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# MacUser

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- ✓ Compatible with all Macintosh computers with at least 512K of RAM



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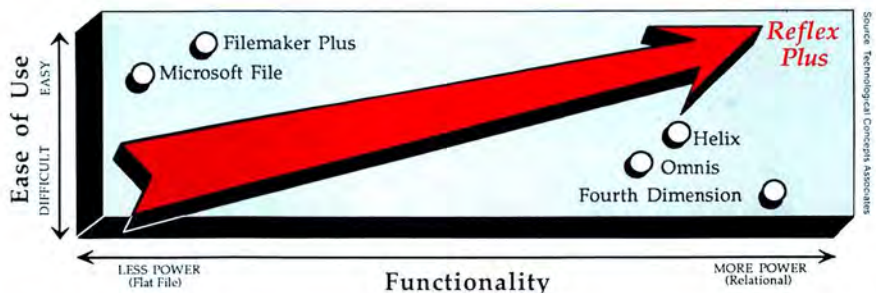
**DATABASE SPECIFICATIONS**

- ✓ Maximum single field length: 4072 bytes
- ✓ Maximum fields per record: 254
- ✓ Maximum record length: 4080 bytes
- ✓ Maximum records per file: limited only by disk capacity
- ✓ Maximum number of linked database files: 200
- ✓ Maximum number of open windows: 15
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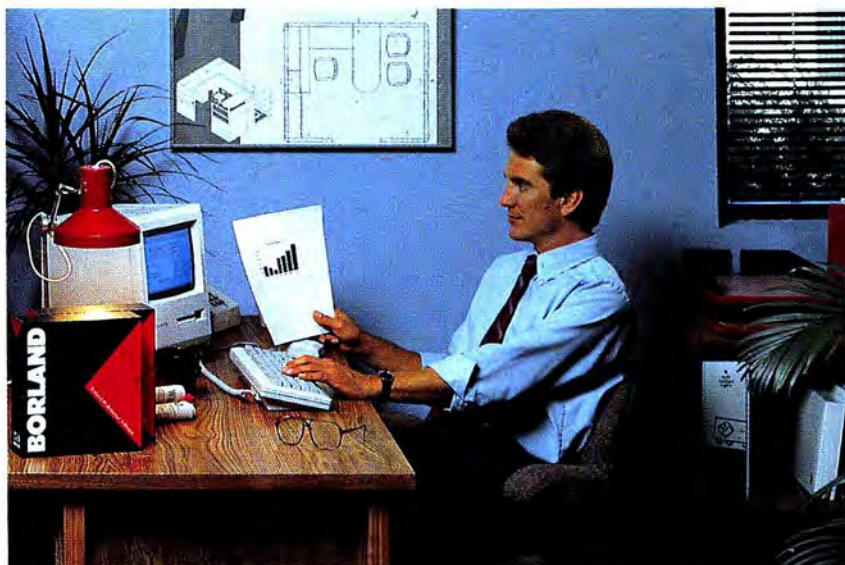
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Prior to Reflex Plus, there were flat-file database managers which were easy to use but limited in power. There were relational programs which were powerful, but difficult to learn and use. Now there is Reflex Plus. It spans all areas of functionality. It can be employed by a single user. It's easy to learn and simple to use.

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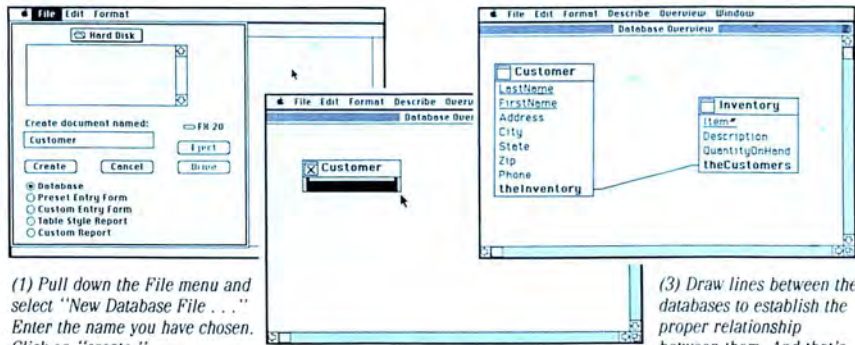
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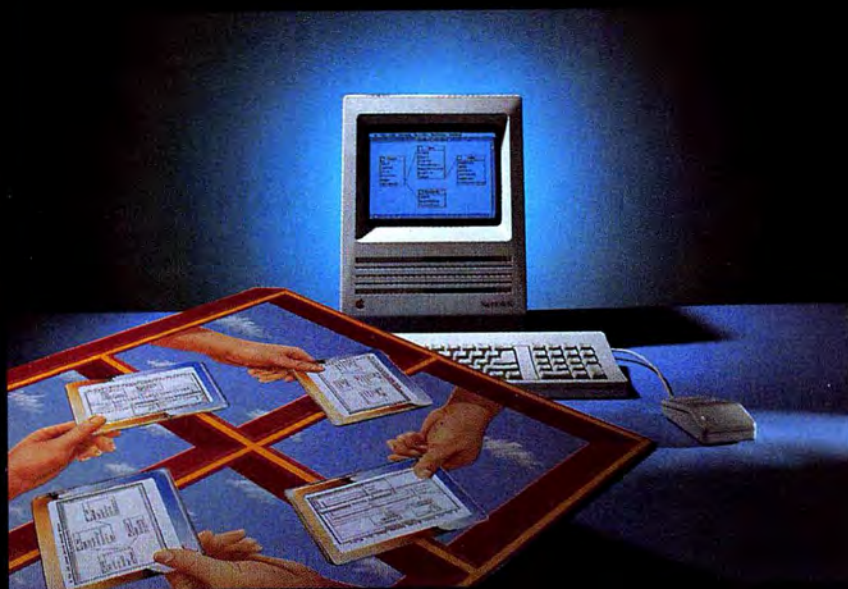


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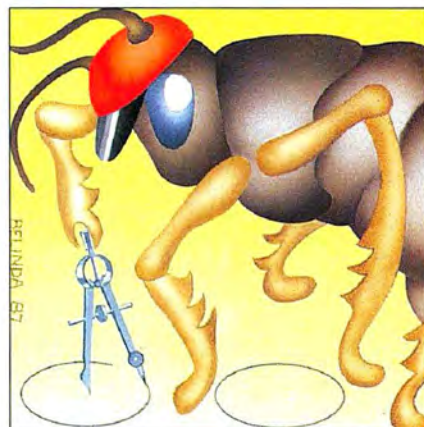
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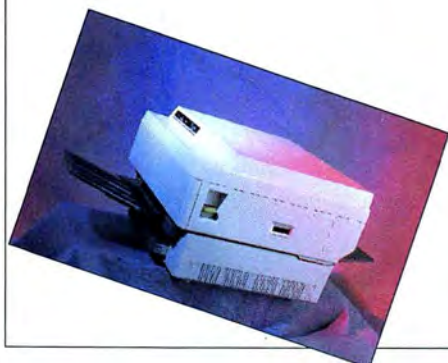
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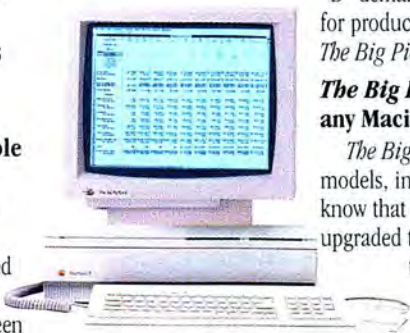
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Denmark, by craftsmen using pure beechwood and durable laminates. Its new, sturdy design and quality materials support even the heaviest equipment. And MacTable is now a new color: Platinum Gray, same as the new Macintosh line.

## Matching roll-away cabinet

The new free-standing cabinet (optional) is big enough to use as a stand for your LaserWriter or CPU. It features easy-glide casters, space for full-size binders, and a special place in the locking drawer that holds over 100 disks upright and secure.

## New lower price

The new MacTable also has a new price. Just \$269. Add the sturdy, matching cabinet for \$129 more (all prices plus shipping and handling). And if you're not satisfied with MacTable for any reason, return it for a prompt refund (less shipping).

Before you buy an ordinary table for your Macintosh, think again. Then choose the Danish solution. The new MacTable.

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# The New MacTable®

- New MacTable handles the entire family of Macs, including the new Macintosh II.
- Surfaces tilt independently for ergonomic comfort.
- Strong base and durable materials support heavy equipment.
- Dimensions: 60" W x 30" D

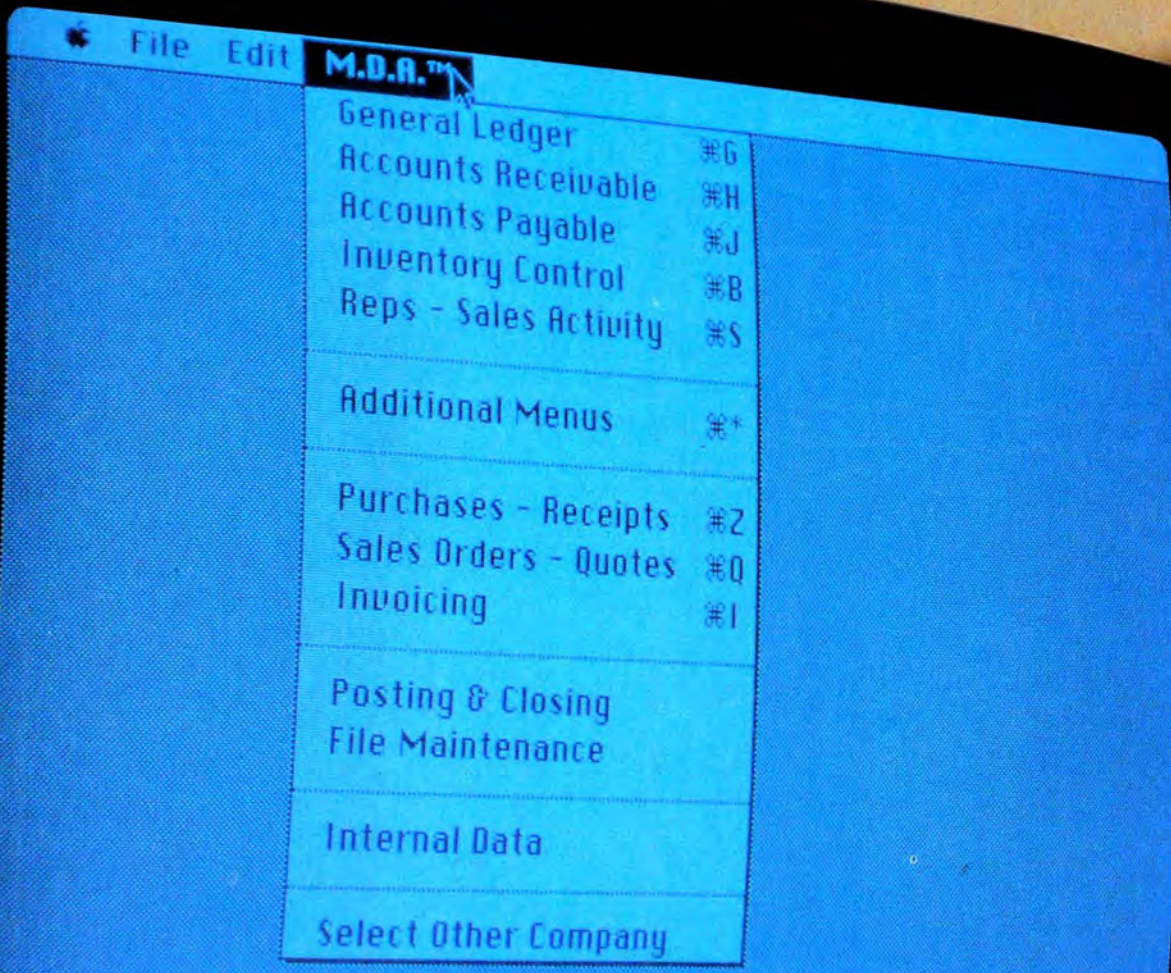


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Macintosh Plus







## Your entire accounting staff can order from this menu.

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

This is Multiuser Desktop Accounting™ (MDA™).

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

### Service for one or a party of 32.

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

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

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

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

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

on the OMNIS 3 Plus database.

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

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

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

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

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

### A single menu means singular ease of use.

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

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

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

### Full service, and expert technical support.

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

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

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



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\*In its multiuser version MDA supports an accounting staff working in the same or various areas simultaneously, limited only by the database-hardware networking capabilities. © 1987 Circo Business Solutions.

# A Crash Course in Accelerator Boards.



TurboMax has passed extensive crash testing.

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

Faster this.

Quicker that.

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

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

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

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

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

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

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

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

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

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

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

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**APPROVED**  
COMPATIBLE

## MacMemory Inc.

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MacMemory is an authorized Apple Developer

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by Neil L. Shapiro

## Foreign and Familiar Concepts

It's been an exciting few weeks for me, as my Mac II finally arrived and I've been familiarizing myself with it. I'm sure by now you've all read various reviews of this new machine, probably have even had some hands-on experiences of your own. But I'd like to offer some of my own experiences in an informal way, just one user to another.

### WHOOSH!

First and foremost—it's a fast machine. This is the Ferrari of personal computing, the Lamborghini of the mousepad set. I thought my Mac Plus with SCSI drive was no slouch but I was really surprised by just how fast the Mac II with the built-in SCSI drive (40 meg, in my case) can go about its business, and your business, everybody's business.

Yes, for business, this has got to be the world's most exciting productivity tool. I loaded in some *Excel* templates that I use to run my own business and was simply delighted at how fast they recalculated, how quickly the disk access process itself was speeded up. I think that benchmarks are very useful. And there's no doubt that this speed is exactly what many benchmarks led me to expect.

But a benchmark can be a foreign concept that can be difficult to relate to everyday use. When you see that, arithmetically, a few seconds have been shaved off here and there, the tendency is to nod and think, "That does sound nice, but I'm happy with the speed I now have."

Well, no, you're *not* happy with the speed you now have. Trust me. No matter how happy you are with the performance of your present Mac Plus or even Mac SE, the Mac II is just going to blow you away. Seconds count, and count and count and count!

