but sloppy answer is to insert rulers before and after the heading, removing and restoring the indent setting. A less obvious but equally tedious solution is to hold down the space bar until word-wrap brings you to the beginning of a new line.

Here is a better solution. Place a decimal tab to the left of your "indent" arrow on the ruler line, as close as possible to the left margin. Then use the Tab key, instead of Return, to move the cursor to the new line. When you start to type the heading, it emerges to the left of the cursor, and each new character pushes the previous ones to the left, until they hit the left margin. Thereafter, each character emerges to the right, as usual. The result is a flush-left heading.

Of course, if the heading contains a decimal point in its first few characters, this ploy won't work. Here is an alternative. Place an ordinary tab as close as possible to the right margin. Then, if you press Tab and add two spaces, the next character you type will begin a new line at the left margin.

*These tips are elementary, my dear Watsons, the merest sampling of what thoroughly dissecting a program can unmask. Polish your magnifying glasses, summon* MacWrite *to appear before you, and observe carefully.* □

*Amanda Pellio is a freelance writer who specializes in word processing applications.*

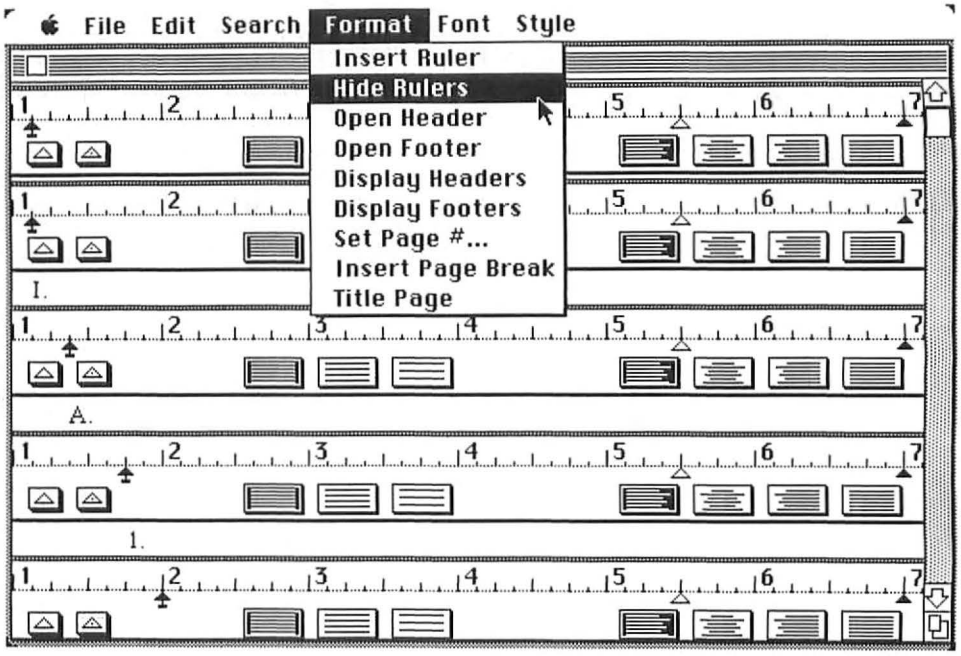



***Figure 5***

*After inserting the rulers, adjusting them to the specifications of your outline, and giving them labels, you choose the Hide Rulers command. Your rulers are invisible, but they reside at the end of the lines after which each ruler was inserted.*

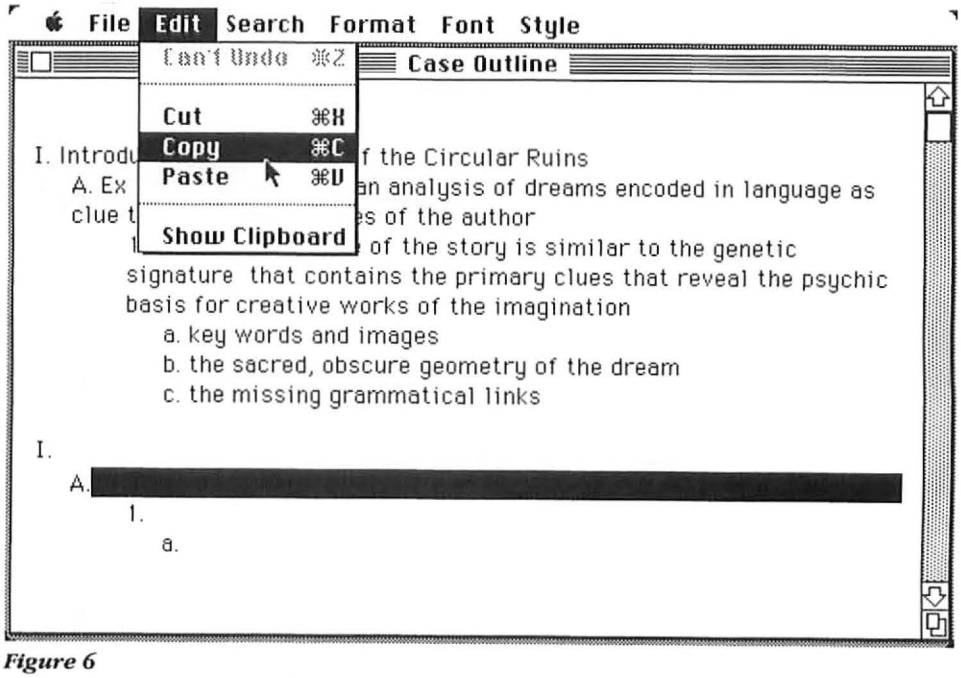
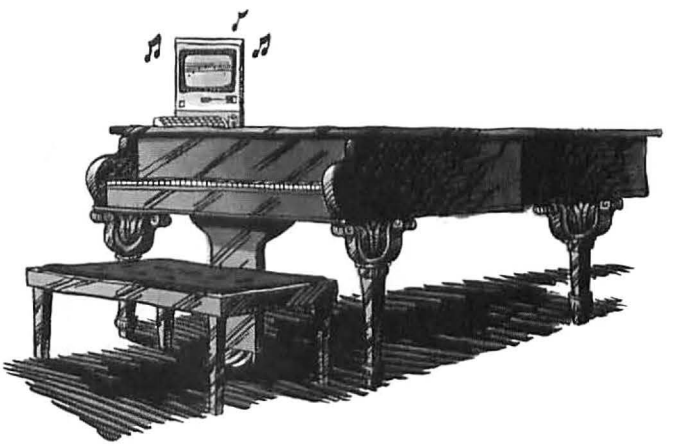



***Figure 6***

*To select a particular ruler, place the cursor to the left of the corresponding label (1. in this example) and drag the cursor straight up. This procedure selects the end of the preceding line, which contains the ruler. Then simply copy and paste the selected ruler into the document.*

# How to Mac Music



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NEWS & INFORMATION

Volume One Number Three

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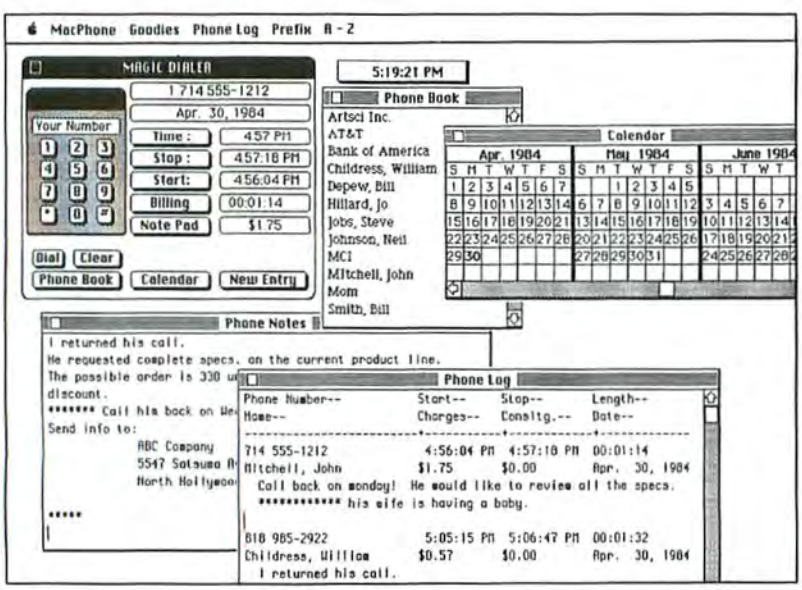


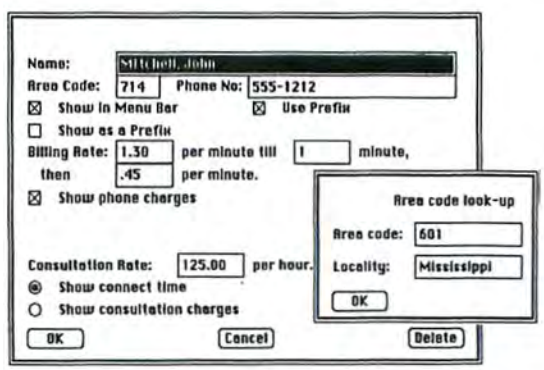


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# Open Window

## *An exchange of Macintosh discoveries*

***Edited by Andrew Fluegelman***

*Microsoft BASIC for the Macintosh gives you access to many of the internal functions of the Apple QuickDraw graphics routines that reside in the Macintosh ROM as part of the Mac's Toolbox. These functions control cursor handling, font selection, and drawing a variety of shapes and patterns.*

*In this issue's* Open Window, *Tandy Trower, Microsoft's marketing manager for language products, explains these Toolbox calls and how to use them in your BASIC programs.*

### Getting Started

The names of the QuickDraw routines are listed in Appendix E of the Microsoft BASIC manual. To use the functions simply list the name and any parameters after the CALL statement.

Many of the routines require that you pass parameters for the function as integers. You can declare integers in BASIC in one of two ways. An integer variable can be specified with a percent symbol added to the end of the variable name or with the DEFINT statement. If a program statement uses the variable RECTANGLE%, for example, it is treated as an integer variable. Alternatively, you can include the statements DEFINT R or DEFINT A-Z at the beginning of the program. Either of these statements causes the variable RECTANGLE to be treated as an integer.

Many of the QuickDraw routines use the VARPTR function, usually referencing an array in the form VARPTR(INTEGER%(0)). The elements of the array INTEGER%(0) through INTEGER%(*n*) should be dimensioned and assigned values prior to using the function. The number of necessary elements varies with the particular Toolbox call, as described below.

Many of the graphics functions also require screen coordinates. The Macintosh screen provides 512 locations along the *X*-axis (horizontal) and 342 locations along the *Y*-axis (vertical). The screen coordinates 0,0 refer to the upper-left corner of the screen. The coordinates 510,290 are located in the lower-right corner of the output window. The smallest displayable point on the screen is referred to as a *pixel*.