### KEYS TO MY HEART

Then there's the extended keyboard. At first, I'll admit that I did not like the

keyboard very much. The keys are big, even mammoth in size. The first day I was typing I felt sometimes as if I was playing a piano and other times as if I was 8 years old and using my Daddy's computer. But that only lasted for about two days.

Now I find that Apple did an absolutely wonderful job in the ergonomic design of this keyboard. I find the tactile feedback, key placements and overall feel of the extended keyboard to be well worth a short period of acclimitization.

Of course, there was one thing I did feel badly about. There were a lot of keys that just did not do anything. All of the top row of function keys; the keys with such interesting monickers emblazoned upon them as "page up," and "page down," all of these were just dead wood—or at least numb plastic.



Then Don Brown of CE Software came to my rescue with a chance to help him beta-test a new program that woke up all of those keys. The program will run on any Mac and allows keys to be redefined in all sorts of interesting ways from straight macro keys to much more. The name of the program was not decided by press time. But we will definitely have a review of it in a subsequent issue as it develops. Likely, by the time you read this, the program will be completely available. If you have any Mac, and particularly a Mac II with an extended keyboard, give CE Software a call at (515) 224-1995 and ask them for information on the "mysterious program that Neil Shapiro spilled the beans on."

And, of course, when such things as MS-DOS cards become available many of the keys will wake up to be used to

emulate IBM PC keys. And speaking about cards....

### SLOTS OF PROMISE

Talk about *deja vu*. When I popped the hood for the first time on the Mac II I was instantly transported back in years to the first time that I looked into my first Apple II and saw its slots. Back then, I was quite new to computing and had absolutely no idea what such things as slots might someday be used for. I recall wondering if they might not always remain empty.

Well, we can certainly say that the slots in the Apple II did not lie fallow for long. Hundreds and hundreds of plug-in circuit boards made the Apple II into what is still the world's most customizable computer.

Now comes NuBus and the Mac II. If ever it could be said that a computer carried within itself the seeds of greatness, there are these seeds in the Mac II—and they're called slots.

I'll admit that they look much more foreboding than the slots in the Apple II. In fact, when I installed the video card, I was a little shaky over how easy (or not) that might prove to be. For one thing the Mac II slots are more complicated in appearance than those in the Apple II. The slots have such things as lining-up guides on the back of the case.

But I need not have worried. The video card just naturally seated itself right in the machine in one easy motion. If anything, the slots on the Mac II are easier to install cards in than on the Apple II.

And, once installed, forget it—there's no contest. The Mac II's NuBus cuts out almost all worries as to configuring cards; trying to figure out which cards will work with other cards, and how to stop some cards from interfering with others. All of the card headaches that Apple II owners occasionally have and that plague IBM PC owners should just about disappear with the Mac II. The NuBus just automatically takes care of such worries.

Believe me, it was a pleasure to plug in a circuit card and then just simply turn on the computer. No little switches to set, no potentiometers to turn, no groans of anguish amidst rising coils of black smoke.

### COLOR ME (STILL) BLUE

Well, I wish I could end this with a brief note as to how I am enjoying the Mac II's wondrous palette of colors. Unfortunately, the color monitors were not yet released as I am writing this so I

## Would you leave this document out on your desk?

## Then why leave it unprotected on your disk?

Everyone creates confidential documents — payroll analyses, bids, personnel records, to name a few. But documents sitting on the Mac desktop are as vulnerable as papers left out on your desk. Anyone can access your files when you are not around. And with the increased use of hard disks and networks, your data is now more accessible than ever. You need a way to guard your private documents from prying eyes.

### SENTINEL: Password Protection and Encryption.

SENTINEL is a data encryption utility that lets you lock your documents right on your desktop. Since password protection is easily circumvented by the determined intruder, Sentinel uses password *and* encryption strategies to protect your documents.

For encryption (which actually scrambles the data on your disk), Sentinel presents a choice of two methods: *DES* or *SuperCrypt*. Both offer speed as well as security. Our DES encrypts a 100K file in less than 90 seconds, SuperCrypt in just under 5.

### Standard Macintosh Format.

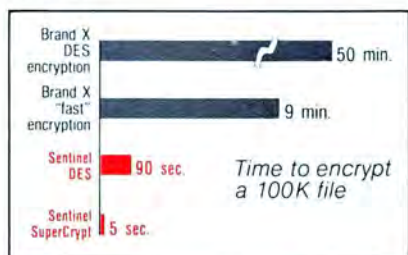
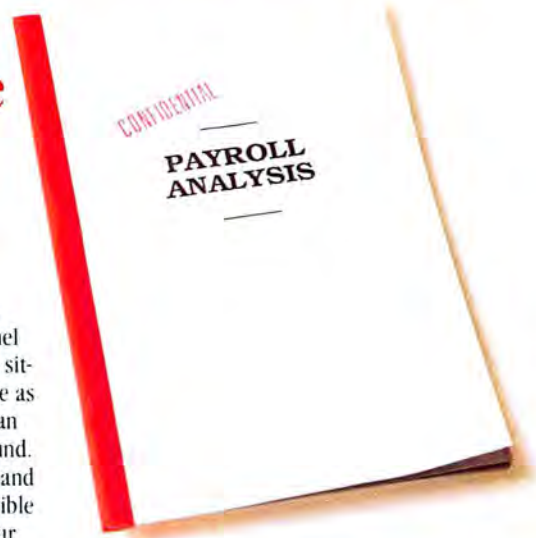
Documents encrypted by Sentinel remain in standard Macintosh file format. They can be backed up, copied, transmitted over networks, or sent to remote sites by modem. But unlike all of the other files on your desktop, they can be unlocked and read only by someone possessing the correct password.

## SENTINEL. Because it's not a personal computer anymore.



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*Sentinel's two encryption methods, DES and SuperCrypt, are so fast, they leave the competition in the dust.*

### Easy and Natural to Use.

Sentinel also makes working with your secured files more convenient. Creating *Sets* of files allows you to protect multiple documents efficiently. You can add or delete documents to a Set, and Sentinel will lock or

unlock them all with one password.

The *WorkSet* feature remembers which files have been opened at any time during a work session, and gives you a quick lock-down capability. Sentinel was designed to be unobtrusive and easy to use, making file security a natural work practice.

Price: \$149.95.

Minimum system requirements:  
Macintosh 512e



have only the hi-res, monochrome monitor to report on.

But it's a spiffy monitor even if it is "only" black-and-white. The resolution is about the same as on the Mac Plus with a slightly lower contrast. The difference in contrast is, of course, because this monitor must be able to also display shades of gray when color software is run.

The production-run monitor I bought does not show any of the screen problems that have been bothering some Mac SE buyers. The amount of screen "bowing" and "pincushioning" is just about

**F**or business, the Mac II has got to be the world's most exciting productivity tool.

negligible. The picture area is straight and centered on the CRT face. The only problem I can detect is that sometimes large white areas tend to "ghost" a little onto the grey desktop. But that's being hypercritical.

If you have heard any rumors that the Mac II's black and white screen will prove hard to read because Apple sacrificed legibility for color—don't even bother repeating them. I work at my Mac II from 6 to 15 hours a day and my eyes are perfectly happy with the view.

I did get a glimpse of color on a friend's Mac hooked up to a Sony monitor. Awesome. And, from what I have heard, the Apple color monitor will be even better. Obviously, we'll be reporting on color software as it becomes available. Meanwhile, suffice it to say that the Mac II's color promise is also a reality.

I know that many people at Apple Computer worked yeoman hours to get the Mac II out on time. I have even heard that many employees voluntarily gave up all of their last Christmas holiday just to ensure that the new baby would fulfill all the promises. Well, they've succeeded in that—and more.

To the Mac II Team: Thanks, people, for the vision and for the dedication that made that vision today's Mac II!

### ONLINE COOPERATION

Thousands of Macintosh owners know how useful a modem can be for such things as calling electronic bulletin-

# Build color into your graphics with an HP plotter.

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

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

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

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

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

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

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*we never stop asking*  
*What if...*



## The Picture

Graphics. That's what you bought the Macintosh for. And that's why there's PictureBase—the graphics “database” for desktop publishers.

With its advanced retrieval system, PictureBase puts graphics at your fingertips anytime, even within other applications. Used with PageMaker® 2.0 or XPress®, you can even place a graphic from PictureBase into a document without copy and paste.

And through the purchase of a low cost multi-use license, users can share graphics through AppleShare™, MacServe™ or other AppleTalk™ file servers.

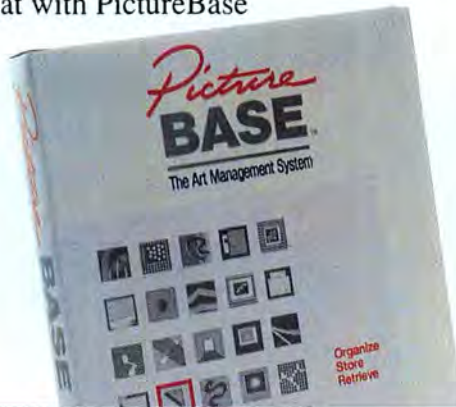
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boards and large networks and keeping offices in touch. One of the things that makes modeming so much fun, and so useful, is the ability to transfer Macintosh software between machines. In this way non-commercial software, shareware, electronic magazines, formatted reports and much more can get right to the people that will use them just as fast as a telephone connection can be established.

One of the basic techniques behind this ability is something called the “MacBinary Standard.” Files that are stored online in MacBinary format are the easiest and most accurate to download.

The new System (4.1) and Finder (5.5) have meant that the MacBinary standard was in need of updating. The new standard has just been published following a series of online conferences that beautifully demonstrated a feeling of community among all Mac telecommunicators.

**T**o the Mac II  
Team: Thanks  
for the vision  
and for the dedication  
that made that vision  
today's Mac II!

People from otherwise competing networks such as CompuServe, Delphi and BIX all got together with representatives from such companies as Apple and Hayes, Freesoft and many, many others to come up with an expanded standard all could live with. I'm pleased to report that not only does the expanded standard completely fix all of the problem areas, it does *not* obsolete existing terminal programs.

If you are programming a terminal program, or if you're just curious, you'll want to check out the new standard as soon as possible. You'll find it published (along with complete transcripts of the various conferences that led up to it) on all the major networks (MAUG on CompuServe, ICONtact on Delphi, the Mac Roundtable on BIX, Usenet and probably others by now). Everything you'll find relating to this new standard is, of course, public domain so please help get the word out by republishing these materials in your newsletters, BBS or other media.

As always, it's when the Macintosh community works together that the best things happen. ☒

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# The next computer revolution.

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Personal Writer is the system that's as natural as your signature. And as easy to use. Its powerful character recognition software learns to read your handwriting and

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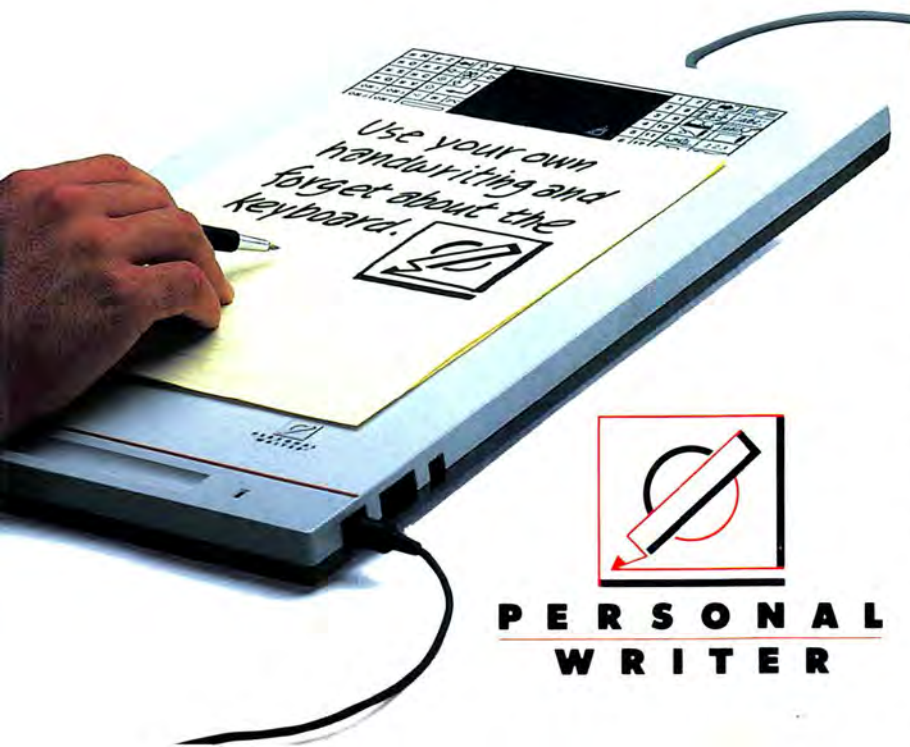
Whether your needs are in word processing, spreadsheets, data base management, or graphics, the Personal Writer system works for you. Fully compatible with virtually any software on the Mac market, Personal Writer's ease of use will follow you in all your applications. So don't worry

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## Pen and paper.