In the following descriptions, BASIC reserved words and the names of Toolbox calls are shown in capital letters. Variables are shown in italics. Any unreserved name may be used for the variables.

| Font No. | Font Name | Optimum Font Size | Characteristics |
|---|---|---|---|
| 0 | Chicago | 12 | System font used for menu and window titles |
| 1 | New York | 12 | Default font used by BASIC |
| 3 | Geneva | 9 | System font used for icon titles |
| 4 | Monaco | 9 | Monospaced (non-proportional) font |
| 10 | Seattle | 10 | Alternative font |

***Table 1***
*Text Fonts*

### Text Selection

The QuickDraw routines available from Microsoft BASIC allow you to select text characteristics. The default font attributes that BASIC uses are:

| | |
|---|---|
| Font | New York |
| Size | 12 |
| Face | 0 (normal) |
| Mode | 0 (copy) |

These attributes can be changed with the following calls:

- CALL TEXTFONT (*font*)

Sets the font for all text displayed on the screen. To use a specific font, you place the corresponding font number in parentheses in the TEXTFONT statement. The available fonts depend on the fonts installed in the System file. Table 1 lists the fonts found on the BASIC disk.

- CALL TEXTSIZE (*size*)

Sets the point size of the current font in use. Each font has a recommended size that yields the best results. If another size is specified the font is scaled.

- CALL TEXTFACE (*face*)

Sets the character style (bold, italic, underline, outline, shadow, condense, extend) of the current font. You select the attribute by setting the appropriate bit in the face parameter. Table 2 lists the bit for each attribute and the corresponding value.

Text characteristics can be combined. To select italic and underlined text, for example, set the 1 and 2 bits. You set the

bits by adding the values listed in Table 2. The resulting statement is CALL TEXTFACE (6). Note that if you want to display outlined or shadowed text, you have to specify a TEXTMODE other than the 0 copy mode (see the following call).

- CALL TEXTMODE (*mode*)

Sets the mode for displaying text on the screen. Mode 0 is the default mode; it causes the text to replace whatever is on the screen (copy mode). Mode 1 causes the text output to be superimposed (ORed) on the screen. Mode 2 causes the screen to be inverted wherever a pixel exists in the text output (XORed). When you specify 3, the BIC transfer mode is used. (See CALL PENMODE below for more information about transfer modes.)

The program in Listing 1 shows you how to use the text functions.

### Pen and Line-Drawing Routines

The PEN is the graphics point used for drawing lines, shapes, and patterns. It has four characteristics—location, size, pattern, and mode—which not only affect the QuickDraw routines, but also the standard BASIC LINE and CIRCLE statements.

- CALL GETPEN (VARPTR(*penloc*%(0)))

Returns the current location of the graphics pen. *Penloc*%(0) returns the horizontal coordinate and *penloc*%(1) returns the vertical coordinate.

- CALL MOVETO (*x*,*y*)

Moves the pen to the coordinates specified by *x* and *y*.

- CALL MOVE (*xdelta*, *ydelta*)

Moves the pen from the current location to the relative position specified by *xdelta* and *ydelta*. Positive values move the pen to the right and down, and negative values move it to the left and up. For example, if the pen is at the coordinates 20,20 you can move it to 10,25 by specifying CALL MOVE (-10,5).

- CALL LINETO (*x*,*y*)

Draws from the current pen location to the coordinates specified in parentheses. The line is drawn using the current pen size, pattern, and mode.

- CALL LINE (*xdelta*, *ydelta*)

Functions like LINETO except that the coordinates are relative to the current pen location. LINE also uses the current characteristics of the pen.

- CALL PENSIZE (*width*, *height*)

Defines the dimensions of the pen. All subsequent calls to LINE, LINETO, and framed shapes are drawn using the current pen size. Try the example in Listing 2.

- CALL PENPAT (VARPTR(*pattern*%(0)))

Sets the pattern used by the pen for drawing all graphic output, where *pattern*%(0) through *pattern*%(3) define an 8- by 8-bit pattern. Since BASIC uses 2-byte integers, the first element of the integer array defines the bit image of the first two lines of the pattern. The next element contains the next two lines, and so forth.

The pattern can be defined on graph paper and translated into a binary sequence with a black pixel represented by a 1 bit and a white pixel by a 0 bit. The example in Listing 3 defines a large gray "paintbrush".

| Style Bit | Value | Attribute |
|---|---|---|
| 0 | 1 | Bold |
| 1 | 2 | Italic |
| 2 | 4 | Underlined |
| 3 | 8 | Outlined |
| 4 | 16 | Shadowed |
| 5 | 32 | Condensed (less space between characters) |
| 6 | 64 | Extended (more space between characters) |

***Table 2***
*Text Attributes*

- CALL PENMODE (*mode*)

Sets the mode that determines how subsequent graphics calls affect any images existing on the screen. One of eight modes may be specified, as shown in Table 3.

- CALL PENNORMAL

Restores the characteristics of the pen to its default setting for size (1 pixel by 1 pixel), pattern (black), and mode (copy). The location of the pen is not changed.

- CALL HIDEPEN

Turns off the visible output of the pen. Lines or shapes can still be drawn but are not seen on the screen.

- CALL SHOWPEN

Turns on the visible output of the pen. The routine is used after a previous call to HIDEPEN.

- CALL BACKPAT (VARPTR(*pattern*%(0)))

Sets the background pattern used for the BASIC output window. (See the explanation of patterns in PENPAT above.) To draw the screen with the new pattern properly, you should use the CLS statement after the call is made.

```
10 ' Change the font attributes and print a message
20 CALL TEXTFONT (3)  ' Change the font to Geneva
30 CALL TEXTSIZE  (9)  ' Set the size to 9 (the standard size
                        for this font)
40 CALL TEXTFACE (16)' Set the typeface style to "shadow"
50 CALL TEXTMODE (2)  ' Set the text output mode to XOR
60 PRINT "CONGRATULATIONS!"
```

***Listing 1***
*Change the Text*

```
10 ' Draw with the pen
20 CLS                    ' Clear the output window
30 CALL MOVETO (10,10) ' Move the pen to 10,10
40 CALL LINETO (20,10)  ' Draw a line from 10,10 to 20,10
50 CALL PENSIZE (3,3)    ' Change the pen size to a 3 by 3 point
60 CALL LINE (0,10)       ' Draw the next line to 20,20 with the
                           new pen
```

***Listing 2***
*Draw with the Pen*

```
10 ' Define a large gray pen pattern
20 CLS
30 DIM PATTERN%(4)
40 PATTERN%(0)=&H55AA  ' In binary 0101010110101010
50 PATTERN%(1)=&H55AA  ' In binary 0101010110101010
60 PATTERN%(2)=&H55AA  ' In binary 0101010110101010
70 PATTERN%(3)=&H55AA  ' In binary 0101010110101010
80 CALL MOVETO (20,20)   ' Move the pen to 20,20
90 CALL PENSIZE (3,3)     ' Enlarge the pen
100 CALL PENPAT(VARPTR(PATTERN%(0))) ' Set the pen to the
                                       pattern
110 CALL LINETO (100,20)' Draw a line to 100,20 using the
                          pattern
```

***Listing 3***
*Define a Pattern*

**Drawing Rectangles, Ovals, and Arcs**

The following routines involve specifying the top, left, bottom, and right bounds of a rectangular area. There are five possible operations that can be used to draw these shapes:

- FRAME. Draws the outline of a geometric shape. The outline is affected by the current height, width, and pattern of the pen.
- PAINT. Paints the shape with the current pen pattern.
- ERASE. Paints the shape with the current background pattern.
- INVERT. Inverts the pixels enclosed by the shape (black pixels are changed to white and white to black).
- FILL. Fills the shape with the supplied pattern.

The pen location is not changed after a call to any of these operations.

The following routines draw rectangles. For example, the short program in Listing 4 draws a simple rectangle.

CALL FRAMERECT
(VARPTR(*rectangle*%(0)))
CALL PAINTRECT
(VARPTR(*rectangle*%(0)))
CALL ERASERECT
(VARPTR(*rectangle*%(0)))
CALL INVERTRECT
(VARPTR(*rectangle*%(0)))
CALL FILLRECT
(VARPTR(*rectangle*%(0)),
VARPTR(*pattern*%(0)))

The next set of calls draws rectangles with rounded corners. This type of rectangle is often used for selection boxes in Macintosh applications. The *ovalwidth* and *ovalheight* variables define the diameters of the curve of the round corner of the rectangle. The program in Listing 5 draws a rounded rectangle.

CALL FRAMEROUNDRECT (VARPTR(*rectangle*%(0)), *ovalwidth,ovalheight*)
CALL PAINTROUNDRECT (VARPTR(*rectangle*%(0)), *ovalwidth,ovalheight*)
CALL ERASEROUNDRECT (VARPTR(*rectangle*%(0)), *ovalwidth,ovalheight*)
CALL INVERTROUNDRECT (VARPTR(*rectangle*%(0)), *ovalwidth, ovalheight*)
CALL FILLROUNDRECT (VARPTR(*rectangle*%(0)), *ovalwidth,ovalheight*, VARPTR(*pattern*%(0)))

The following calls draw ovals that fit within the rectangular area specified. To draw a circle, simply make the distance between the top edge and the bottom the same as that between the left and right edges (see Listing 6).

CALL FRAMEOVAL (VARPTR(*rectangle*%(0)))
CALL PAINTOVAL (VARPTR(*rectangle*%(0)))
CALL ERASEOVAL (VARPTR(*rectangle*%(0)))
CALL INVERTOVAL (VARPTR(*rectangle*%(0)))
CALL FILLOVAL (VARPTR(*rectangle*%(0)), VARPTR(*pattern*%(0)))

The following procedures enable you to draw arcs and wedge-sections of ovals. The arc is described using the oval that fits inside the rectangular area you specify. *Startangle* is where the arc begins and *arcangle* indicates the extent of the arc. Angles may be in positive or negative degrees. Positive angles are drawn clockwise (to the right), and negative angles are counterclockwise. Zero degrees is at the 12 o'clock position.

Angles are measured relative to the rectangle border. An arc from 0 to 45 degrees, for example, is drawn from the top to an imaginary line drawn from the

```
10 ' Draw a rectangle
20 DIM EDGE%(4)
30 EDGE%(0)=20 ' Top edge of the rectangle
40 EDGE%(1)=15 ' Left edge of the rectangle
50 EDGE%(2)=50 ' Bottom edge of the rectangle
60 EDGE%(3)=40 ' Right edge of the rectangle
70 CALL FRAMERECT (VARPTR(EDGE%(0)) ' Now draw the framed
                                        rectangle
```

***Listing 4***
*Draw a Rectangle*

```
10 ' Draw a rounded rectangle
20 DIM SIDE%(4)
30 SIDE%(0)=30 ' Top border
40 SIDE%(1)=30 ' Left border
50 SIDE%(2)=60 ' Bottom border
60 SIDE%(3)=60 ' Right border
70 OW=10 ' Oval width
80 OH=15 ' Oval height
90 ' Now draw the rounded rectangle and "paint" with the pen
   pattern
100 CALL PAINTROUNDRECT(VARPTR(SIDE%(0)),OW,OH)
```

***Listing 5***
*Draw a Rounded Rectangle*

```
10 ' Draw an oval filled with gray pattern
20 DEFINT E-G ' Define variables beginning with E through G as
                integer
30 DIM EDGE(4), GREYPAT(4)
40 EDGE(0)=20 ' Top of oval
50 EDGE(1)=20 ' Left edge of oval
60 EDGE(2)=60 ' Bottom of oval
70 EDGE(3)=60 ' Right edge of oval
80 ' Now define the pattern
90 GREYPAT(0)=&H55AA ' In binary 0101010110101010
100 GREYPAT(1)=&H55AA ' In binary 0101010110101010
110 GREYPAT(2)=&H55AA ' In binary 0101010110101010
120 GREYPAT(3)=&H55AA ' In binary 0101010110101010
130 ' Now draw the circle with the pattern
140 CALL FILLOVAL(VARPTR(EDGE(0)),VARPTR(GREYPAT(0)))
```

***Listing 6***
*Draw an Oval*

| Mode No. | Operation | Description |
|---|---|---|
| 8 | Copy | Causes the pen pattern to replace the contents of the screen (default mode). |
| 9 | OR | Causes the pen pattern to be ORed with the contents of the screen (overlay mode). |
| 10 | XOR | Causes the pen pattern to be XORed with the contents of the screen (invert). |
| 11 | BIC | Causes black pixels of the pen pattern to be changed to white. White pixels of the pen pattern will not affect the screen contents (Black Is Changed mode). |
| 12 | Not copy | Same as mode 8, except that the pen pattern is inverted before the operation. |
| 13 | Not OR | Same as mode 9, except that the pen pattern is inverted before the operation. |
| 14 | Not XOR | Same as mode 10, except that the pen pattern is inverted before the operation. |
| 15 | Not BIC | Same as mode 11, except that the pen pattern is inverted before the operation. |

***Table 3***
*Screen Transfer Modes*

center to the top right corner of the rectangle (even if the rectangle is not square). Only the FRAMEARC call actually draws an arc. All other operations draw the wedge-shaped portion of the oval described by the arc.

CALL FRAMEARC (VARPTR(*rectangle*%(0)), *startangle,arcangle*)
CALL PAINTARC (VARPTR(*rectangle*%(0)), *startangle,arcangle*)
CALL ERASEARC (VARPTR(*rectangle*%(0)), *startangle,arcangle*)
CALL INVERTARC (VARPTR(*rectangle*%(0)), *startangle,arcangle)*
CALL FILLARC (VARPTR(*rectangle*%(0)), *startangle,arcangle*, VARPTR(*pattern*%(0)))

```
10 ' Define a new cursor
20 DIM HAND%(34)
30 HAND%(0)=&H0          ' In binary 0000000000000000
40 HAND%(1)=&H0          ' In binary 0000000000000000
50 HAND%(2)=&H700        ' In binary 0000011100000000
60 HAND%(3)=&H1900       ' In binary 0001100100000000
70 HAND%(4)=&H 2200      ' In binary 0010001000000000
80 HAND%(5)=&H4700       ' In binary 0100011100000000
90 HAND%(6)=&HC7FE       ' In binary 1100011111111110
100 HAND%(7)=&H8C01      ' In binary 1000110000000001
110 HAND%(8)=&H97FE      ' In binary 1001011111111110
120 HAND%(9)=&HE410      ' In binary 1110010000010000
130 HAND%(10)=&H87E0     ' In binary 1000011111100000
140 HAND%(11)=&H8420     ' In binary 1000010000100000
150 HAND%(12)=&HC7C0     ' In binary 1100011111000000
160 HAND%(13)=&H7F80     ' In binary 0111111110000000
170 HAND%(14)=&H0        ' In binary 0000000000000000
180 HAND%(15)=&H0        ' In binary 0000000000000000
200 ' Now set up the cursor mask
205 ' Use the same data for the mask as for the cursor
210 FOR I=16 TO 31:HAND%(I)=HAND%(I-16):NEXT I
220 ' Set up the cursor hot spot
230 HAND%(32)=7          ' Vertical location of the hot spot
240 HAND%(33)=16         ' Horizontal location of the hot spot
250 ' Now call the new cursor, mask, and hot spot
260 CALL SETCURSOR(VARPTR(HAND%(0)))
```

***Listing 7***
*Define a New Mouse Cursor*

### Mouse Cursor Handling Routines

This set of calls governs the appearance of the mouse pointer on the screen. The QuickDraw calls refer to this pointer as the cursor.

| Cursor Data | Cursor Mask | Resulting Pixel on the Screen |
|---|---|---|
| 0 | 1 | White |
| 1 | 1 | Black |
| 0 | 0 | Same as the pixel under the cursor |
| 1 | 0 | Inverse of the pixel under the cursor |

***Table 4***
*Cursor and Mask Results*

- CALL INITCURSOR
Resets the mouse cursor to the standard arrow shape and makes the cursor visible if it is not.
- CALL HIDECURSOR
Turns off the mouse cursor so that it is invisible.
- CALL SHOWCURSOR
Makes the mouse cursor visible. This routine is the opposite of HIDECURSOR.
- CALL OBSCURECURSOR
OBSCURECURSOR is exactly like HIDECURSOR except that the mouse cursor is "hidden" only until the mouse is moved.
- CALL SETCURSOR (VARPTR(*cursor*%(0)))
Sets the mouse cursor to a 16-by 16-bit image defined in the integer array named in the CALL statement. The parameters are broken down into three major areas. The first 16 elements of the integer array

describe the bit pattern (shape) of the cursor. The next 16 integers define the cursor "mask." The appearance of the cursor pattern depends on the cursor data bit and the mask bit (and the pixel under the cursor if the mask bit is 0), as shown in Table 4.

The last two elements in the cursor array define the horizontal (x) and vertical (y) location of the "hot spot," which is the active area of the cursor image that determines where the cursor is pointing to. The hot spot is not a pixel location, but the intersection of the corners between the pixels. The top-left corner of the top-left pixel is coordinate 0,0; the top-right corner of the top-right pixel is 16,0; the bottom-right corner of the bottom-right pixel is 16,16.

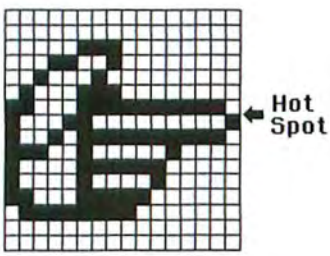


***Figure 1***
*New Mouse Cursor*

The program in Listing 7 illustrates a redefined cursor, which is shown in Figure 1. SETCURSOR does not affect the cursor status. If the cursor is currently hidden, it is set to the shape defined but remains hidden. If the cursor is visible, the change will be seen immediately. □


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# Drexel's Brave New World

***Eva Thury***
***Photos by Bill Ravanesi***

*Launching a bold experiment in the way students learn and think, Drexel University of Philadelphia has wholeheartedly joined the Apple University Consortium Program. Students no longer have to lug around stacks of notebooks or laboriously draw charts and diagrams by hand. The Mac's disks fit into shirt pockets, and transcribing a classmate's lecture notes is as easy as copying a file.*

Early in the morning of February 24, 1984, a truck carrying Drexel University's shipment of Macintoshes arrived on campus. Some students anxiously watched the truck's progress from their dormitory rooms. Then they put on their clothes and rushed over to the Treck building, a warehouse that Drexel had refurbished to serve as the distribution site. For the next two weeks,

> *Drexel is the first university to require all incoming freshmen to buy a computer.*

students stood outside, peeking through the wire-covered windows, trying to catch glimpses of the unpacking, testing, and repacking of over 2000 Macs.

In the winter of 1983, President William Hagerty had astonished the faculty at a meeting by announcing his decision to make Drexel the first university in the nation to require all incoming freshmen to buy a computer. Even more astonishing was his timetable: the plan would go into effect the next year.

**Making It Happen**

Operating at breakneck speed, members of the Drexel community completed the steps necessary to implement Dr. Hagerty's dream: reviewing machines, negotiating with vendors, creating a new personal computer division of the Computer Center, rewiring

the campus, developing a security plan, and designing a new curriculum. The hardware selection committee chose the as-yet-unreleased Apple Macintosh.

The original plan had been to deliver the computers to freshmen when school started in September, but because Apple was not ready to release the Mac until January 1984, Drexel waited. Some freshmen were impatient: one sign in a dormitory window asked, "Macintosh—machine or myth?" A few ironists began to say that the Mac would be their graduation present.

**Arrival At Last**

At 8 a.m. sharp on March 6, distribution of the Macs began. Snowflakes fell from a gray sky. A long white trailer at the curb in front of the Treck building sheltered students who arrived early and later those who had collected their Macs and were waiting for a shuttle bus. Students entering the building were greeted by a bright yellow poster in the bare entrance corridor. "Has the Macintosh marvel left you stranded?" it read, inviting students to join the Drexel University student user group, DUsers.

The poster showed a person on a desert island, staring at a neighboring island that had a Mac on it, alone and unreachable. The sun, a green apple, peeped over the horizon. For Drexel's 1900 freshmen, the sun was rising at last. On the first day the DUsers handed out applications for membership, 200 students joined; 600 of the freshmen were recruited by the end of the week.

**Users Unite**

Steve Weintraut, president of the DUsers, was sitting in Cavanaugh's, a student hangout, discussing the effect of the Mac's presence. "This computer is going to be completely different," he said. "I've been slaving away in computer rooms by myself since I was in the ninth grade. With the Mac you don't have to do that; you can use computers and interact with people too."

With Steve were Bill Miller, Denise Walls, and Amy Lettofsky, who had helped start the user group. Denise, a mechanical engineering student, classified the group's membership into three categories: hackers who know all about computers; people who know a bit and have a lot of ideas (she put herself in this group); and students who just want to use the computer enough to get through college.

**Conversion Made Easy**

George Koszowski would fit in the last category. He planned to use the Mac if it helped him get his work done, but would forget about it otherwise. George, a civil engineering major, received his computer on the first day. He took it home and started up the Guided Tour disk. He ran it without sound, then switched disks and looked into *MacPaint*. After drawing a few shapes in different patterns, George ejected the disk and turned off the machine. He covered it with a piece of plastic and set it in a corner, where it stayed for several days.