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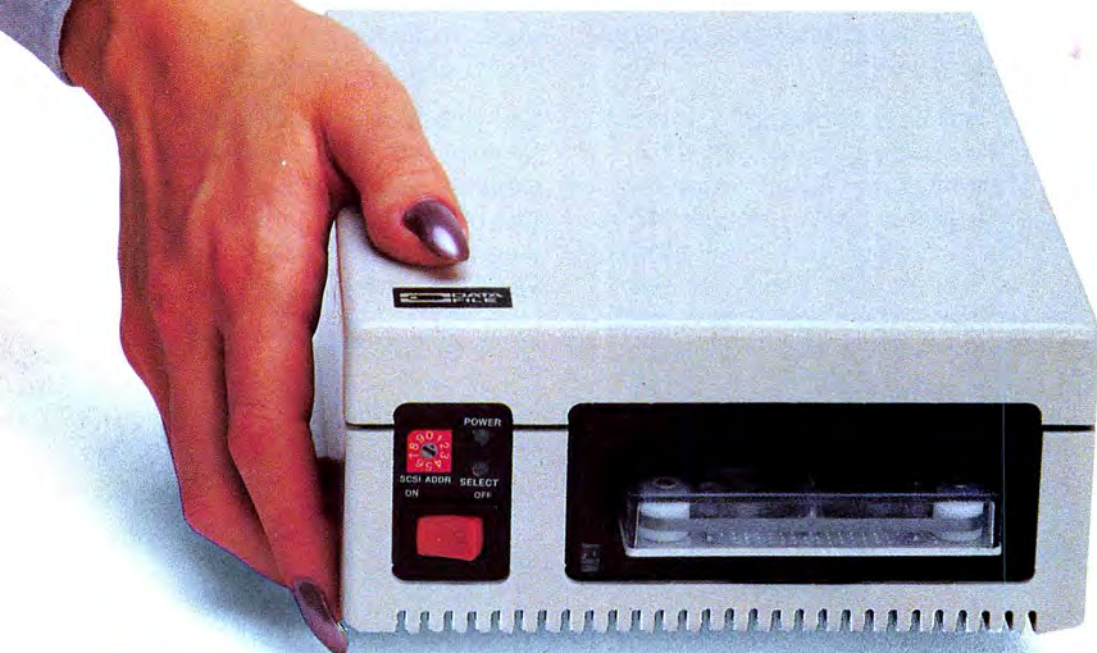
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Steven Bobker

We're always happy to hear from our readers, so keep sending your comments to *Letters to the Editor*, MacUser, 25 West 39th Street, New York, NY 10018. All letters become the property of MacUser and we reserve the right to edit any letters that we print.

### AN AKER OF PRAISE

I have just finished reading two reviews of the same product, one appearing in *MacUser* and one in "another" Macintosh magazine. The product is Microsoft's *BASIC Compiler* and the winner is Sharon Zardetto Aker and *MacUser* magazine. Her review was very good. It included the important stuff (commands, compile time, error handling and interface issues), as well as the peculiarities of the product that can mean a great deal to a potential user—such as the strange window that appears just after a compiled application is launched. Not only did the competing magazine fail to mention any of these issues, it led me to believe that Microsoft's *BASIC Compiler* was more or less equivalent to Zedcor's *ZBasic Compiler*, which it clearly is not. It further enraged me by concluding that a potential *BASIC* buyer should carefully research the available products before buying one. That's what I thought I was doing when I bought the magazine.

I subscribe to many computer publications and I spend a great deal of time reading every one. I read them exclusively for the product reviews and I want to be able to take those reviews seriously. Thanks again to Ms. Aker and *MacUser* for telling me just what I needed to know about a new product.

CARL BROOKS  
BOSTON, MA

### MIMEOGRAPHING ON THE MAC

Just got my July 1987 *MacUser* and in reading Dan Cochran's "Help Folder" find that I have the answer to Lloyd Fowler's question on mimeographing using the Mac.

Look up the nearest A. B. Dick office and ask for #2060 stencils. These are specially made for electric typewriter and computer printer use; the stencil material seems thinner and harder than regular stencils.

As the mimeograph machine will not print out on the page as the ImageWriter, you must be careful to keep copy inside the border printed on the stencil. I print a draft, slide it between the backing

and the stencil to see if all copy is inside the border. After you do several stencils you have a feel for what you can and can't do.

Print the stencil in manual or cut sheet mode with the printhead adjusted all the way out (as if for four sheets of paper). Do not take the ribbon out! After printing the stencil, move the printhead back to normal and print a copy on paper to clean the head surface.

I live in a mobile home park of some 800 homes and we put out a flyer every week. We have just two requirements: cheap (not inexpensive, cheap!) and readable. I have been doing flyers this way for over a year on the Mac using both the ImageWriter I and ImageWriter II and have had no problems yet.

It certainly shows the Mac's flexibility.  
ROGER LANDON  
SUNNYVALE, CA

### HELP COLUMN HELPS

Just a note of thanks. I wrote to Dan Cochran about a problem I had with my Mac 512 and its HD 20. My question and his complete and informative answer were printed in your May 1987 issue. Armed with this information, I solved the problem in 5 minutes.

E. R. LUTER  
DALLAS, TX



### CRICKET IS NOT BUGGED

Your May 1987 "Bug of the Month" noted that *Cricket Graph* has "a rather serious" problem in that it "does not properly graph data points in a list in the order in which they occur in that list."

Note that in most statistical applications the order of the records in the file is irrelevant. Therefore, a properly designed statistical graphics program should ignore that order. *Cricket Graph* follows this common practice and should not be "fixed" as the piece implied.

Even though *Cricket Graph* is a poor

tool for "graphing" a circle, it can still do it. First cut and paste to restructure the data set given in the article so that it becomes:

A	B-POS	B-NEG
1.00	0.00	0.00
0.92	0.38	-0.38
0.71	0.71	-0.71
0.38	0.92	-0.92
0.00	1.00	-1.00
-0.38	0.92	-0.92
-0.71	0.71	-0.71
-0.92	0.38	-0.38
-1.00	0.00	0.00

Then choosing variable A for the X axis and variables B-POS and B-NEG for the Y axis will generate the circle. The lines and plotting symbols can then be changed so that the circle's top and bottom look the same.

RALPH G. O'BRIEN, ASSOC. PROF.  
UNIV. OF TENNESSEE, STAT. DEPT.

### THREE OF A KIND

Good news and upgrades come in threes. While I was debating whether to buy CLR libraries for *Microsoft BASIC*, Microsoft bought them, added more features and sold me the upgrade for \$25. Well, you expect service from a big company like Microsoft. Next, though, my *Strategic Conquest* went bad. Knowing that copy protection doesn't stop thieves, I assumed the purpose was to force legal users to buy extra copies. No. For \$15 PBI replaced my old version with the new version, which added a multiplayer feature, digitized sound and more. The final good news came from Symmetry, who are upgrading my copy of *Acta* free! All three companies deserve recognition for good service.

WALTER BAYS  
HOUSTON, TX

### GETTING IT OFF YOUR CHESS

Concerning Neil Shapiro's article on *Chessmaster 2000* in the July, 1987 *MacUser*, I want to point out that the strongest commercially available chess computers are probably the Mephisto computers. 6 months ago they used the *Dallas* program, with an estimated Elo rating of 2250. All feature auto-sensory chess boards. They can be bought from ICS—(800) 645-4710 or (516) 221-3000—for about \$1000 to \$2000, depending on the model. Whereas this is a lot of money, you have to take into account that they are consumer upgradeable and the Novag computers are not. (Novag also has stronger computers than the Forte on the market.)

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I think you miss a point in your article. It makes sense to go for a program with a rating of 2250 instead of one rated at 2100 even if your own rating is only 2000 because it means you can play against the computer at a lower level and save your time. Better programs are more likely to come up with a sounder evaluation of position (even on a lower level) and are therefore more interesting to play against.

I'm not so sure that *Chessmaster 2000* is so much stronger than *Sargon III*. *Chessmaster* seems to be poor at finding long lines.

H. ABERG  
HIGHLAND PARK, NJ

## CAVEAT EMPTOR

John Dvorak's column in your July 1987 issue was masterful. I thought I was the only one "too cheap" to be able to afford a Mac. I love the machine (except for *Word 3.0*) and I am happy to be able to dabble with it. However, I now know what it is like to live in a ghetto and watch *Dynasty*. All of those wonderful baubles and trinkets and all I can do is gaze longingly.

Dvorak has freed me from Macintosh bondage and given me the OK to look at an Atari or Amiga. Maybe they are truly the computers for "the rest of us." Lest you wonder at this heresy, my business partner always proceeds me by 10 paces proclaiming to the unwary, "Beware. Beware. A Macintosh missionary doth approach." I guess I'll soon be defrocked. (Unless Microsoft causes me to become disillusioned first.)

JOHN M. ZWIEBEL  
LAFAYETTE, CO

*While we see your budgetary point, we'd like to suggest that, rather than falling at the feet of some false idol, you should ask for a raise.—LK*

## OBJECTIVITY IS SUBJECTIVITY?

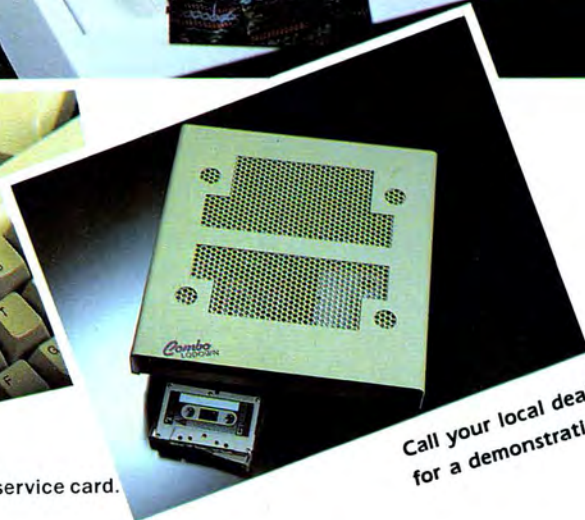
I've often heard it said that *MacUser* is more objective in reviewing products than other Macintosh magazines. Therefore, I was quite surprised by your two reviews of Microsoft *Word 3.0* in the March 1987 issue. Neither of these write-ups mentioned a large flaw in the new *Word* or at least two other annoyances. In general, I love *Word 3.0*, but Microsoft's change in the print strategy to the LaserWriter was a major mistake. The problem is that although PostScript has a command to print multiple copies of a page, *Word 3.0* will regenerate each copy of the page individually, rather than letting the printer do the work. This is a

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

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

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

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change from the old *Word* and causes *Word 3.0* to be unusable for publishing multiple copies on the LaserWriter—and isn't this what desktop publishing is all about? The other two problems are that not all fonts in your *System* file will be seen by *Word 3.0* (this is the same as the older versions), and the indexing option is done totally in memory (not disk-based) and thus the size of your index (or the number of occurrences of each key word) is limited.

I hope Microsoft fixes the printing problem soon, in a free update, and considers recognizing more fonts. As for the indexing problem, I may have to go back to my old indexing program.

KAREN L. COHEN  
MILFORD, PA

*Because of the interest and anticipation level surrounding Word 3.0, we broke our normal rule and reviewed it in beta—as we indicated in the two articles. The number of letters we've received as well as our own experience have convinced us once again that the rule was a good one.—LK*

**A** *rmed with information from Dan Cochran's column I solved my problem in 5 minutes.*

#### DOING IT IN STYLE

I find it interesting that the developer of *Word Tools* (David Barrett of Aegis Development), the producer of a product that promises to be the final arbiter of proper writing style for all Mac users, admits that "style is very subjective." I trust that his opinion will not affect the ability of the program to accurately determine "what's hot and what's not."

CARL J. MADSON  
MENLO PARK, CA

*In these subjective matters, it's always best for you to rely on your own judgment. But if you want to know what I think, see the review of Doug Clapp's Word Tools in the last issue.—LK*

#### AND SHAME THE DEVIL

Your Editor-at-Large, Neil Shapiro, wrote one of the best columns of computerdom: "Copyright—Copy

Wrong" (May 1987). As a copyright and computer law attorney and as a Macintosh software developer for GreenLight, I've paid particular attention to the computer press discussions, information and misinformation.

Shapiro reminds us that the software industry needs to reach beyond computer magazine readers to help people understand why copyright laws have been balanced the way they have. Without

understanding and respect, our computer and copyright laws are liable to turn blue (as in blue law, not big blue). Illegal copying and use of shareware without paying are violations of federal law. We need to ensure that computer users understand that software piracy and theft discourage new programs, encourage burdensome copy protection and create bad karma.

Another informed column on copy-

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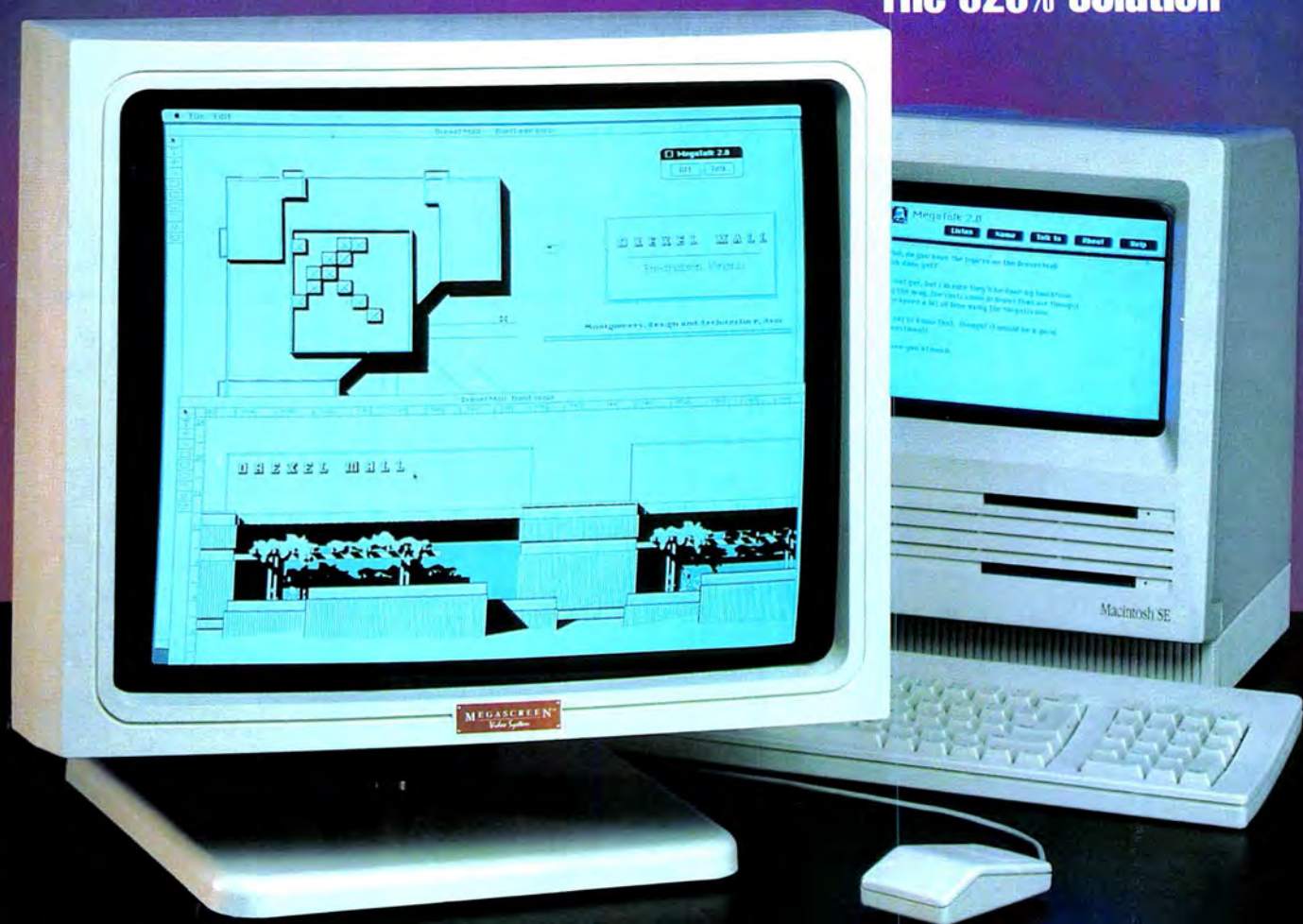


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right appeared in the same issue. John Dvorak is the only columnist I've encountered who has noticed that "look and feel" copyright was not created to confuse software developers, but originated in a 1970 greeting card case. It makes no more sense to apply "look and feel" to every software development question than it does to attribute every social problem to communists, cat crusaders or Arctic cooling. Dvorak even managed to slip in the second major element of software protection, trademark law, with its key question of likelihood of confusion.