The next week George got out his Mac, wrote a term paper, and turned it in. The instructor marked his first draft with comments for improving it. In the past this would have meant completely retyping the essay, which George saw as a waste of time. But now he opened the file on the disk where his draft was stored and began to edit. He spent only an hour preparing the final version of his paper, which incorporated the teacher's suggestions. Score another convert for the Mac.

At Cavanaugh's, Steve Weintraut and Denise Walls talked about students like George. "The negative attitudes people had were due mostly to waiting," said Denise. "Now that they have their Macs, students will be drawn to the computer's simplicity. You can pop a disk into the Mac and start working without reading a single manual."

*●●●●● The Mac will be used to design individual class schedules.*

Steve elaborated, "I gave my Mac to my mother last night. My parents are not computer oriented; they'll take a manual typewriter any day. A word processor's difficult for them because you have to learn commands. But my mom had a great time with the Mac."

**Big Plans**

The DUsers envision a series of programs to get students excited about the Mac's capabilities. One way will be to create a game about life at Drexel, Amy Letoffsky explained. "In high school, that's all computers were to me—games. In ninth grade, I got a book of games that had the programs written out so all you had to do was type them into the computer. As I typed, I puzzled out the logic; that's how I learned to program."

Denise Walls described herself as an organizer: "I want to see the Mac used to design individual class schedules. The DUsers will write a program that allows you to type in your priorities—no classes before noon, or a particular teacher—and your requirements. The program will then show you the schedule variations you can choose from. If we have to, we'll type in the university's master schedule by hand to provide the course data."

The DUsers are, in fact, working with the university administration to get a machine-readable form of the master schedule. The Drexel administrators are delighted with the student organization and have even asked for advice about revising the introductory computer course required of all engineering students.

*President William Hagerty, who decided that Drexel would join the Consortium, addresses students on the day the Macs arrived on campus.*

*The university's shipment of more than 2000 Macs waits in a warehouse for distribution to begin.*

*A group of curious students gathers around a Mac at the first demonstration seminar before distribution.*

*Technically oriented students and faculty carefully uncrate and test a sampling of Macs before they are released.*

*Anne Griffin was officially the first student to receive her Mac. She won the honor in a random drawing.*

*Although snow was on the ground on distribution day, it didn't chill the spirits of this student and her father as they picked up her Mac.*

*Dorm rooms don't have much extra space, but Scott Minor and Roger Reso found room to set up their Macs as soon as they got them.*

*These students got a kick out of seeing their initial* MacPaint *drawings on paper at the printer station in Drexel's main library.*

*Some newcomers to the Mac receive instruction at the walk-in consulting center in the Korman student center.*

*A staff training session goes on at one of the Mac clusters located in several areas on campus.*

"The DUsers went to Brian Hawkins [director of the personal computer program] about six months ago. We wanted to know about the new computer," Steve recalled. "He encouraged us to get involved. On January 24 [the day Drexel officially announced its selection of the Mac], the faculty was looking at the Mac and handing out copies of the *Drexel Micro News* that described it. We were hanging around outside the room, hoping for a peek at the *Micro News,* but the faculty wouldn't let us in. Hawkins sneaked out a stack of them to us under his coat."

**Hands On Faculty**

Much of the faculty has been amused by and supportive of student efforts. Many faculty members are trailing their students only a little in learning to use the Mac. Sheree Meyer, who teaches in the department of Humanities and Communications, was grading term papers not long after distribution. She turned to her office mate and said, "They seem to be doing papers on their new machines. Doesn't the Mac have superscripts? Here's a student who puts footnotes on the same line as text."

Her office mate explained that the program for producing superscripts was not ready. Sheree looked back over the paper: "On the other hand, he has sheep in his bibliography." The student had discovered a key combination that produces unusual graphics characters including sheep, robots, birds, and cars (see "Open Window," *Macworld,* May/June).

A week later, Sheree's office mate, who had participated in the advance training for faculty, showed her how to type her syllabus on the Mac. The syllabus didn't have sheep, but it did have Old English entries for Spenser's *Faerie Queene.* The Mac's special effects are hard to resist.

**The Have-Nots**

In Drexel's software review center, there are two areas where students and faculty who don't have Macs of their own can use them. Most of the students who come into the center are upperclassmen taking courses in which computers are used, but a core of students has developed who are fascinated with the Mac.

Steve Pugliese is an upperclassman who spends time in the student area. He majors in computer systems management and intends to get a Mac before he graduates. Many advanced undergraduates share this dream, but Drexel's administration does not encourage their hopes: Apple has restricted the university's ability to sell machines because it does not want Drexel to hurt local computer dealer sales.

"The Mac makes you want to start college again," Steve announced on the first night of distribution week. He enviously watched Stephan Augustin use a borrowed Mac. Stephan was working on a drawing of a Porsche, painstakingly drawing tire treads in black and then reversing them in FatBits.

**The Mac Metaphor**

Training was available to Drexel students during distribution week: a hot line, a walk-in clinic, and a variety of lectures and demonstrations were organized. But none of the official training could rival the vitality and enthusiasm of students showing other students the wonders of the Mac. Inside almost every dorm room sat a pair of Macs.

Matt Nocifore picked up a large piece of styrofoam packing from the Mac's carton. He held it poised like a waiter's tray and spoke to Dave Greenwald, his roommate. "Imagine that this is the Clipboard. Put your paper on it." Dave looked a little hesitant, but he put the history paper he was writing on the styrofoam tray. "Assume this room is one document and your paper is a sentence in it," continued Matt, starting toward the door. "I can go outside with the Clipboard, taking the paper with me to another

●●●●● *"The Mac makes you want to start college again."*

room. Or I can close this room up and the paper will stay in it on the Clipboard," he concluded, returning the paper to Dave. Another Drexel freshman was now equipped for his computer education.

No one can predict all the changes this innovation will bring to Drexel's curriculum and the campus lifestyle. The future certainly will include a new Mac programming class, term papers done in *MacWrite,* art projects aided by *MacPaint,* scheduling programs of various sorts, and simplified exchange of data within and between disciplines. Faculty members are designing course material and software. But the brightest development at Drexel is a new sense of community, in which administrators conspire with students, and all sectors of the university share intensified communication, Macintosh-style. □

●●●●●●●●●● *Eva Thury is an Assistant Professor of Humanities and Communications at Drexel University. She teaches both English and computer programming.*

●●●●●●●●●● *Bill Ravanesi is a Drexel Fellow in Humanities and Communications. He has received several grants for excellence as a documentary photographer. All photographs in this article are © 1984 by Bill Ravanesi.*

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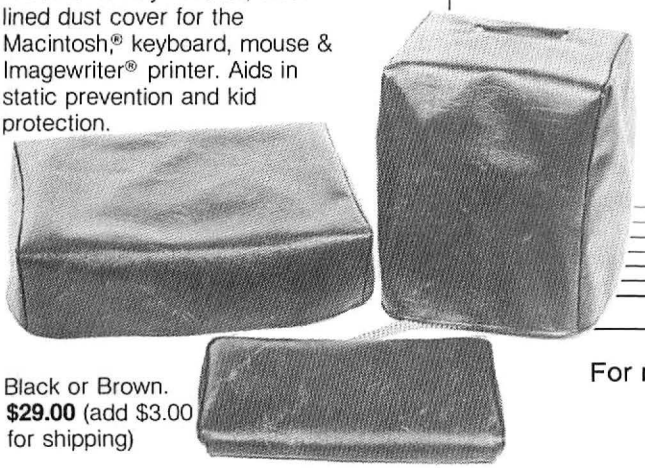

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*Although it is only a few months old, the Macintosh has already been to the Far East. The journalist who took his Mac on its maiden venture reports on it as a traveling companion. You'll find that you need more than plane tickets and a passport when you take the Mac overseas.*



*An airplane can take you and your Mac thousands of miles to Japan or China in a matter of hours. But once you get there, it may not be so easy for the two of you to get along.*

# Travels in the Orient with the Mac

*Robert Buderi*

The Macintosh, now a voyager to mainland China and other exotic lands, travels like a temperamental child. The computer is fine when settled comfortably on a desk, but in motion it can be difficult and occasionally a pain in the neck. Traveling with a Mac outside the United States can cause undue hardship, such as aching shoulders and torn garment bags, and you may feel like leaving the machine on a scavenger's doorstep in Sham Shui Po (the legendary Hong Kong district where counterfeit Apple IIs are made).

Now that my trip is over and I've carted my Mac through the hot, crowded streets of Hong Kong, the more reserved but equally crowded streets of Guangzhou (Canton), China, and the hustle and bustle of Tokyo, Japan, my answer to whether it's worth the effort is "maybe." In many ways, you see, the Mac is like a houseplant: it should reside only in environments where it can prosper easily.

You should choose your environments carefully, because forewarned is not necessarily forearmed when it comes to the Mac. While you may rightly assume that preparation is the key to traveling with the Mac, be careful who you listen to. Even some people at Apple Computer are unsure how to travel with the American-issue Mac. If you listen to the wrong people, you may find yourself as I almost did, up the Pearl River without a sampan.

Even though you can pack up the Mac fairly quickly (during my trip I got so I could unpack and assemble my computer in less than a minute), you can't just pack and head out of the country. At least not if you're traveling to a country where the voltage standard is much different from our 110. Even if you follow the advice presented here, you can easily spend hours searching for the accessories you need for your trip. But that's getting ahead of the story. Let's take it from the beginning, from ignorance, where I started.

### Immediate Worries

As a writer, I knew that the Mac would be important on my trip, but I had several worries about taking it. First and foremost was the valuable computer itself: was it protected against theft and damage? Secondly, would the machine work overseas? I knew nothing about voltage standards where I was going. Finally, as a journalist who likes to travel light, I wanted to streamline things as much as possible. During the trip—seven days in Hong Kong, two in China, and three in Japan—I would be pretty much out of my element. If I needed help, I wouldn't know where to turn, even if it were available.

The concern about protecting my machine was easily resolved. A call to my insurance agent confirmed that anything covered by my renter's insurance (or homeowner's, if that had been the case) was covered on the road, just as if I were traveling with jewelry, for instance. Of course, there was still the potential fiasco of having the computer stolen. I learned that several Macs shipped by Apple for demonstrations had already been stolen. I don't trust baggage handlers anyway, so I resolved to carry the Mac on board the plane even if it meant having to check my garment bag or my gym carryall—something I had avoided for years.

### Transformer

Once my plane set down on foreign soil, would the Mac work? I was able to determine that the standard voltage in Hong Kong and mainland China is 220 to 240 volts. According to its specifications, the Mac runs on 105 to 125 volts of alternating current. I turned first to my computer dealer, who said I didn't need any special equipment, except adapters to fit the foreign wall sockets. I purchased a travel kit that had several different adapters from a hardware store. Apple, the dealer said, had designed the Mac so it could travel to any country without problems. Later, I reasoned that he was talking about the fact that the Mac can run at either the U.S. standard 60 hertz or the 50 hertz standard used in many other countries. For some reason, however, Apple did not design the Mac with a 220-volt switch, so you need a transformer to convert the approximately 220 volts often found abroad to the U.S. 110 standard.

*Apple did not design the Mac with a 220-volt switch.*

The support people I talked to at Apple said the transformer I needed was the "standard step-up" variety. I later found two mistakes in that advice. First, any transformer has to "step down" the electrical current to change it from 220 volts to 110.

And second, as several electricians informed me, the transformer would have to be anything but standard to handle the Mac's 60 watts of power without blowing up. Finally, I asked an Apple hardware engineer. He gave me the exact transformer requirements; what is needed is a two to one (meaning from 240 to 120 or 230 to 115 and so on), step-down transformer, with a power rating of 150 to 250VA (volt amperes). Use either an autotransformer or an isolation transformer.

After nearly half an hour of calling stores in the San Francisco area, I found one that carried such a transformer. It cost $36 and weighed just over four pounds. But the transformer was out of stock and I couldn't get one before I left. Eventually, I located another one in San Jose, but this model, more powerful than the first, cost $56 and weighed more than seven pounds. The extra weight plagued me throughout my trip. Although I kept the transformer in its 7- by 4- by 5-inch box, to spread its weight more efficiently and keep its jagged edges from tearing holes in my belongings, the load eventually made my shoulders ache and tore the seams of my garment bag. In fact, if I hadn't paid so much for it, I would have thrown away the vicious little device when I no longer needed it.

**Disks to Go**

Solving the voltage worries made traveling light impossible, at least in the physical sense. But I forged ahead. All that was left was to format some workdisks for the road. Since my job entails mostly writing (rather than graphics or financial analysis), I created several disks containing *MacWrite* only, and I eliminated all but a few fonts to save disk space (see "The Compleat Disk Juggler," *Macworld,* May/June, for tips on optimizing disk space).

I was scheduled for a series of briefings in Hong Kong—at the stock exchange, the gold and silver exchange, and several government departments—that might relate to a story on investing overseas. Partly for fun, partly for future records, and partly because my spending had been getting out of hand, I took along my copy of *Multiplan,* formatted so I could keep a running tally of expenses. I listed the days of my trip across the top and labeled the columns for the various types of expenses I expected: hotel, meals, entertainment, personal items, professional goods (like film, camera, and tape recorder, all of which I bought in Hong Kong), transportation, and miscellaneous. I left a few lines blank before the Total row in case I thought of anything else.

*I took along my copy of* Multiplan *to keep a running tally of expenses.*

I formatted the cells so that *Multiplan* would add up my day's expenses as I plugged them in and add up the days' totals so I could track overall expenses. That simple expense sheet took little time to format, and it will come in handy at tax time. Every night after I entered the day's figures, I saved the changes and put a duplicate of the updated version onto a backup disk. Once I failed to make a copy, and when I lost a document it was aggravating to recalculate my expenses up to that point.

**Where to Put It**

Getting settled on the plane, I debunked a Mac myth. Apple and several other knowledgeable insiders swear that the Mac packed in its case fits under the seat in front of you or in the overhead bin. They were technically correct. The Mac does fit under the seat—a first-class seat. In tourist class, it doesn't even come close. The overhead bin was also much too small. In fact, because the Mac is bigger than the allowable carry-on bags, Japan Air Lines wouldn't let me on the plane with the computer until I went back to the ticket counter and got special permission. Once I explained that the case held a computer, however, the permission was granted.

From then on, the Mac passed easily through customs, although I made sure I had the sales receipt from my dealer before I left the United States, so the customs agents wouldn't try to charge duty on it when I returned. I sent the computer through the X-ray machines without hesitation, except in Hong Kong and Japan, where a sign warned that the machines were not safe for film. In those instances I merely removed the disks from their pouch and had them hand-searched.

Indeed, I had no problems carrying the Mac through customs anywhere (only in China was it subjected to more than a cursory check). As soon as I arrived at my hotel in Hong Kong, I started setting it up. There I ran into another snag. Although the transformer accepted the Mac's three-wire grounded plug, the wall socket wouldn't take the transformer's oddly shaped plug (also with three wires and grounded). Nor would any of the adapters from the travel kit I had bought before I left home. Luckily, the hotel had an adapter (in fact, all the hotels I stayed at carried them). It wouldn't take the ground—the third plug—but I was told that didn't matter much, because

the ground merely serves as protection to you if water comes in contact with the Mac. The adapter worked fine, but later I found out that the ground can be important and that I should not have taken the chance of plugging in the Mac without it.

It would have been safer to have tied a wire from the ground prong to the wall plug screw that holds the ground plate. Another option would have been to snip off the transformer's plug and insert the color-coded wires into an adapter from the country in question.

### China and Japan

After the modern high-rise skyline of Hong Kong, the older buildings of Canton, which is built along the famous Pearl River, seemed inhospitable to a computer. This time one of my adapters fit the wall socket in my hotel, and I was up and running. I got out a backup copy of *MacWrite* that still held *MacPaint* and used the graphics program to draw some Chinese characters on the screen. The next day I took the Mac back to Hong Kong by train. This time it fit in the overhead section, and it rested contentedly as we passed by rice paddies, groves of mangoes, and fields of other crops that the Chinese till with water buffalo and an occasional tractor.

As I headed for Japan the following day, I again had to get special permission to carry the Mac onto the plane. And I carried it on the cramped bus to downtown Tokyo and my hotel. It was late when I arrived at the hotel, and I decided not to unpack the Mac. Besides, I was a bit leery of running it on only 100 volts, which I was told was the Japanese standard where I was staying (Japan uses 100, 110, or 220 volts, depending on the area you are in). Although logic and an electrician had told me that nothing serious would happen, I was still afraid. After all, I had paid a lot of money for the machine.

I had lunch the next day with *Time* magazine bureau chief Ed Reingold at the Foreign Correspondents' Club, which overlooks the Imperial Palace and General MacArthur's former headquarters. Reingold scolded me for not bringing along the Mac and scoffed at my reluctance to run it in Japan. "You're lucky if you get a regular 110 volts in the U.S.," he charged. Besides, he had his own Apple II, and it ran fine on the Japanese current. When I got back to the hotel that night, I started it up, and sure enough it worked like a charm. I immediately calculated my expenses with *Multiplan* and found out that I had spent much more on the trip than I had anticipated. I ejected the program as punishment for that reminder.

### Triumphant Return

Coming home to the United States posed no problem whatsoever. By this time I had learned to ask for special permission to carry the Mac aboard an airplane. In San Francisco, the U.S. Customs agents barely glanced at my purchase receipt.

The plane ride home allowed me time to reflect on the value of traveling with the Macintosh. Would I do it again? I wouldn't take it outside the country, unless I were planning to set up shop in one location for a while. All told, I had carted the Mac to three hotels in three countries and on five airplanes and a train. But I had also lugged around other things that I don't normally travel with: a dozen tailor-made shirts and two suits from Hong Kong, a cassette recorder, and a computer chess game. If I hadn't gone shopping, perhaps the Mac wouldn't have been so burdensome. Then I thought again—the inescapable transformer was the big problem. No, journeying out of the country with the Mac was to be avoided if possible.

However, most of my business trips are short flights to Portland or Seattle to write one story at a time. What about taking the Mac on one of these trips? The computer clearly would be useful. For one thing, I would probably carry only one bag. I wouldn't need the transformer, so I could just plug the Mac into an outlet at the hotel and write my articles after the interviews were conducted.

Communications gear such as a modem and *MacTerminal* software make traveling with the Mac even more attractive (see "Communications Primer" in this issue). When I'm working under a deadline, I can write an article and send it over the phone lines to my editor. I don't have to wait until I return to my office to turn in the work. Of course, for constant travel in the U.S. or abroad, some people might prefer a lap-size portable computer such as the GRiD or the TRS-80 Model 100. Their small screens and childlike characters are distracting, but you can write on the road or on the plane and stick the computer in a briefcase. For most travel, though, the Mac can do the job. □

● ● ● ● ● ● ● ● ● ● *Robert Buderi is a reporter for the Time-Life News Service in San Francisco and has published articles in* Time, Money, *and* California *magazines.*

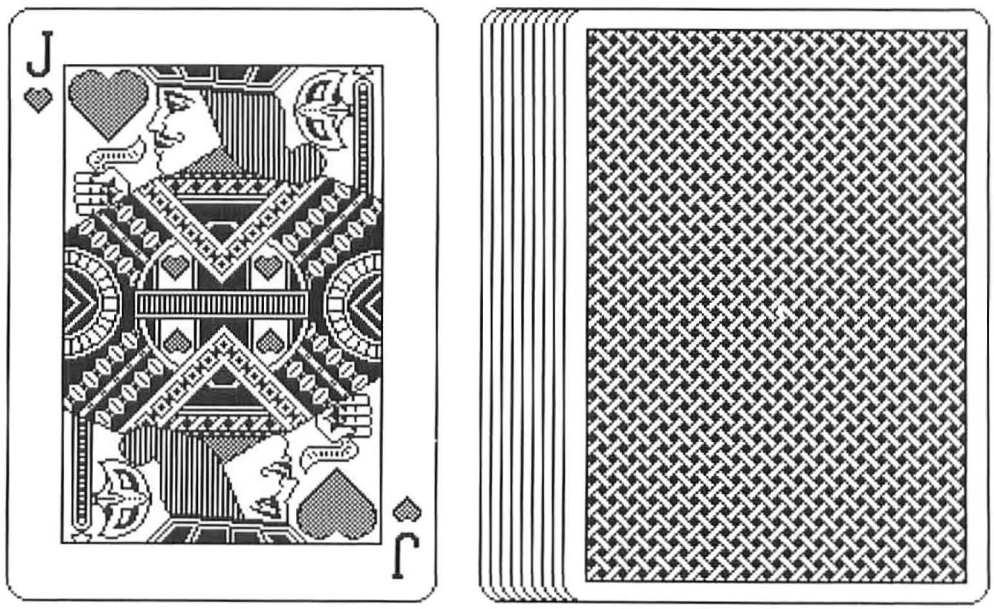
# Macworld Gallery

## *An exhibition of Macintosh graphics*

***Edited by Erfert Nielson***

*As Macintoshes find their way into more homes, the number of* MacPaint *artists is growing, and so is the number of submissions we receive at* Macworld Gallery. *In this issue, our contributors include a "weekend painter," a computer store employee who has been using the Mac for several months, and a 14-year-old girl who sent in her first* MacPaint *efforts.*

*To be considered for exhibition in* Macworld Gallery, *send a paper copy of your drawing and a detailed description of the techniques you used to create it to* Macworld Gallery, *555 De Haro St., San Francisco, CA 94107.* Macworld *pays $25 for each drawing exhibited. If your drawing is selected, we will ask you to send a copy of it on disk. All disks become the property of* Macworld.