What's the computer columnist community coming to when it's Dvorak, your resident devil, who has the most informed, most reasonable column?

DANIEL KEGAN  
CHICAGO, IL

#### FIND IT HERE

I'm a subscriber to *MacUser* and I really look forward to receiving each issue. I'm a relatively new participant in the personal computer field, and since the area I live in is somewhat provincial in nature, *MacUser* is an important information and reference resource for me.

We have recently made the upgrade from 512K to the Mac Plus, and to a hard disk drive. The MiniFinders section was of inestimable value in helping us make hardware and software choices.

For those of us that don't have the resources of a metropolitan area available to us, yearly or even semi-annual index of the information you publish would be of real value as a reference source.

CARL LADLEY  
CARSON CITY, NV

#### TAXING SITUATION

In the April 1987 "Pinstripe Mac," Robert Wiggins discusses the impact of the Tax Reform Act of 1986 on Macintosh users. Although most of his points are well-taken, we would like to clarify some of the issues he raises.

SoftView is the publisher of two programs related to this article: *MacInTax*, the income tax preparation program, and *MacInUse*, a program that tracks the usage of your Macintosh. Mr. Wiggins mentions that the IRS requires a handwritten log of your computer use to justify business deductions. However, the IRS has confirmed to us that a computer-generated log is acceptable *as is*. Thus, *MacInUse* users do not have to transcribe this information. A log maintained automatically by a computer is likely to be more accurate than a handwritten log.

With regard to using the Macintosh

for tax preparation, Mr. Wiggins states that anyone who has prepared their own returns in the past should consider using an accountant this year. While it is true that the Tax Reform Act has made many changes to the tax laws, almost all of these changes relate to the manner in which the tax is computed. Tax preparation programs, such as *MacInTax*, perform these computations automatically. The information that the user must enter

into these programs—such as wages, tax withheld and deductible expenses—remains virtually the same from year to year. Thus, anyone who uses a tax preparation program should have little trouble dealing with the new tax laws. SoftView will be releasing a *Five-Year Tax Planner* program in June, which should further aid tax planning under the new laws.

SUSAN MORGAN, PRES.  
SOFTVIEW

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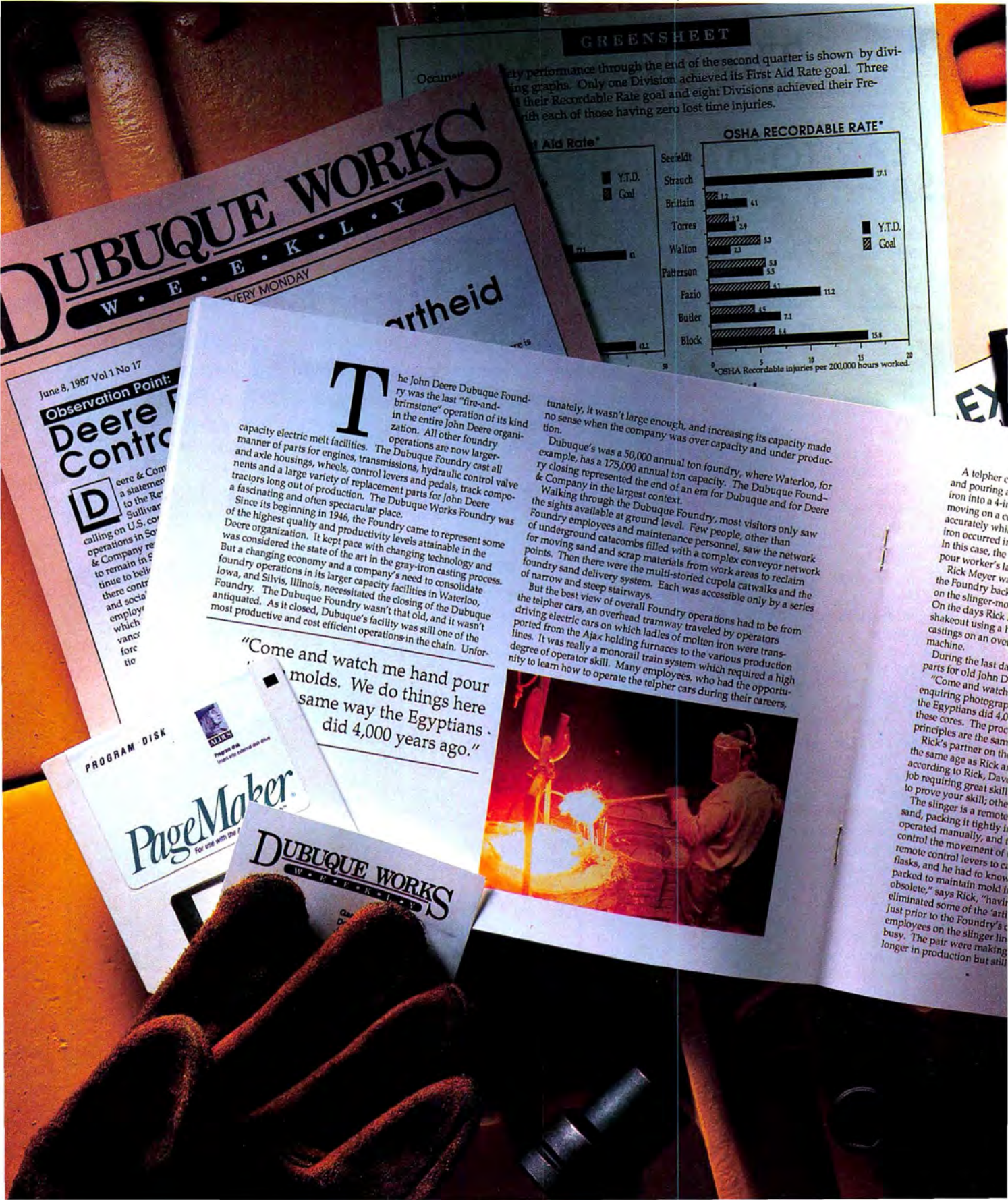
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### Observation Point: Deere Controls

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### artheid

**T**he John Deere Dubuque Foundry was the last "fire-and-brimstone" operation of its kind in the entire John Deere organization. All other foundry operations are now larger-capacity electric melt facilities. The Dubuque Foundry cast all manner of parts for engines, transmissions, hydraulic control valve and axle housings, wheels, control levers and pedals, track components and a large variety of replacement parts for John Deere tractors long out of production. The Dubuque Works Foundry was a fascinating and often spectacular place.

Since its beginning in 1946, the Foundry came to represent some of the highest quality and productivity levels attainable in the Deere organization. It kept pace with changing technology and was considered the state of the art in the gray-iron casting process. But a changing economy and a company's need to consolidate foundry operations in its larger capacity facilities in Waterloo, Iowa, and Silvis, Illinois, necessitated the closing of the Dubuque Foundry. The Dubuque Foundry wasn't that old, and it wasn't antiquated. As it closed, Dubuque's facility was still one of the most productive and cost efficient operations in the chain. Unfortunately, it wasn't large enough, and increasing its capacity made no sense when the company was over capacity and under production.

Dubuque's was a 50,000 annual ton foundry, where Waterloo, for example, has a 175,000 annual ton capacity. The Dubuque Foundry closing represented the end of an era for Dubuque and for Deere in the largest context.

Walking through the Dubuque Foundry, most visitors only saw the sights available at ground level. Few people, other than Foundry employees and maintenance personnel, saw the network of underground catacombs filled with a complex conveyor network for moving sand and scrap materials from work areas to reclaim points. Then there were the multi-storied cupola catwalks and the foundry sand delivery system. Each was accessible only by a series of narrow and steep stairways.

But the best view of overall Foundry operations had to be from the teletcher cars, an overhead tramway traveled by operators driving electric cars on which ladles of molten iron were transported from the Ajax holding furnaces to the various production lines. It was really a monorail train system which required a high degree of operator skill. Many employees, who had the opportunity to learn how to operate the teletcher cars during their careers,

"Come and watch me hand pour molds. We do things here the same way the Egyptians did 4,000 years ago."



A teletcher car and pouring iron into a 4-in. moving on a cast accurately while iron occurred in this case, the pour worker's last Rick Meyer was the Foundry back on the slinger-mo. On the days Rick shakeout using a machine. During the last days parts for old John D. "Come and watch an intriguing photograph the Egyptians did 4,000 these cores. The principles are the same Rick's partner on the the same age as Rick according to Rick, Davi job requiring great skill to prove your skill, other The slinger is a remote sand, packing it tightly in remote control levers to control the movement of flasks, and he had to know packed to maintain mold obsolete," says Rick, "having eliminated some of the 'art' employees on the slinger line busy. The pair were making longer in production but still

### GREENSHEET

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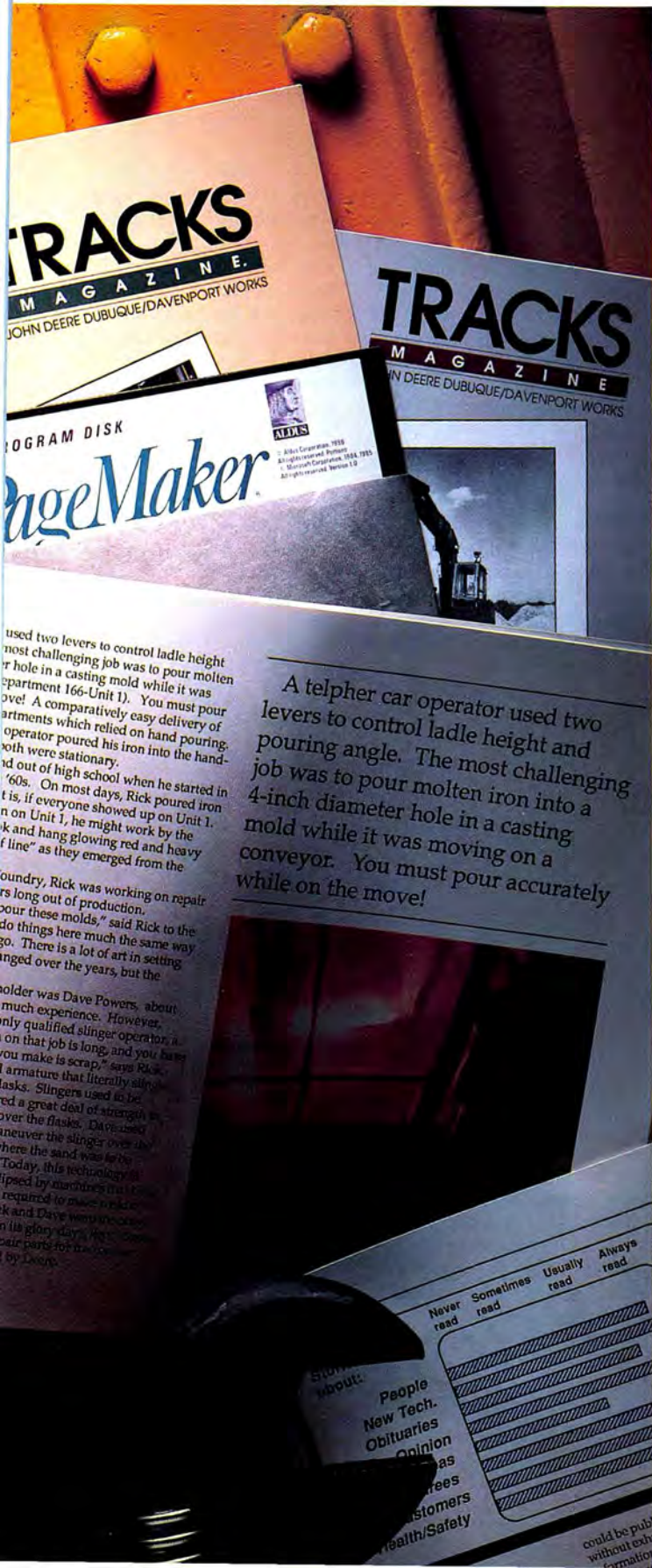
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BY  
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## No Longer On Target



Target Software recently lost their rights to distribute most of their product line. Deneba Software, developers of *MacLightning*, *Memorandum*, *Voila!* and the *Merriam-Webster Thesaurus*

for *Microsoft Word 3.0* decided not to extend Target Software's marketing and distribution license for these products. This decision also affects *Mentor*, another product written by Deneba

Systems, that Target had planned to use to replace *MacLightning*.

Deneba will be marketing these products themselves. However, the names of the products will be changing. Deneba cannot use the original names, since the original names were trademarked by Target. The new names are *Coach* for *MacLightning* (and what was to be *Mentor*); *XTRA* for *Voila!*; *Comment* for *Memorandum*; and *Coach Merriam-Webster Thesaurus* for the *Merriam-Webster Thesaurus for Microsoft Word 3.0*.