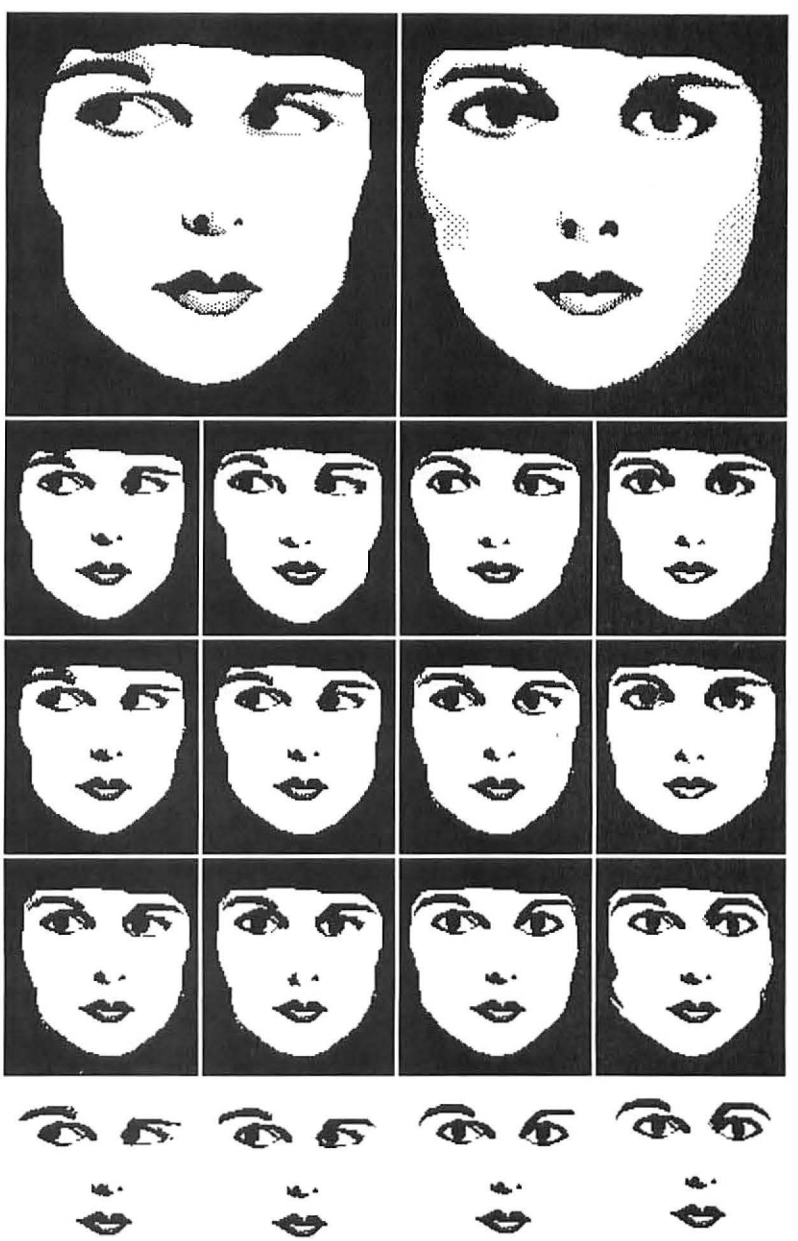

*Playing Card*

**Playing Card**
This drawing suggests to me the incredible possibilities of the Macintosh for creating games. I drew the top half of the card freehand (free-mouse?), then duplicated and rotated it. I used the lasso to connect the two halves. Most of the detail work was done in FatBits. I drew the top card on the deck using the rounded-corner rectangle. Then I lassoed the card and dragged it while holding down the Shift, Option, and ⌘ keys, spreading the cards out like a dealer fans cards on a tabletop. The pattern on the top card came straight from the pattern palette.

*Charles A. Schleper, Jr.*
*Olathe, Kansas*

**Sisters**
This drawing shows a face changing from one expression to another. First, I drew the large faces at the top of the picture; they are the first and last faces in the series. Then I made copies of the faces using the Option key. Using the Shift and ⌘ keys, I reduced them to one-fourth of their original size. I wanted the woman's whole expression to change as her eyes moved. When I finished making changes, the two faces looked like different people. My husband said they at least looked like sisters, so I decided to call the drawing "Sisters."

*Rika Watanabe*
*Los Angeles, California*



*Sisters*

**Key West**

The inspiration for this drawing came from a watercolor of a house in Key West, Florida. I used most of the *MacPaint* tools and techniques, but the lasso provided the most exciting discovery. I put together the top section of the porch railing, then lassoed it and dragged it into position in front of the door. However, the space between the spindles came with it and covered the details behind the railing. I "undid" that move and used the pencil to open up a channel one dot wide in each of the spaces. The lasso slipped through the channel into all of the spaces. As I moved the railing back into position, I could see the background through the moving spindles. Once the railing was in place, I closed up the channels and that section of the drawing was finished.

*Henry Taylor*
*Washington, D.C.*

*Key West*

**Cabin**

I drew the cabin and the trees with the pencil, using FatBits for detailed touches. To create the reflection in the lake, I selected the left half of the drawing, copied it to the Clipboard, pasted it onto a lower portion of the page, and flipped the image vertically. I did the same with the right half and moved the sections into position. As a final touch, I used the pencil to put ripples on the lake.

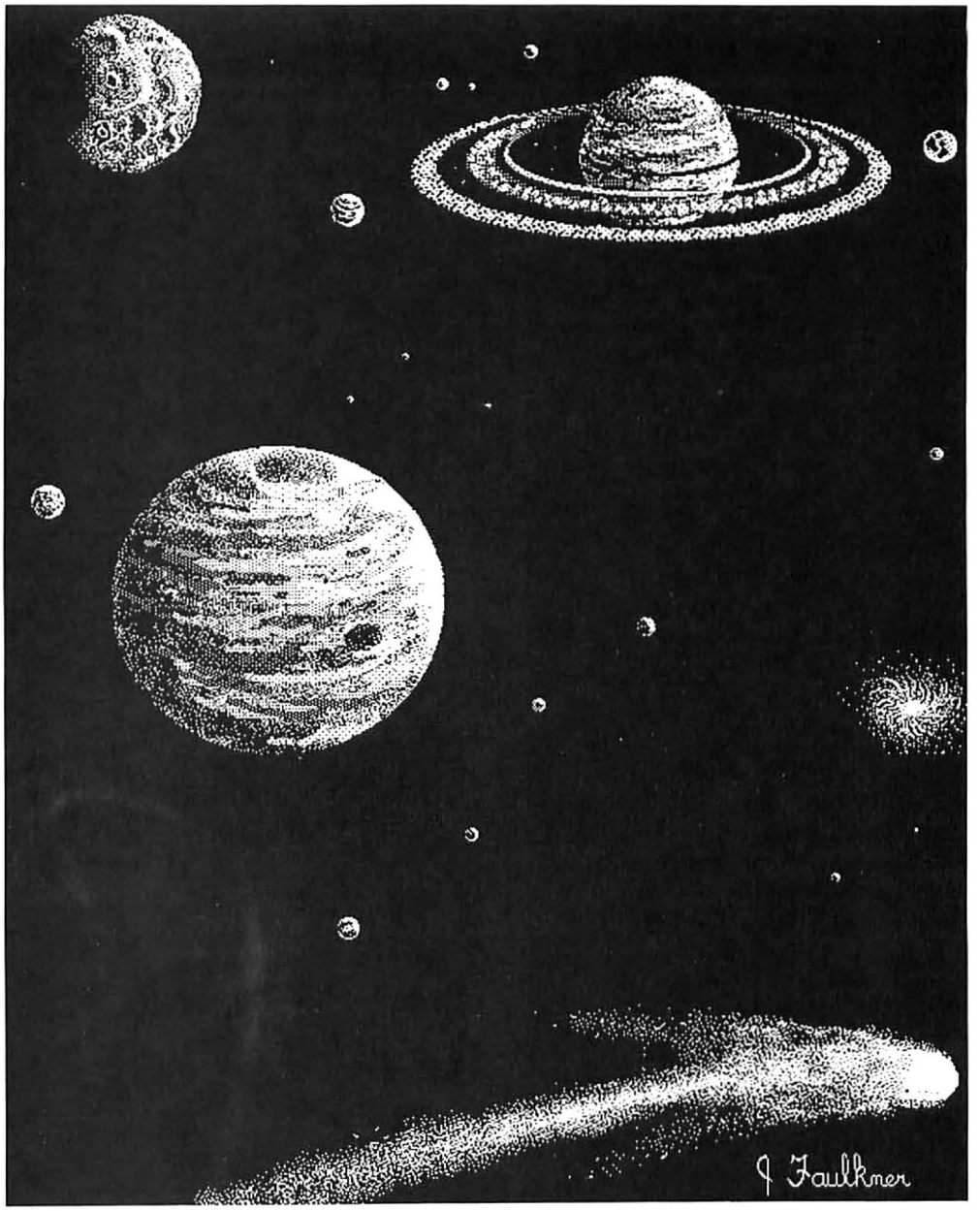
*Stephen F. Cox*
*Tualatin, Oregon*

*Cabin*

**Space Collage**

I drew the planets in black on a white background, then selected and inverted sections to reverse the image. For Saturn's rings, I produced several concentric ellipses with the hollow circle tool, then filled in the bands using the paint bucket. Finally, I used the paintbrush and the spray can to soften the edges of the rings. To place the rings around Saturn, I divided them in half with the selection rectangle, then dragged the bottom half of the rings over the planet using the lasso. Then I dragged the combination of planet and bottom rings over the top half of the rings. I added surface details to the planets using the pencil, the spray can, and the paintbrush. FatBits was terrific for drawing craters on the moons.

*James V. Faulkner, Jr.*
*Raleigh, North Carolina*

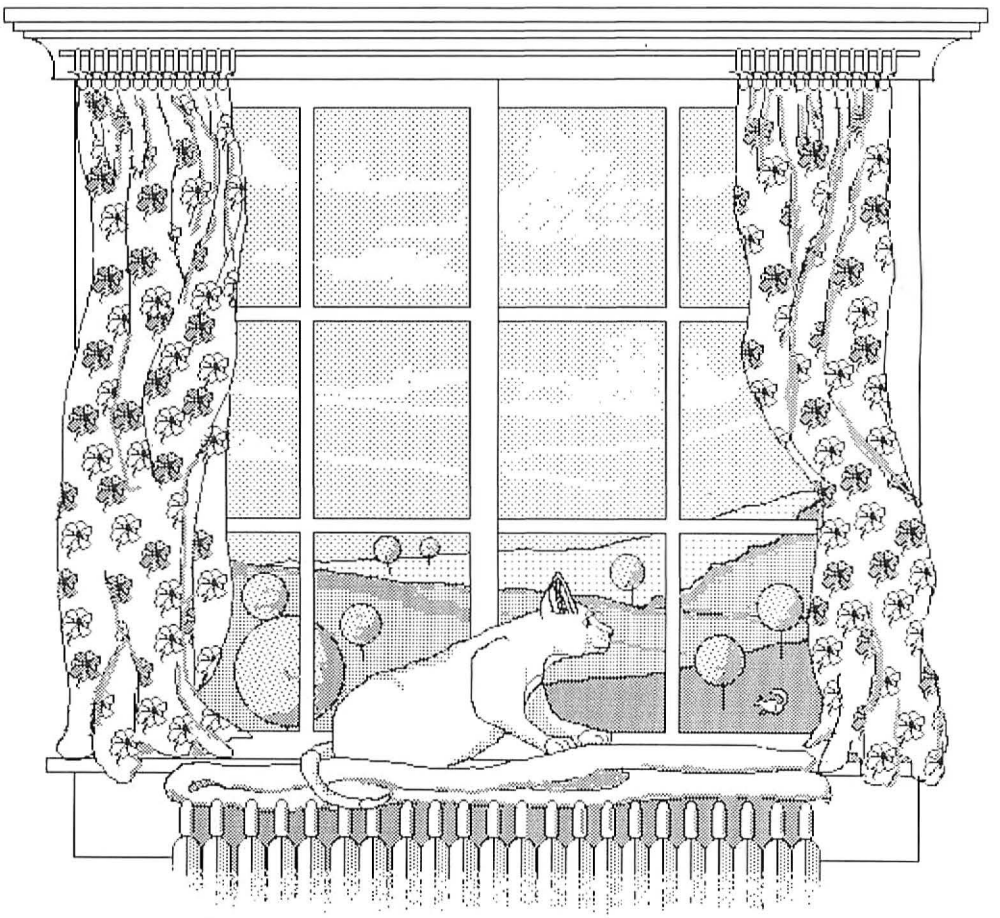



*Space Collage*

**Cat on Radiator**

The curtain rings and the radiator were created by drawing one element and making multiple copies with the lasso and the Option key. The window was laid out using the hollow rectangle with the Grid option selected. I drew the drapes with the pencil, then drew the floral pattern in FatBits and copied it repeatedly. Where the pattern overlapped folds in the cloth, I erased using the small round paintbrush with white paint. The cat and the towel it sits on were outlined with the pencil and shaded with a small brush. The trees were made from circles shaded using the spray can and the paintbrush. I used the paint bucket to pour in a pattern for the sky, then painted the clouds in white.

*Bob Dupree*
*Aurora, Colorado*



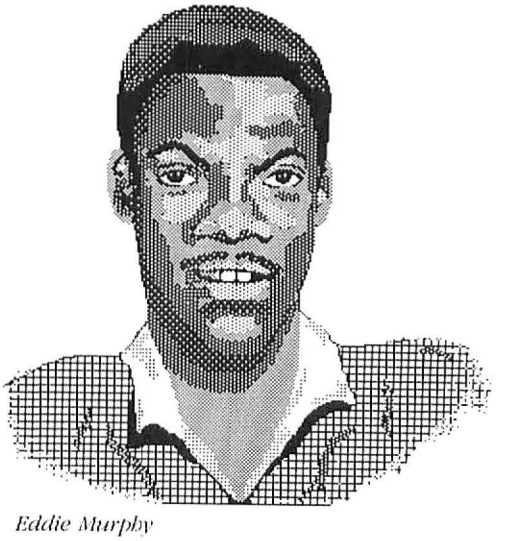
*Cat on Radiator*

**Richard Pryor and Eddie Murphy**

These pictures are my first attempts at drawing with *MacPaint*. I used photographs from magazines to help me draw the two comedians. I started by drawing an oval and adding the basic skin tone with the spray can. Then I painted in the darker and lighter patterns using the paintbrush. If a part of the drawing was out of proportion, I used the selection rectangle to remove unwanted sections. For example, if the face was too full, I removed a strip and then reconnected the remaining parts. I found that when different patterns overlapped, they didn't blend but left white or black streaks. I corrected these problem areas in FatBits. I also used the pencil in FatBits to draw minute details in the faces (folds in the ears, eyes, and so on).

*Debi Bittinger*
*Danville, Virginia*

*Richard Pryor*

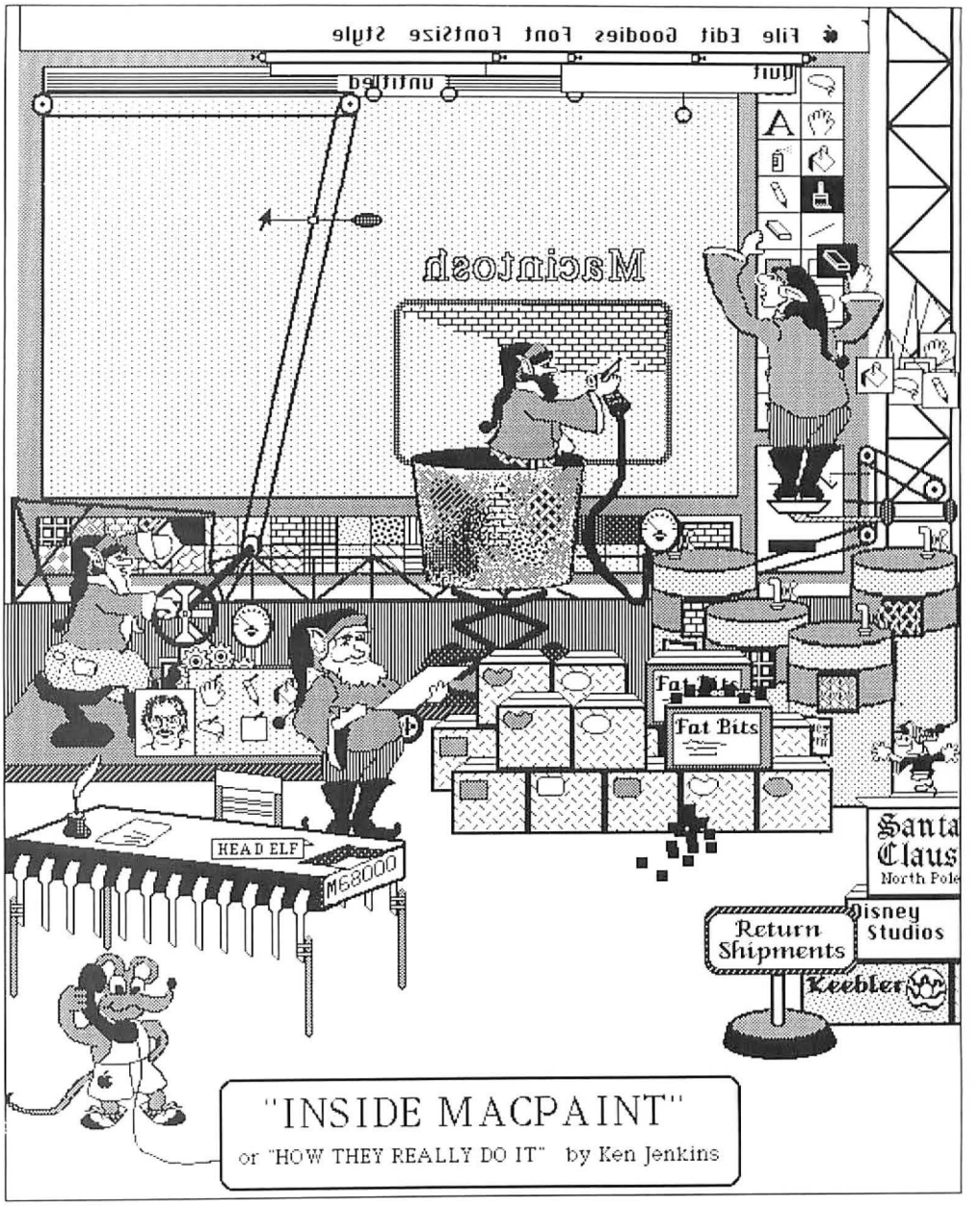


*Eddie Murphy*

**Inside MacPaint**

When I came across the "snapshot" technique described in the Macintosh manual, I got an idea. Why not take a snapshot of the *MacPaint* screen itself and then flip it horizontally to make it appear as if you were looking at it from inside the Mac? Starting from that perspective, I created a whole little world (and used up an entire Saturday). The tiny picture of Bill Atkinson was made by taking a snapshot of the About MacPaint option in the Apple menu, then pasting it from the Clipboard into the drawing. I created sections of the drawing at the bottom of the page and dragged them into place using the lasso. The little gauges, shipping boxes, and icons were copied to the bottom of the page and moved up as needed. The lift bucket was spray-painted with a number of patterns.

*Kenneth W. Jenkins*
*Bowling Green, Ohio* □




*Inside MacPaint*

Professional typesetting
for the Macintosh

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# World Events

## *A calendar of regional and national events*

***Edited by Erfert Nielson***

World Events *lists computer-related conferences, conventions, workshops, symposiums, trade fairs, and shows. If you know of an upcoming event, we'd like to hear from you.*

**July 9-12**
National Computer Conference (NCC '84)
Las Vegas Convention Center
Las Vegas
*A general computer show with 370,000 square feet of exhibits, 90 technical sessions, and 25 professional development seminars. This year's theme is Enhancing Creativity.*
AFIPS
1899 Preston White Dr.
Reston, VA 22091
703/620-8900

**August 2-4**
Great Southern Computer Show
Charlotte Civic Center
Charlotte, North Carolina
*An exhibition, workshops, and seminars pertaining to computer hardware, software, and peripherals.*
Great Southern Computer Shows
P.O. Box 655
Jacksonville, FL 32201
904/356-1044

**August 2-5**
First Annual Tampa Bay Computer Show
Curtis Hixon Convention Center
Tampa, Florida
*A computer and office equipment exposition that focuses on hardware and software for business, government, education, and home use. The show will include seminars that cover a variety of applications including spreadsheets and word processing.*
CompuShows, Inc.
P.O. Box 3315
Annapolis, MD 21403
800/368-2066, 301/263-8044

**September 5-7**
National Software Show West '84
Anaheim Convention Center
Anaheim, California
*A personal computer trade show for dealers and manufacturers. Exhibits will be limited to software manufacturers, distributors, and packagers; publications that review software; disk copier manufacturers; and magnetic media suppliers.*
Raging Bear Productions
21 Tamal Vista Dr. #175
Corte Madera, CA 94925
800/732-2300, 415/924-1194

**September 6-9**
The San Francisco Byte Show
Brooks Hall
San Francisco
*A 25-session conference and exposition featuring hardware and software.*
The Interface Group
300 First Ave.
Needham, MA 02194
800/325-3330

**September 20-23**
Personal Computer Userfest
Madison Square Garden
New York
*An exposition of 500 booths displaying Apple and IBM computers, compatibles, and software (formerly Applefest and PC '83).*
Northeast Expositions
822 Boylston St.
Chestnut Hill, MA 02167
800/343-2222, 617/739-2000

**September 27-30**
Fifth Annual Mid-Atlantic Computer Show
Convention Center
Washington, D.C.
*A computer and office equipment exposition that focuses on hardware and software for business, government, education, and home use. The show will include seminars that cover a variety of applications including spreadsheets and word processing.*
CompuShows, Inc.
P.O. Box 3315
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800/368-2066, 301/263-8044 □


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# Our phone lines are now open.