Both Target and Deneba maintain toll-free numbers and both companies have pledged that they will continue to support all their products. Deneba also plans to deliver all upgrades

promised by Target, but will use a special update procedure. Target has not provided Deneba with its list of registered users, so you must re-register your software with Deneba. To do so, simply call Deneba's 800 number and tell them what products you've purchased and their serial numbers (which is on each manual and master disk).

Both companies encourage you to call with any questions you may have regarding this reorganization. Deneba Software may be reached at 7855 NW 12 St., Suite 202, Miami, FL 33126, (800) 6-CANVAS, or (305) 594-6965 in Florida, while Target Software is available at 14206 SW 136th St., Miami, FL 33186, (800) 622-5483 (or 305-252-0892 in Florida).—DS

## Simultaneous Translation

One of the problems of trying to get the Macintosh into an IBM PC-dominated office has been communications. Until recently the only reasonable way for the two machines to talk to each other was via a direct link. Local Area Networks (LANs) have gone far to provide translation services, but are relatively expensive and require setting up and administration. They aren't the most efficient answer for small scale users.

If you work with limited space or staff or you only need to access the odd MS-DOS disk, the ideal answer would be to just pop your AT or XT disk into a drive attached to your Mac and read it in. Sound farfetched? It's not. If you want an effective, inexpensive translation solution, Dayna Communication has just the thing: DaynaFile.

DaynaFile is an external disk



drive that plugs directly into the Mac's SCSI port and lets it read and write to both IBM PC XT formats on both 5¼- and 3½-inch disks. The *Finder* is fully supported and the drive accesses MS-DOS files by way of an HFS-compatible system. All you have to do is pop a disk in the drive and click on the "fat disk" icon when it appears on the desktop. You don't need to type

in so much as "dir." Subdirectories show up as folders; files as Macintosh documents. You can edit, change figures or whatever needs doing and save to your Mac or to the original disk. The DaynaFile comes in a single or double drive and is about the same size as the ubiquitous Commodore 1571 drive, only longer. Special translation software is available to deal with

some formatting codes that the Mac can't understand directly.

A demonstration of DaynaFile in *MacUser's* offices pulled everyone away from their desks. And we don't even have to deal with MS-DOS programs. If you'd like to stare in amazement, too, you can get in touch with Dayna at 50 Main St., Salt Lake City, UT 84144; or by calling (801) 531-0600.—LK



# Designer Apples

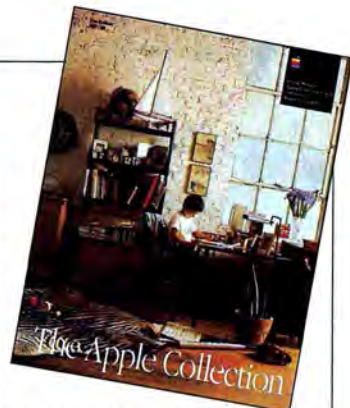
Now that you have your Apple computer with coordinated Apple printer and disk drive, wouldn't it be nice to complement them with matching Apple clothes and furniture? Or how about a pair of Apple binoculars, or, better yet, a bottle of Ridge Zinfandel Glen Ellen 1980 with Apple's gold seal of approval? No, I'm not having an Apple nightmare, I'm thumbing through the new Apple Collec-

tion catalog, containing over 150 Apple-brand products.

The Apple Collection (not affiliated with Apple Computer) has been marketing Apple label-paraphernalia for a few years. Their new, 1987/88, 36 page catalog is the largest yet. The diversified products range from a compact disk carrying case (\$16) and sun visors (\$9) to Swiss Army knives (\$34), a chocolate mouse (\$5.95) and a beau-

tiful, Rona-designed briefcase (\$460). The catalog contains 40 wearable items (eight of them for children), plus 14 pieces of jewelry. There are also 22 kinds of carry bags, including a plastic briefcase (\$12) and 13 different writing implements.

You can contact the Apple Collection and obtain a catalog by writing to PO Box T, Gilroy, CA 95021-2249, or by calling (800) 345-2888. Did I forget to

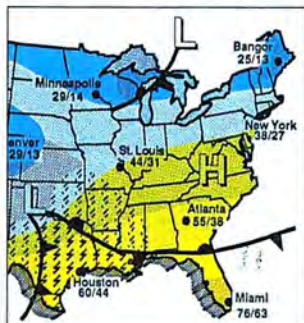


mention the Apple Spanish leather travel slippers? Good, I meant to.—DS

# Barometer of the Future

Meteorologists at Weather Central, a forecasting and map service for newspapers and broadcasters, have gotten a big boost by using the Macintosh to draw weather maps. "We cut production time by 75 percent," says Special Projects Director Charles Sholdt. Sholdt and his weather artists use *MacDraw* to place isobars and city temperatures on national and local maps that run in daily newspapers like the *St. Petersburg Times*.

The maps are sent by modem using *PackIt* (to merge the graphics and text) and are available on Knight-Riders' Press-Link service. Sholdt, who spearheaded the effort to use Macs at



Weather Central, says that in the beginning he couldn't even bring his Mac Plus into the IBM-dominated office. Now, the Mac has a larger share of other office chores, including financial forecasting.—BT

# Proof of the Pudding

Here's some new evidence that the Mac is penetrating the corporate marketplace. The June 1987 issue of *PC Tech Journal*, the leading technical magazine for IBM PC users, opened with a very interesting editorial regarding the Mac II entering the corporate market. Just having the Mac II mentioned in a positive light in this type-of publication is a good part of the battle towards corporate acceptance.

Will Fastie, Editor of *PC Tech Journal*, claimed that Apple will have a tough time selling the machine, partially due to the original image that the overzealous Steve Jobs created for the

Macintosh, with its closed architecture and innovative interface. Mr. Fastie thinks that this image is changing, but potential buyers will still have to "get religion" to fully accept Apple as a serious business company. Mr. Fastie goes on to comment that, from personal experiences, Apple is "very businesslike" and "very serious" about business.

*PC Tech Journal* included, directly next to the editorial, a ballot card asking readers for yes or no answers and to give the reasons why "the new Macintosh machines will be important to your company." We'll tell you the results as soon as we get them.—DS

# RUMOR MANAGER

The new 10-megabyte floppy drives should be available as you read this. There are actually several different kinds and several manufacturers so you're going to have to make some hard choices. One thing the different types aren't compatible with each other.

A Palo Alto-area developer has been showing a new utility product he is calling *Cabbage* for the time being. *Cabbage* is going to introduce some radically new ideas in file recovery. This guy really understands the Mac operating system, apparently better than Apple. He claims to have discovered features in HFS that even Apple was unaware of. This wonderful product quickly and, in most cases, easily, recovers trashed and otherwise seriously damaged HFS disks. Yes, it works on hard disks too! About all it has failed to handle is disks with serious

physical damage, like sections gouged away (yes, we tried that). At least three major (and/or very major) software publishers are engaged in a heated bidding war for the rights to *Cabbage*. The product is not yet complete—the interface still needs a lot of work—but could be out by the end of the year. And it's likely to be expensive. Since it's relatively small (right now), it is sure to be a contender for the highest price per byte Mac program.

Over 50 percent of all Mac software publisher presidents and CEOs are using custom-painted Macs. They apparently make a very deep impression, especially the wood and stone finish versions. What color is your Mac?

The recent slew of presentation software packages shows no sign of slowing down in spite of what appears to be

market indifference. Four more have been announced recently and we've seen a beta of yet another. The hardware slide makers still seem to be the better value in professional environments.

Our Japanese correspondent recently managed to break security at a large Tokyo-area firm and get a look at their new laser engine. It's capable of 3000-dot-per-inch resolution (yes, 3000, not 300), and since it's essentially made of the same parts used in the 300-dpi engines it will cost about the same to make. There are currently no plans to export these gems to the United States until late 1989 (internal Japanese demand is expected to be that heavy), but that may change. And when they do arrive they are going to revolutionize laser printing.

Speaking of revolutions, a full-scale developer revolt

against the way Apple is marketing Bill Atkinson's new *HyperCard* seems to be brewing. An awful lot of developers feel that this product is specifically aimed at *their* products, and they're mad, and they're gonna do something about it. Exactly what they're going to do is unclear, but we'll have more for you on this subject next month.

Have you heard any good rumors recently? Can you share them? Does your legal department agree? Will you share them anyway? If we use your rumor we'll send you a token of our appreciation and promise not to use your name. Anonymous contributions also accepted. Contact the Rumor Manager by snail mail or, better yet, electronically. Right now we can be reached on MCI Mail (MacUser), CompuServe (72257,2671) and AppleLink (X0259).

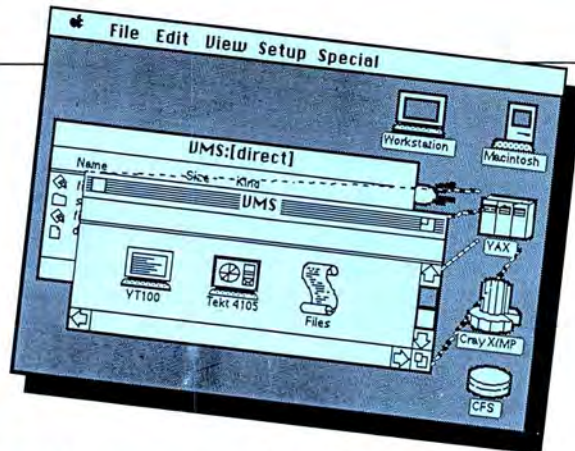
# Cray-On the Mac

"We want to bring supercomputer power to the masses," says Barry Fortner of the National Center for Supercomputing Applications at the University of Illinois. In this case "the masses" are thousands of scientists and engineers across the country; the supercomputer is the CRAY X-MP/48 which has a memory of some 8 million words; the terminals are, of course, Macintoshes and the link is software developed by Fortner's group.

NCSA Telnet transfers files

from the CRAY at speeds of 230 kilobauds—about 200 times faster than the average 1200-baud modem. But it's the CRAY Finder that brings supercomputer power to the Macintosh's icon-based environment. On top of that, NCSA Imagetool downloads color graphics from the CRAY and allows images to be flipped through at high speeds.

CRAY Finder and Imagetool open up new modeling power for scientists who use the Mac II. Up to now, astrophysicists at NCSA used the Sun workstation,



dedicated graphics hardware, to simulate spectacular celestial events such as the collision of two neutron stars. Now the Mac II is replacing the Sun for an all-in-one (word processing, calcu-

lation, graphics) terminal hook-up to the CRAY.

Apple Computer is subsidizing the Urbana, Illinois-based NCSA work to the tune of \$350,000 in equipment donations.—BT

## UPDATES

Programs, like people, change over time. To get the most out of your programs, you should be using the most recent versions. Here's a list of the current version number (as of press time) of many popular programs. The version number of a program can usually be found by running

the program and checking the About... item at the top of the Apple menu.

Apple System software is special. Generally, and unless you have a 128K Mac, you should be running System 4.1, and Finder 5.5 (128K owners should continue to use System 2.0 and Finder

4.1). If you don't have the latest System and Finder you can get them free from an authorized Apple dealer. Be sure to bring in a blank disk or two, though. A full Apple-supplied compatibility chart appears in the "The Help Folder" in the September issue.

All programs listed here are

HFS compatible. The meanings of the codes in the right column are as follows: CP or NCP, copy protected or not; //, programs we have found to be Mac II compatible (this is not a comprehensive list yet); S, shareware (try before you buy software); and 5, requires at least 512K of RAM.

Acta	1.2	NCP, //
AMS General Ledger	2.08	NCP
AppleShare	1.1	NCP
Aztec C	1.06H.1	NCP
Back to Basics	1.03	NCP
Balance of Power	1.03	CP
Business Filevision	1.1	CP
CalendarMaker	2.3	NCP, S
Chooser	3.1	NCP
ClickArt Effects	1.1	NCP, //
Clipper	1.01	NCP
ColorChart	1.3	NCP
ColorMate	2.1	NCP
ColorPrint	2.03	NCP
ComicWorks	1.0	NCP, //
ConcertWare+	4.0	NCP, //
ConcertWare+MIDI	4.0	NCP, //
Copy II Mac	6.5	NCP
Copy II HD	6.5	NCP
Cricket Draw	1.01	NCP, //
Cricket Graph	1.1	NCP, 5
Deluxe Music Construction Set	2.0	CP
DesignScope	1.14	NCP, 5, //
Disk Express	1.10	NCP, 5
Disk First Aid	1.0.1	NCP, 5
DiskInfo	1.45	NCP, S
Disk Ranger	3.0	NCP
DiskTop	2.0	NCP
Dollars & Sense	1.4	CP, //
Easy3D	1.01	NCP
Edit	2.1	NCP
ExperCommon Lisp	2.2	NCP, 5
ExperLisp	1.5	NCP, 5, //
ExperLogo	1.1	NCP
EZ Draft	2.0	NCP, 5, //
Fedit Plus	2.0	NCP, //
FileMaker	1.0	NCP, //
FileMaker Plus	2.0	NCP, //
Filevision	1.0	CP
Finder (MFS-128K)	4.1	NCP
Finder (HFS)	5.5	NCP, 5
FlashBack	1.4	NCP
Flight Simulator	1.0	CP
Fokker Triplane	1.0	CP
FONTastic	2.7	NCP
Font/DA Mover	3.5	NCP
Fontographer	2.3	CP, 5

Frame Mac	1.1	NCP, 5, //
FreeTerm	2.0	NCP, //
FullPaint	1.0	NCP, 5
Gato	1.42	CP
Glue	1.04	NCP
GraphicWorks	1.1	NCP
Hard Disk 20	1.1	NCP, 5
Hard Disk Utility	2.0	NCP, 5
Helix	2.0r11	NCP, 5
Helix, Double	DH1r35	NCP, 5, //
HFS Backup	2.01	NCP, 5
HFS Locator Plus	2.0	NCP
Illustrator	1.0	CP/NCP, 5, //
ImageWriter	2.6	NCP
ImageWriter, Apple-Talk	2.6	NCP
Insight GL	1.0	NCP, 5, //
InTalk	2.11	CP
Jazz	1A	CP, 5
JustText	1.1	NCP, 5
Laser Author	1.3	NCP, 5, //
Laser Prep	4.0	NCP
LaserShare	1.0	NCP
LaserStatus	2.0	NCP
LaserWriter	4.0	NCP
Layout	1.3	NCP, S
Lightspeed C	2.01	NCP
Lightspeed Pascal	1.0	NCP
Lode Runner	1.0	CP
Mac-3D	2.0	CP
MacASM	2.0	NCP
MacBillboard	4.01	NCP, S
Mac C	5.0	NCP, //
MacCalc	1.2	NCP
Mac Disk Catalog II	2.1.1	NCP
MacDraw	1.9	NCP
MacDraft	1.2a	NCP
MacFlow	1.02	NCP
MacGolf	2.0	CP
MacInTalk	1.1	NCP
MacLabeler	2.2	CP
MacMoney	2.02	NCP
MacMovies	1.02	NCP
MacNosy V2	2.55	NCP
MacPaint	1.5	NCP
MacPalette	1.0	CP
MacPascal	2.1	CP

Mac + [ ]	3.0	NCP
MacProject	1.1	NCP
MacProof	2.0	NCP
MacSafe	1.03	CP
MacServe	2.1	CP, 5, //
MacSpec	1.3	CP
MacSpin	1.1	CP
MacSpool	2.1	NCP
MacTerminal	2.0	NCP
MacTools (MFS/HFS)	6.5	NCP
MacWrite	4.5	NCP
Mac Zap Copier	4.52	NCP
MailManager	1.0	CP
MapMaker	2.0	NCP
MDS	2.0	NCP
Measure Test	9.10	CP, S, //
Megamax C	3.0	NCP
MicroPhone	1.1	NCP, //
Micro Planner Plus	5.8	CP
MindWrite	1.0	NCP
miniWriter	1.39	NCP, S
MockPackage+	4.3.4	NCP, S
MORE	1.1C	NCP, //
MPW	1.02	NCP, 5
MS BASIC	3.0	NCP
MS BASIC Compiler	3.0	NCP
MS Chart	1.0	CP
MS Excel	1.04	NCP, //
MS File	1.05	CP
MS Fortran	2.2	NCP
MS Word	3.01	NCP
MS Works	1.0	NCP
Multiplan	1.1	NCP, //
MusicWorks	1.1	CP
myDiskLabeler	2.11	NCP
Neon	2.0	NCP
Omnis III Plus	3.24	CP, //
OverVUE	2.1	NCP, //
PackIt III	1.3	NCP, S
PageMaker	2.0	NCP, 5
Parameter Manager	1.092	NCP
PictureBase	1.2	NCP
Plains and Simple	4.1	NCP, 5, //
PowerStation	1.0	NCP, 5
Profit Stalker II	1.3	NCP
QUED/M	2.0	NCP
Quick & Dirty Util.,		

Vol. 1	1.6	NCP
Quick & Dirty Util., Vol. 2	1.1	NCP
Rags to Riches	3.0	CP, //
RagTime	1.1	CP, //
Ready, Set, Go! 3	3.0	NCP, //
Record Holder	2.1	NCP
REdit	1.2	NCP
Red Ryder	9.4	NCP, S
Reflex	1.01	NCP
ResEdit	1.1d12	NCP, //
Sargon III	1.0	CP
SideKick	2.0	NCP
Silicon Press	1.1	NCP
Slide Show Magician	1.3	CP
Smartcom II	2.2B	NCP, //
SoundCap	4.4	CP
SpellNow	1.0	NCP
Spellswell	2.0	NCP
StatView 512+	1.1	NCP
StatWorks	1.2	NCP, //
Stella	1.3	CP, 5, //
Straight Talk	2.08	NCP, //
Studio Session	1.4	CP
SuperPaint	1.00	NCP, 5, //
Switcher	5.1	NCP, 5
System (MFS-128K)	2.0	NCP
System (HFS)	4.1	NCP
Telescope Pro		
VT100	1.0	NCP
Tempo	1.1	NCP
ThinkTank 512	1.3	NCP
Thunder!	1.0.1	NCP
ThunderScan	3.4	NCP
TML Pascal	2.01	NCP
TMON	2.614	NCP
Top Desk	2.3	CP
Turbo Maccountant	2.0	NCP, //
Turbo Pascal	1.0E	NCP, //
VersaTerm	3.0	NCP
VersaTerm Pro	2.0	NCP
VideoWorks	1.1	NCP
VIP	2.0	NCP
Widgets	2.0	NCP
WorksPlus Spell	1.0A	NCP
WriteNow	1.0	NCP, //
XPress	1.04	CP, 5
ZBasic	3.03	NCP

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- Plot a graph
- Generate a report, then send the output to your printer, disk file or screen
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- Interest Rate/Present Value calculations
- Variables we call "What happens?," like "What happens if I change this variable to 21 and that variable to 27?"

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- Inequality solutions
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**Minimum system requirements:**  
Any Macintosh with at least 512K.

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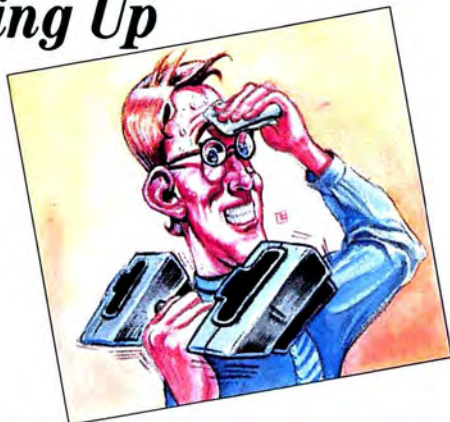
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## Toning Up



Continually changing the cartridge in a LaserWriter can become an expensive proposition. If your LaserWriter uses a toner cartridge once a month, the yearly bill can be over \$1,000. The Laser Connection, a subsidiary of QMS, believes they have the solution with their Toner Refill Certificate Program.

As your toner cartridge comes to its end, simply go to your nearest dealer and buy the Toner Refill package. In the package

you'll find a prepaid refill certificate, a claim stub (for your records) and mailing label (preaddressed to the refill plant). Your nearly empty cartridge is shipped to the refilling plant in New Jersey. The Laser Connection claims that their special refilling process gets 50 percent more black toner or 25 percent more blue in each refill. Only a few days, after you send it, it'll be back in your hands, ready to churn out more copies.

The refills are available in two colors: \$69 for the black, \$79 for blue. Shipping to the plant is extra; return shipping is included in the prices. Each cartridge can only be refilled twice and the Laser Connection won't refill any cartridges that have been

previously refilled by other manufacturers.

To locate your local dealer or to find out more about their products, write to the Laser Connection at PO Box 850296, Mobile, AL 36685, or call them at (800) 523-2696.—DS

## DIALOG BOX OF THE MONTH



Please put the disk: "There are problems with this disk. Please try a different one." into the drive.

We've seen some unusual disk names in our time, but "There are problems with this disk. Please try a different one" as a disk name? I don't think so. It appears that this dialog box, which started off in *MacTools*, the utility package by Central

Point, got jumbled and confused on its way to the screen.

Have you come across any unusual dialog boxes lately? Share them with us by sending a screen dump to MacUser Dialog Box, c/o MacUser, 11 Davis Drive, Belmont, CA 94002.—DS

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## Investing in Shares

Two new products, *ModemShare* and *NetModem*, may do for telecommunications what *LaserShare* is doing for laser printing. Each product allows several computers linked by AppleTalk to share one modem. This strategy may save small companies several hundred dollars in additional modem and phone line installation costs.

*ModemShare* runs over an AppleTalk network with a Mac and modem dedicated as a server. It reportedly supports most telecommunications programs, but beta testing indicates problems with older applications like *MacTerminal*. It can run in either the background or foreground of both a Mac and an *AppleShare* file server.

*NetModem* is actually a 1200-baud modem that can also be accessed by a Mac over an AppleTalk network. The modem's



status display with its blinking LEDs is simulated on the menu bar. A nice realistic touch is that you can hear dial tones and busy signals on the remote Mac so you know when and if a connection is being made.

*ModemShare* is marketed by Mirror Technologies, 2209 Phelps Rd., Box 304, Hugo, MN 55038, (800) 328-6795, and retails for \$200. *NetModem* is available for \$599 from Shiva, 222 Third St., Suite 1200, Cambridge, MA 02141.—BT

## Correction

The July Quick Click on the CMS S-140 SCSI Hard Disk incorrectly states that *Hard Disk Partition* from FWB Software comes with the hard disk. CMS' original plans to market the program along with its hardware

were dropped after *MacUser* went to press. CMS does recommend *Hard Disk Partition*, which is available from FWB Software, 2040 Polk St., Suite 215, San Francisco, CA 94109, 415-474-8055 for \$54.95.—BT

## BUG OF THE MONTH

This month's bug is simple, yet deadly and can easily lock up your computer, forcing you to reboot. The culprit application is *Turbo Pascal*, version 1.00, by Borland International. Finding the bug requires all document windows to be closed, so it's not possible to lose your files.

Once you are in *Turbo Pascal*, close all open windows. Then hit any key on the keyboard. You'll have to reboot once that's done, because the system is now frozen; nothing will function.

The (un)lucky programmer who discovered this bug is Tim Votaw of Anaheim, CA. Look in the mail for your \$25 check, Tim. Send any bugs that you may have stumbled upon to Buggy, c/o *MacUser*, 11 Davis Drive, Belmont, CA 94002. Always remember to include all of the related details, including what *Finder* and *System* versions were used, what non-standard DAs were installed, etc., and exactly what you did to get the bug to appear.—DS



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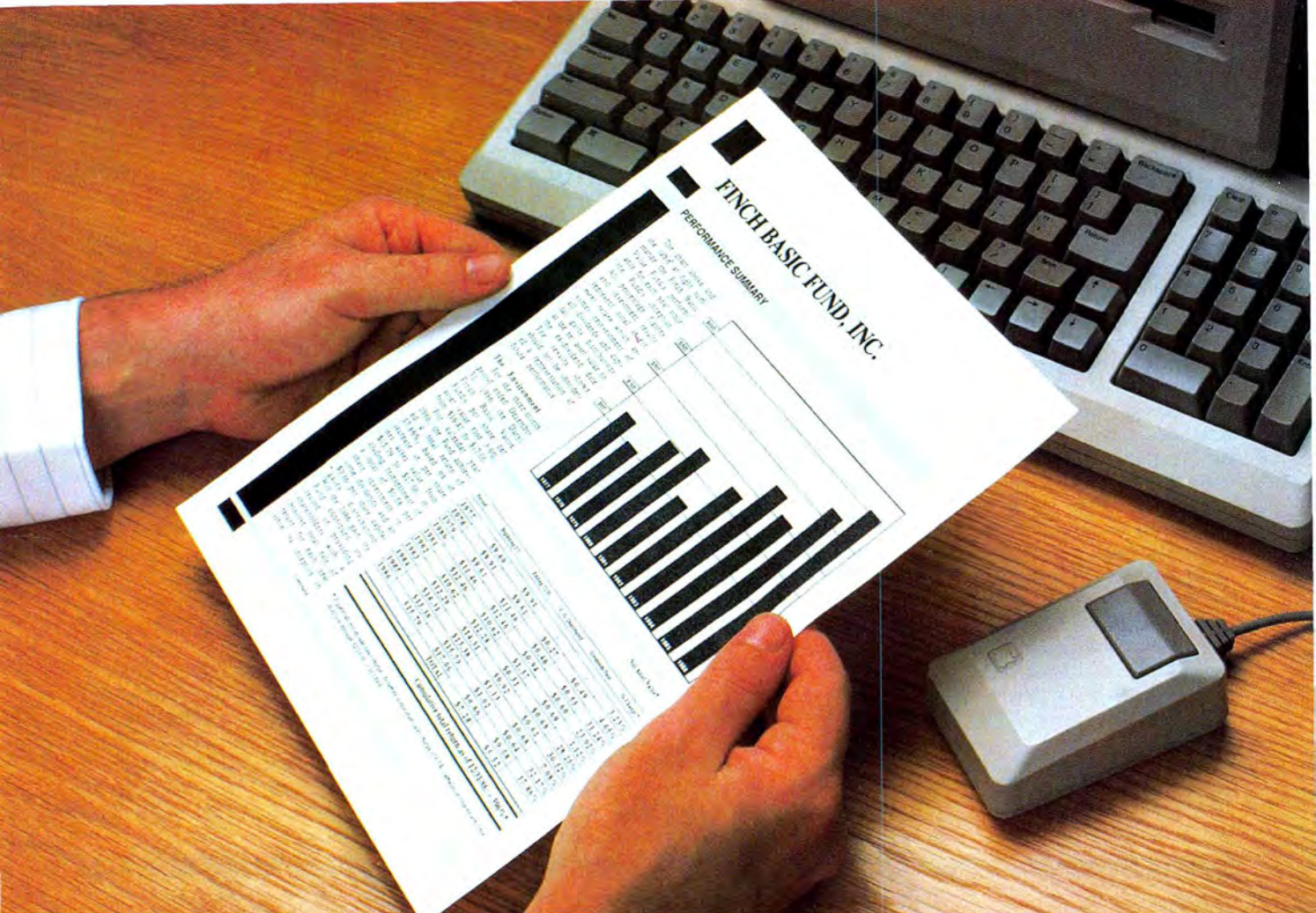


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by Robert R. Wiggins

## Overpower Your Mac

There's a new sickness spreading across corporate America: speed lust. Normally calm and sedate accountants, marketing types and finance wizards start palpitating and slaving when the conversation turns to the Macintosh II. "The 68020," one chortles. "The 68881," another whispers longingly.

And it's not only the Mac II. Since the Mac II has been in short supply, the Mac SE has been filling their days with loving talk of accelerator boards. [Editors Note: An accelerator board is an add-on (or add-in) product that puts a fast 68020 CPU (like the one in the Mac II) in your SE. Most add more RAM and other goodies. They range in price from \$895 to \$2000, depending on manufacturing and features.] Nor is it just the computers these speed freaks are lusting after. They sit in darkened bars after work and compare hard disk access times and toast 9600-baud modems.

The Macintosh, which began life as a "toy" to these very same people, has suddenly become the springboard to the raw speed they all want. The question is, do these people really need this speed they're perpetually seeking? The answer, for the most part, is no.