## (But we'd still rather be playing with our Macs.)

**On your mark, get set, beat a path to our door. 1-800/Mac&Lisa.**
That's right. We took time off from our love affair with the Macintosh to figure out who owns the phone company and get an 800 number.

And not just any 800 number. But one that you'll remember well into the 1990's. Just think of Apple's two most innovative computers. Or a big truck owned by the Long Island Steamship Authority. (Get it?) Either way you'll remember 1-800/Mac&Lisa. And feel an irresistible urge to call us up.

**Who we are. And where. And why it matters.**
We're MacConnection, a division of Micro Connection, Inc.—a wildly successful direct merchant of computer peripherals and software. (Other divisions sell products for the IBM-PC and the IBM-PCjr.) We are well known for our low prices, fast shipping, and pleasant computer-side manner. We also have a reputation for being ruthlessly honest in our evaluations of various products.

MacConnection is located in the rustic metropolis of Marlow, New Hampshire (pop. 542), far from the frenzy of big cities where otherwise normal people tend to suffer from prolonged overexposure to hype and the disease of the fast buck. At MacConnection we'll take the time to talk with you about your Mac and the best ways to crank it up to its full potential.

You'll be talking to our specially trained Mac consultants. They don't earn commissions. They just give good advice.

**You call that work?**
For those of you who read our last ad, you'll be happy to know that every morning we still get up, hop in our '64 Ford Pickups, '70 Pontiacs, and Saab Turbos, and drive with reckless abandon to work.

All day long we play with our Macintosh computers, so we can answer whatever questions you throw at us. When we're not sending our mice careening all over our desks (in the name of research, of course), we're examining and evaluating all of the products being introduced for the Mac.

By the time you read this ad we'll have the first of these add-ons and software programs in stock. And offering them to you at not-quite-unbelievable-but-very-impressive low prices.

**Drive us wild.**
In our last ad we asked you not to call us, write us, or visit us. In this ad we're asking you to drive us wild with your questions, your confusions, and, of course, your orders.

We're here Monday through Friday 9:00 to 9:00, and Saturday 9:00 to 5:30. With a constantly expanding inventory of Macintosh products.

And now that we've made our pitch, we only have a few more minutes to play with our Macs before the phone lines light up. Talk to you soon.

1-800/Mac&Lisa

# MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456

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**MACINTOSH OWNERS**

The *Original* Macintosh Sourcebook - The only definitive, comprehensive and up-to-date guide to all Macintosh software, hardware and accessories; includes complete info on all currently available and planned future releases, product descriptions, release dates/availability, pricing, names, addresses and telephone numbers of manufacturers, developers, and suppliers. - $9.95 postpaid.

*ICONS*; The Macintosh owner's newsletter. User friendly monthly dedicated exclusively to the Mac; product reviews, articles, applications, letters, news, ideas, followup. *A must for every Mac owner.* $18.00 postpaid.

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# HIGH TECHNOLOGY AT AFFORDABLE PRICES

Ever since the owner of ***THE BOTTOM LINE*** bought his first MacIntosh on January 27th, he's tried out any and everything available for it. After months of testing and waiting, he's selected the software and hardware you see in this ad.

Most of the direct-mail ads you've seen in past issues of ***MacWorld*** promise to bring you product as soon as it's available. We thought that was jumping the gun a bit. So we decided to wait until some products really ***were*** available, and use ourselves (& not you) as the test site.

Admittedly, some of these products are too new to test. Others have been in the owner's Mac for months. We think we've found the right mix, and we'll add products as we go along (and delete those we find unacceptable). A full list should be available in our ***Fall 1984 Catalog***, due out in September.

**GAMES**

| | |
|---|---|
| Coveted Mirror | $24.88 |
| Quest | 24.88 |
| Murder by the Dozen | 29.88 |
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| Transylvania | 29.88 |

**FINANCIAL**

| | |
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| Management Edge | 179.88 |
| MultiPlan | 139.88 |
| Sales Edge | 179.88 |

**LANGUAGES**

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**A. Please check whether you are:**
☐ Male ☐ Female

**B. What is your age?**
1. ☐ 18–24 2. ☐ 25–34 3. ☐ 35–44
4. ☐ 45–54 5. ☐ 55+

**C. Please state your title and industry:**
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**D. What was the last level of education you completed?**
1. ☐ Completed high school
2. ☐ Some college
3. ☐ Completed college
4. ☐ Post-graduate work
5. ☐ Post-graduate degree

**E. What category best describes your family's total annual income before taxes?**
1. ☐ Under $15,000 2. ☐ $15,000–$24,999
3. ☐ $25,000–$34,999 4. ☐ $35,000–$49,999
5. ☐ $50,000–$74,999 6. ☐ $75,000 or more

**F. Do you currently own a Macintosh?** ☐ Yes ☐ No
**Are you thinking of purchasing one?** ☐ Yes ☐ No
**If yes:** ☐ For your home ☐ For your business ☐ For use in both

**G. Do you own another computer or use one at work? Please indicate the system(s):**
_____

**H. Computer experience:**
☐ less than a year ☐ 2–3 years ☐ 4 or more years

**I. What kind of software programs do you find most useful?**
☐ Word processing ☐ Spreadsheets ☐ Integrated packages
☐ Graphics ☐ Accounting ☐ Other _____
☐ Data base management ☐ Games/entertainment _____

**J. Programming:** ☐ BASIC ☐ PASCAL ☐ FORTRAN
☐ FORTH ☐ COBOL ☐ OTHER(s)

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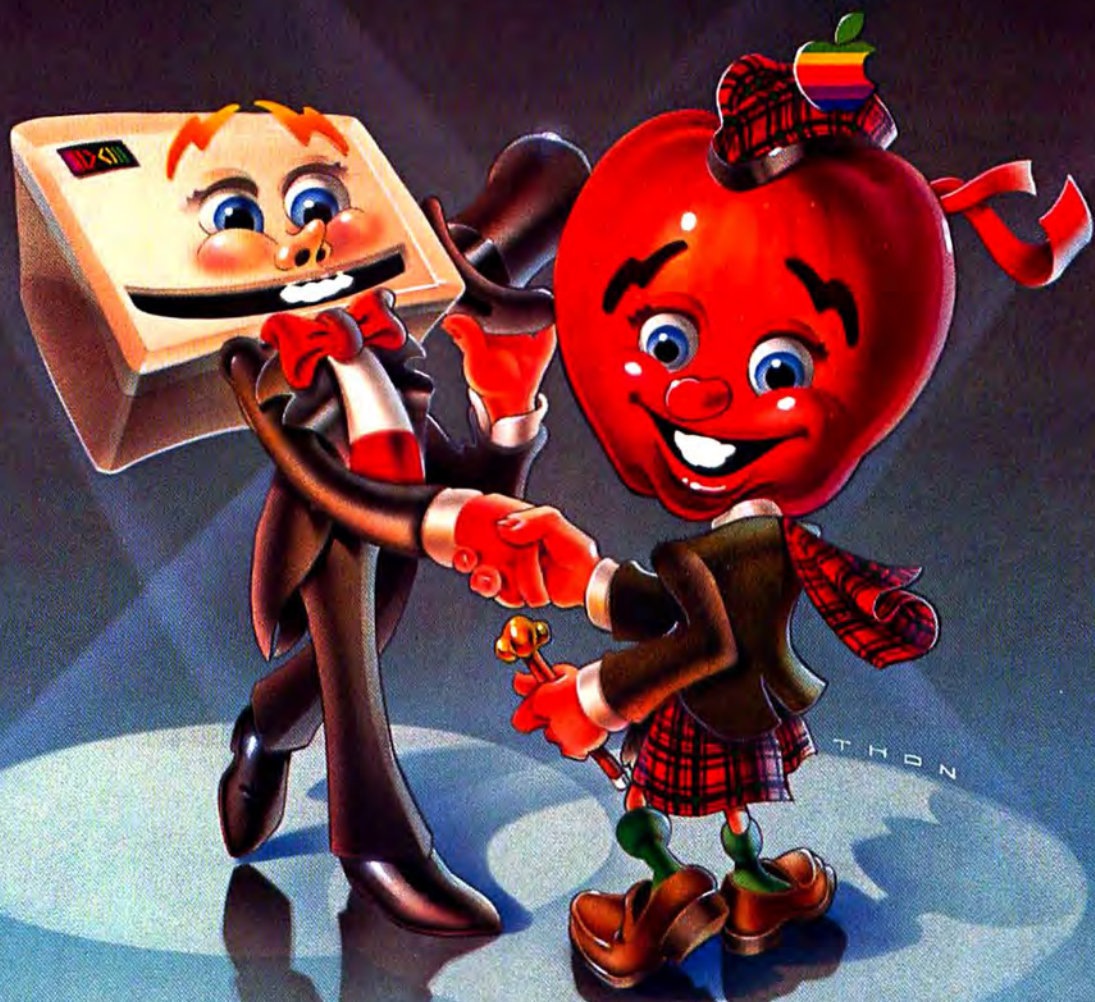

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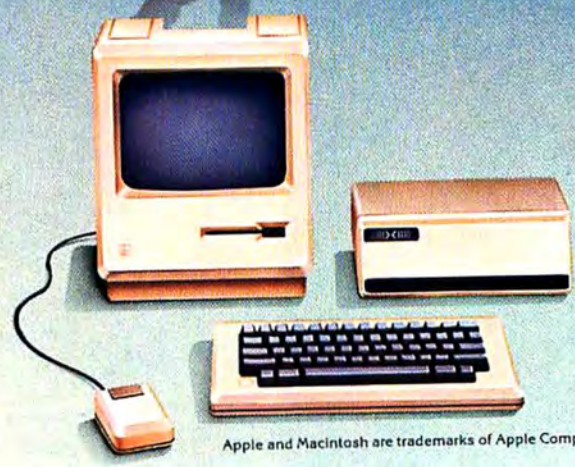

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