For some strange reason, in March the Mac Plus didn't just go from being the top of the Macintosh line to the bottom of the line. In most people's minds, it disappeared from the line completely. The decision tree most purchasers follow only has two main branches: the Mac SE and the Mac II.

Admittedly, the Macintosh II does a

lot to obscure its lesser siblings. The Mac II is a sexy machine. It may not look like a lot, but boy, can it fly! And then there's color. Pure sex appeal. It's no wonder that the speed freaks go nuts over this machine, since it has so many other capabilities in addition to its raw speed. But it is expensive.

The SE, on the other hand, has the simplicity of the Plus, but with a fan and optional internal hard disk. And with some minor improvements, the SE is about 20% faster than a Plus. Hardly enough for the speed freaks. But the SE also has that slot just begging the speed freaks for an accelerator card.

What about the lowly Plus, forgotten in the quest for speed? Well, not completely forgotten, since there are even some accelerator cards for it. But for the most part, when it comes time to buy a new machine, it is an SE or a II, and seldom a Plus.

And herein lies the problem: Business users are spending too much money on equipment they don't need. They are literally overpowering their Macs in the madcap race for speed—and wasting the company's money in the process.

*Item:* At least 90% of all business users have absolutely no need for a Macintosh II. They don't need color. They don't need all the slots, and they don't need the memory. Most of all they don't need the compatibility problems and other assorted headaches the Mac II brings along with the power and glory.

*Item:* At least 75% of all business users have no need for an accelerator slot at all. And for those who do, the number one card that should be slipping into these slots is not an accelerator card—it's a communications card such as the Avatar 3278 card or an Ethernet card.

*Item:* At least 50% of all business users have no need for an expansion slot at all. And for those who do, the number one card that should be slipping into these slots is not an accelerator card—it's a communications card such as the Avatar 3278 card or an Ethernet card.

There are reasons to get a Mac II or SE. But make sure you really need one—or will need the extra capabilities in the future—before committing the compa-

ny's money. Instead of embarking on a pointless quest for speed, think twice the next time a purchase order comes through. Think about the Mac Plus, which a year ago was enough to make most anyone happy. And save the company some money. Think, even, about a used Mac Plus, and save the company *more* money. Slow down. Speed kills, and in this case what gets killed may be your career when the departmental budget goes out of control due to all the speed freaks.

### MEA CULPA

In my July column I blasted magazines (including this one) for reviewing prerelease software. Then in my Pinstripe Picks in the very same column, I picked *Red Ryder 10.0*, which, as you may know, was not yet available at the time the column appeared. So I am guilty of the very same crime for which I was lambasting everyone else.

As a weak defense, let me say that I had been using an early developmental version of *Red Ryder 10.0* for many months which had so few bugs that even if it had been released unchanged I would have still been able to recommend it. And knowing Scott Watson, I knew the final version would only be better, so I felt safe in recommending it. My timing, however, was off, and Scott spent some extra time polishing it, so my pick was premature.

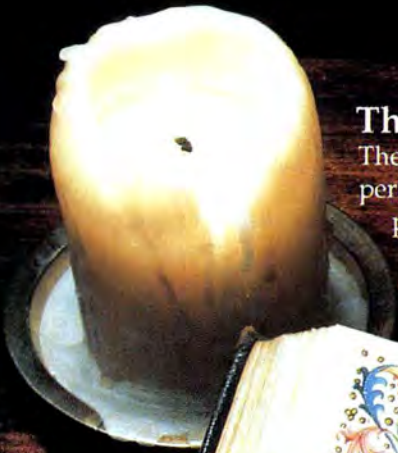
My apologies to everyone who was put out by my overeager recommendation. My special apologies go to Don Killian over at the Freesoft Company, who lost his voice explaining my error to the many people trying to order version 10.0.

### MEA CULPA, MEA CULPA

It gets worse. In my August column one of my Pinstripe Picks was *Da Mob*. In this case I jumped the gun so far that the name of the product changed before the column appeared. So if you have been looking for the product which lets you have virtually unlimited DAs, fonts and FKEYs, ask for *Suitcase* from Software Supply.



# Attention to Detail



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**MEA CULPA, MEA MAXIMA CULPA**

As long as I've caught you in a forgiving mood, there's one last thing I should confess. After I turned in my August column which recommended *PowerStation* and *Da Mob* (now *Suitcase*)—but before it appeared in print—Steve Brecher, author of *PowerStation* and *Suitcase*, asked me if I'd write the manuals for the two products. I agreed, so if you bought either of these products based on my recommendations then saw my name in the manual, be assured that I was not trying to abuse my position or your trust. One of the reasons I agreed to write the manuals was that I already thought they were excellent products.


Writing manuals is harder than it would appear, and I have a major new project (which you may have heard about at the Boston Mac Expo) making demands on my time, so this should not happen again.


**PINSTRIP MAILROOM**


I do get the mail you send in care of this magazine, but I can seldom find the time to reply. I am a much better electronic mail correspondent, so if you have any gripes, beefs or suggestions, you can reach me on CompuServe at 76703,3036 where I'm the sysop of the MAUG Macintosh Business Users Forum (GO MACBIZ), or on the Source at BBX523 (in PARTI I'm WIGGO), or on GENie or Delphi at WIGGO, or on PARTI on NWI at ROBERT WIGGINS. Paper mail should continue to be sent to *MacUser*.



**PINSTRIP PICKS**

Hardware products worth looking into if you use your Macintosh for business:

 **Radius Full Page Display:** the Rolls-Royce of the big screens, designed by Burrill Smith, the original Macintosh hardware wizard, with ROM code by Andy Hertzfeld, the original Macintosh software wizard. Early production problems have been overcome, and the latest ROM version (2.8) is stable. An amazing piece of equipment. A must for desktop publishing.

 **Jasmine 80:** the first truly inexpensive large capacity hard disk for the Macintosh. Its low price has made it very popular.

 **CMS 80:** another low-cost, high-capacity disk which is enjoying popularity, particularly among Mac II owners.

 **Levco Prodigy:** the father of the accelerated motherboards. Available for the Mac Plus as well as for the SE. 

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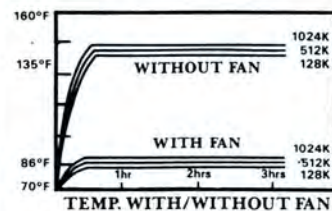
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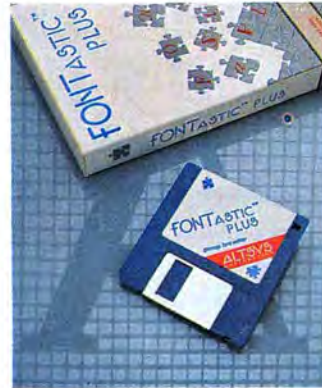
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# Programs & Peripherals

Picks of the Month



## FONTastic Plus by Altsys Corporation



**FONTastic Plus** is the premier bitmap font editor for the Mac. It gives you the power to *change any screen font*. **FONTastic Plus** can create special symbols in seconds and helps you to make your own letters. You can also edit several fonts at once, create true kerning pairs, print samples and use guidelines. Everything you need to make fonts is at your fingertips with **FONTastic Plus**.

**FONTastic Plus**..... 45.

## MicroPhone 1.1 by Software Ventures

**MicroPhone 1.1** is the best-selling telecom software for the Macintosh. It offers fast and reliable communications with other PCs, minis, mainframes and info services. **MicroPhone** allows you to automate log-on sequences, data transfers and electronic mail. With the unique Watch Me features, script creation is a snap so you don't need to learn a new language. **MicroPhone** now comes with an on-line text editor and includes *Glue* for desktop publishing. Get in touch with other computers by using **MicroPhone 1.1**.

**MicroPhone 1.1** ..... 109.



## MindWrite 1.1 by MindWork Software

**MindWrite** is the best idea organizer for any professional who writes. It allows documents to evolve naturally from notes, through an outline into finished text. **MindWrite** moves easily between writing and outlining, automatically tracking revisions for you. A special search function allows you to abstract all references to a certain topic into a new document. In addition to all this, **MindWrite** automatically renumbers sections and lists, creates table of contents, counts characters, words, and paragraphs and displays as many windows as memory allows. If



you have writing on your mind order **MindWrite** now!

**MindWrite 1.1** ..... 179.

## Utility Software

<b>Berkeley System Design</b>	<b>Personal Computer Peripherals Corp.</b>	
Stepping Out ( <i>Macintosh Screen Extender</i> )	HFS Backup V2.0	29.
<b>Central Point Software</b>	Softstyle Printworks	47.
Copy II Mac ( <i>Includes MacTools</i> )	Laserstart Plus	89.
<b>FWB Software</b> Hard Disk Util	<b>SuperMac Software</b> SuperSpool	
Hard Disk Backup or Hard Disk Partition	( <i>ImageWriter Print Spooler Utility</i> )	39.
<b>Ideaform</b>	DiskFit ( <i>Backup &amp; Restore Utility</i> )	49.
Mac Labeler ( <i>Version 2.2</i> )	SuperLaserSpool	99.
DiskQuick ( <i>Disk Librarian</i> )	Multi-User SuperLaserSpool	259.
<b>Infosphere</b>	Sentinel	49.
MacServe ( <i>Network Software</i> )	<b>THINK Technologies</b>	
LaserServe ( <i>LaserWriter Print Spooler</i> )	LaserSpeed ( <i>Single User</i> )	65.
ComServe ( <i>Modem Sharing Software</i> )	LaserSpeed Office Pack	279.
<b>Olduvai Software</b> DA-Switcher	<b>Williams &amp; Macias</b> myDiskLabeler	24.
( <i>Switch Multiple Sets of DA's</i> )	myDiskLabeler w/ Color	33.
Icon-It! ( <i>Assign Icons to Menu Items</i> )	myDiskLabeler w/ LaserWriter Option	37.
	<b>Working Software, Inc.</b>	
	Findswell ( <i>Document Finder</i> )	32.

## Desk Accessory Programs

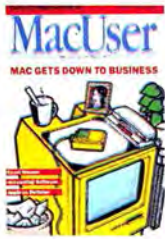
<b>Affinity Microsystems</b> Tempo	55.	<b>Imagine Software</b>	
<b>Batteries Included</b>		Smart Alarms & Appointment Diary	38.
Battery Pak ( <i>9 Desk Accessories</i> )	32.	Smart Alarms & Appointment Diary Multi-User	99.
<b>Borland</b>		<b>Solutions, Inc.</b>	
SideKick V2.0	59.	SmartScrap & The Clipper	
<b>Cortland</b>		( <i>New Scrapbook DA</i> )	41.
Top Desk ( <i>7 New Desk Accessories</i> )	34.		

## Languages

<b>Apple Computer</b> MacPascal	99.	<b>Microsoft</b> Basic Compiler 1.0	119.
<b>Borland</b> Turbo Pascal	59.	Microsoft Fortran Compiler 2.2	169.
<b>Consular</b>		<b>THINK Technologies</b> Lightspeed C	119.
Macintosh 68000 Development System	59.	Lightspeed Pascal	79.
<b>Mainstay</b>		<b>TML Systems</b> TML Pascal V2.0	68.
V.I.P. ( <i>Visual Interactive Programming</i> )	85.	TML Source Code Library	58.
<b>Microsoft</b>		TML DataBase Toolkit	64.
Microsoft Basic Interpreter 3.0	64.	<b>Zedcor, Inc.</b> ZBasic 4.0	64.

## Communications Software

<b>Apple Computer</b> MacTerminal	99.	<b>Software Ventures</b>	
<b>Compuserve</b>		Microphone 1.1 ( <i>Includes Glue</i> )	Special 109.
Compuserve Starter Kit	24.	<b>Think Technologies, Inc.</b> InBox-Starter	
<b>DataViz</b> MacLink Plus with Cable	149.	Kit V2.0 ( <i>3 Personal Connections</i> )	219.
<b>Hayes</b> Microcomputer Smartcom II	88.	InBox-Additional Personal Connections	79.



**DECEMBER '85**  
Accounting software - Excel Macros - Is it *Just Text?* - Novels of the Mind - Beginners guide to telecommunications - MIDI to the Macs - Basic Pt. 2 - QuickSet, Sidekick & BatteryPak reviewed



**JANUARY '86**  
Best products of 1985 - ThinkTank the creative way - *Deja Vu* review - The Great Language Face-Off - MUG Line—users group - Crunch - Beyond the ImageWriter - Basic Pt. 3



**FEBRUARY '86**  
Power User's Manual - The Laser-Writer Revealed - Function Keys - Apple's HD20 & HFS - MacDraft vs. MacDraw - Business Television - *Rogue* - 3 flight simulators reviewed - Basic Pt. 4



**MARCH '86**  
The Mac Plus - *Helix* - Sargon III vs. *Psion Chess* - *Omnis 3* - MacProject and Micro Planner review - Multiplan - C Pt. 1 - Clipboard, Note Pad and Scrapbook revelations



**APRIL '86**  
Softstrip reader - ReadySetGo 2.0 - Astronomy software roundup - *The Home Accountant* - The Cheat Sheet - *The Ancient Art of War* - *Interface*—a relational Bargain - C Pt. 2



**MAY '86**  
Upgrading your Mac - Secrets of Word - *StatWorks* & *StatView* - *Easy 3D* - Tee off with MacGolf - *Borrowed Time* - Kids games with *Slide Show* - *Magician* and *VideoWorks* - C Pt. 3



**JUNE '86**  
Special Desktop Publishing Issue - Newsletters - *Fontographer* and *Laser-Writer* fonts - *PageMaker 1.2* - Directory - *MacSpin* - *Switcher* and RAM disks - *TML Pascal* - *Wizardry* - C Pt. 4



**JULY '86**  
*Tempo* - *MicroPhone* - *Smartcom* and *Red Ryder* - *CLR Libraries* - Games that let you make games - *Quartet* and *Ensemble* - *Mac-a-Mug* - *Pascal* Pt. 1



**AUGUST '86**  
Mac systems in the office - Your First Utilities - *Radio Shack Model 100* and Mac - Software print spoolers - The colors of *Silicon Press* - On-line services - *Pascal* Pt. 2



**SEPTEMBER '86**  
Professional Desktop Publishing Issue - Effective Charting - Power Word Processing - The Linotronic Connection - *MacPublisher II* - SCSI hard disk roundup - MORE - *Uninvited*



**OCTOBER '86**  
*Microsoft Works* - As the *Double Helix* twists - Nine spell checkers reviewed - *Archon* - Word games galore - Exploring MAUG - *Full-Painting* - *Finder* basics - *Pascal* Pt. 3



**NOVEMBER '86**  
Radius monitor - *Works* - *Power PageMaker* techniques - Beginners telecommunications - *Cricket Graphing* - *Flight Simulator* - *Orbiter* - *StoryBoarder* - *Shanghai* surprise - *Pascal* Pt. 4



**DECEMBER '86**  
MacUser looks at the IIGS - *InBox* - AppleTalk Electronic Mail - *Inside Insight* - *Studio Session* - *PhoneNET* - *OrbQuest* - Secrets of *Pascal* - *ZBasic* - *StatView 512K+* - Smart Games



**JANUARY '87**  
Special Desktop Productivity Issue - Jazz vs. *Microsoft Works* - 2nd Annual Editor's Awards - Desktop Publisher of the Year - *MapMaker* - *GrayPaint* - *Dungeon of Doom*



**FEBRUARY '87**  
Dynamac preview - *Is SuperPaint* super-HardBall, a great baseball game - Get more out of MORE - SCSI drive comparison - Design your own Mac screen - *LightSpeed Pascal*



**MARCH '87**  
Word processors round-up - *Word 3.0* - *WriteNow* - *dBase Mac* preview - Financial and tax programs - Buffers go head to head - *Mac Pro Football* review - Prolog - AI for the Mac



**APRIL '87**  
Two new Macs - Page processing with *Ragtime* - *Guide* review - Clean copy with *MacProof* - Create a world with *World Builder* - *Dark Castle* review - DAs galore - *LightSpeed C* review



**MAY '87**  
Desktop Communications Issue - *AppleShare* - *TOPS* - *InterMail* vs. *inBox* - *Music Mouse* - *BASIC 3.0* interpreter & Compiler - *Cricket Draw* - *EZ-Draft* - *MacMoney*



**JUNE '87**  
Visual Programming - *Trapeze* - *Secrets of Excel* - How to pick the right programs for your publishing job - *V.I.P.* - *Scrapbook* - *Seven Cities of Gold*



**JULY '87**  
Special Supplement—Desktop Publishing: *Pagemaker 2.0* - *Ready, Set, Go!* 3 - *Illustrator* - Type-setting on your Mac - The Apple Desktop BUS - *Chessmaster 200* - *Parameter Manager* - *Turbo Pascal*



**AUGUST '87**  
The Writing Process—*MindWrite* - *PowerPoint* for presentations - *UNIX* - A BASIC approach to writing a MIDI program - *LISP* the AI language of choice

# MacUser

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## DataBase Management

<b>Blythe Software</b> Omnis 3 Plus 259.	<b>Microsoft</b> Microsoft File 1.05 110.
Omnis 3 Plus Multi-User ( <i>MacServe, Tops Network, Corvus, or Appleshare Network</i> )	<b>Nantucket Corporation</b> McMax ( <i>Run dBase Programs on the Mac</i> ) 189.
<b>499.</b>	<b>Odesta</b> Double Helix 275.
<b>Borland</b> Reflex 59.	Multi-User Helix 429.
<b>Chang Laboratories</b>	<b>ProVUE</b> Development OverVUE 2.1 149.
C.A.T. Contacts*Activities*Time	<b>Software Discoveries</b> MergeWrite 32.
<b>239.</b>	RecordHolderPlus <i>Special 45.</i>
<b>Forethought</b> FileMaker Plus 159.	

## Business Software

<b>Apple Computer</b> MacProject 159.	<b>Legisoft/Nolo Press</b>	
<b>Batteries Included</b>	WillWriter V2.0 31.	
Isgur Portfolio System 125.	<b>Lotus Jazz (Version 1.A)</b> 179.	
Time Link 32.	<b>Micro Planning Software</b>	
<b>Bravo Technologies</b> MacCalc 85.	Micro Planner Plus <i>Special 289.</i>	
<b>Cricket Software</b>	<b>Microsoft</b>	
Cricket Graph 125.	Microsoft Works 1.0 189.	
<b>Data Tailor</b>	Microsoft Multiplan 1.11 110.	
Trapeze ( <i>Spreadsheet/Color Report Generator</i> ) 169.	Microsoft Chart 1.02 72.	
<b>Deneba Software</b> Comment ( <i>Attach Electronic Notes to Files</i> ) 64.	Microsoft Excel 1.04 224.	
<b>Forethought</b> PowerPoint 209.	<b>Satori Software</b>	
<b>Layered</b>	Legal Billing 359.	
Notes For Excel, PageMaker, Microsoft Works or Word 3.0 ( <i>each</i> ) 42.	Legal Billing II 519.	
	Project Billing 429.	
	Bulk Mailer 3.0 89.	
	Bulk Mailer Plus 3.0 219.	

## Word & Outline Processors

<b>Ann Arbor Softworks</b>	<b>MindWork Software</b>	
FullWrite Professional 169.	MindWrite 1.1 <i>Special 179.</i>	
<b>Apple Computer</b> MacWrite 99.	<b>OWI International</b> Guide 79.	
<b>Firebird</b> Licensees Laser Author 105.	Guide Envelope System 99.	
<b>Living Videotext</b> More 149.	<b>Symmetry</b> Acta V1.2 37.	
<b>Microsoft</b> Microsoft Word 3.0I 239.	<b>T/Maker Company</b> WriteNow 98.	

## Spelling & Grammar Checkers

<b>Aegis Development</b>	<b>Coach Merriam</b> Webster's Thesaurus 2.0 39.
Doug Clapp's Word Tools 42.	<b>Lundeen &amp; Associates</b> WorksPlus Spell 38.
<b>A.L.P. Systems</b> MacProof V2.0 ( <i>Requires MacPlus</i> ) 99.	<b>Murolytics, Inc.</b>
<b>Batteries Included</b>	Word Finder ( <i>Synonym Finder</i> ) 39.
Thunder! ( <i>Interactive Spelling Checker</i> ) 32.	<b>Working Software Inc.</b>
<b>Deneba Software</b> Spelling Coach 3.0 ( <i>Webster's/Medical/Legal/Hyphenation</i> ) 64.	Spellswell Spelling Checker & Proofreader V1.3 44.
<b>Spelling Coach</b> 3.0 Professional ( <i>Adds Definitions &amp; Thesaurus</i> ) 129.	Spellswell Medical Dictionary ( <i>35,000 Medical Terms</i> ) 57.
	Lookup ( <i>Makes Spelling Suggestions</i> ) 32.

## Desktop Publishing

<b>Aldus Corporation</b>	<b>Postcraft International, Inc.</b>	
PageMaker 399.	Laser FX ( <i>Typographical Special Effects for Desktop Publishing</i> ) 119.	
<b>Boston Publishing Systems</b>	<b>Solutions, Inc.</b>	
The MacPublisher III 149.	Glue ( <i>Adds "Print to Disk" Capability</i> ) 41.	
<b>Letraset</b> Ready, Set, Go! 3.0 249.	Super Glue ( <i>Graphics Integration Package</i> ) 59.	
Ready, Set, Go! 4.0 289.		

## Accounting Packages

<b>BPI</b>	<b>Digital, Etc.</b>	
BPI Entry Series-General Accounting 135.	<b>Turbo</b> Maccountant V2.0 259.	
<b>Chang Labs</b>	<b>Migent</b>	
<i>New Enhanced Version III Modules!</i>	In House Accountant 99.	
Rags to Riches GL, AR, or AP 125.	<b>Monogram</b>	
Rags to Riches Three Pack- ( <i>GL/AR/AP</i> ) <i>Special 279.</i>	Dollars & Sense 81.	
Inventory Control 243.	<b>Peachtree</b>	
Professional Billing 243.	Back To Basics Three Pack ( <i>GL/AR/AP</i> ) 129.	
Professional Three Pack- GL/Professional Billing/Payables 349.	<b>Survivor Software</b>	
	MacMoney ( <i>Financial Planner</i> ) 42.	

## Statistics Packages

<b>BrainPower</b>	<b>Systat</b>	
StatView 512 Plus 179.	Systat 3.1 ( <i>Specify Mac 512K, MacPlus, or Mac II</i> ) 459.	
<b>Cricket Software</b> Statworks 77.		

## Graphics Software

<b>Altsys Corp.</b> FONTastic 27.	<b>Japanese Clip Art</b> Scroll 1 "Heaven" or Scroll 2 "Earth" 59.
FONtastic Plus <i>Special 45.</i>	<b>LaserWare, Inc.</b> LaserPaint 319.
Fontographer 2.2 245.	LaserWorks 199.
<b>Ann Arbor Softworks</b> Full Paint 53.	<b>Miles Computing</b> Mac The Knife Volume III, IV, or V 27.
<b>Apple Computer</b> MacPaint 99.	<b>Mindscape</b> ComicWorks GraphicWorks 1.1 64.
<b>Broderbund</b> Print Shop 39.	<b>Olduvai Software</b>
<b>Toy Shop</b>	Fluent Fonts 2.0 ( <i>Two-Disk Set</i> ) 29.
<b>Casadyware</b>	Fluent Laser Fonts Vol. 1-15 ( <i>ea</i> ) 48.
Fluent Fonts 2.0 ( <i>Two-Disk Set</i> ) 29.	<b>Deneba Software</b>
Fluent Laser Fonts Vol. 1-15 ( <i>ea</i> ) 48.	Canvas 1.0 ( <i>Graphics Capabilities of MacPaint &amp; MacDraw</i> ) 129.
<b>Silicon Beach Software</b>	Canvas DA 1.0 ( <i>Desk Accessory Version</i> ) 64.
SuperPaint 54.	<b>Dubl-Click Software</b>
Silicon Press 41.	World Class Fonts! Vol. 1 or Vol. 2 World Class Fonts! ( <i>Both Volumes</i> ) 28.
<b>Springboard</b> Certificate Maker 35.	WetPaint Vol. 1 or Vol. 2 28.
Certificate Maker Library #1 21.	WetPaint ( <i>Both Volumes</i> ) 49.
<b>Symmetry</b> PictureBase V1.2 44.	<b>Enzan-Hoshigumi USA</b>
<b>T/Maker</b>	MacCalligraphy 2.0 115.
Click Art Letters I, Letters II, Personal Graphics, Publications, Effects, Business Image, or Holidays ( <i>each</i> ) 28.	
Click Art Laser Fonts: Plymouth, Bombay, or Seville ( <i>each</i> ) 46.	

## CAD Products

<b>Apple Computer</b> MacDraw 159.	<b>Enabling Technologies</b>	
<b>Challenger Software</b>	Easy 3D 69.	
Mac 3D ( <i>Enhanced Version 2.0</i> ) 119.	Professional 3D 199.	
<b>Cricket Software</b>	<b>Innovative Data Design</b>	
Cricket Draw 175.	MacDraft ( <i>Updated Version 1.2</i> ) 159.	

## Educational/Creative Software

<b>Addison Wesley</b> Puppy Love 14.	<b>Hayden</b> MusicWorks 29.
<b>Bogus Productions</b> Studio Session 59.	Score Improvement System for the SAT 59.
<b>Broderbund</b> Sensei Geometry Calculus & Physics 64.	<b>Microworks</b> Maps MacAtlas Paint Version ( <i>MacPaint Format</i> ) 32.
<b>Davidson &amp; Associates</b>	MacAtlas Professional 39.
Speed Reader II 39.	( <i>PIC/T MacDraw Version</i> ) 129.
Math Blaster or Word Attack! 28.	<b>Mindscape</b> Perfect Score SAT w/ The Perfect College 46.
<b>Electronic Arts</b> Deluxe Music Construction Set V2.0 <i>Special 62.</i>	<b>Rubicon Publishing</b>
<b>Ist Byte/Electronic Arts</b>	Dinner at Eight-Silver Palate Bundle 52.
Kid Talk, Speller Bee, First Shapes, or Math Talk 31.	<b>Simon &amp; Schuster</b>
Mathtalk Fractions, First Letters & Words, or Smoothtalker 31.	Typing Tutor IV 38.
<b>Great Wave Software</b>	Paper Airplane Construction Set 24.
KidsTime or TimeMasters 28.	<b>Spinmaker</b> Typing Made Easy 32.
Concertware+ 4.0 45.	<b>Springboard</b>
Concertware+ MIDI 4.0 95.	Early Games for Young Children 28.
	Easy as ABC 28.

## Game Software

<b>Accolade</b> Hard Ball 24.	<b>Hitchhiker's</b> Guide to The Galaxy 19.
<b>Activision</b>	Zork Trilogy 45.
Shanghai or Hacker II 24.	<b>Microsoft</b>
Hacker 16.	Flight Simulator 1.0 32.
Portal 32.	<b>Miles Computing Inc.</b>
Tass Times In Tonetown 21.	The Fool's Errand 27.
<b>Artworx</b> Bridge 5.0 20.	Downhill Racer or Harrier Strike Mission II 27.
<b>Avalon Hill</b>	<b>Mindscape</b>
Mac Pro Football 30.	Balance of Power or Crossword Magic 32.
<b>Broderbund</b>	Deja Vu: A Nightmare Comes True 32.
Ancient Art of War 27.	King Of Chicago or Shadowgate 32.
<b>Bullseye Software</b>	The Uninvited 32.
Fokker TriPlane Flight Simulator 34.	<b>Practical Computer Applications</b>
Ferrari Grand Prix 37.	MacGolf 2.0 or MacRacquetball 36.
<b>Electronic Arts</b> Starfleet I ChessMaster 2000 30.	MacCourses 34.
Archon, One-On-One, Patton vs Rommel, Pinball Construction Set, Seven Cities of Gold, Software Golden Oldies or SkyFox ( <i>each</i> ) 15.	<b>Pision</b>
<b>EPYX</b> Winter Games or Sub Battle Simulator 24.	Pision Chess ( <i>3D &amp; Multi-Lingual</i> ) 31.
<b>Firebird</b> Pawn 27.	<b>Sierra On-Line</b>
<b>Hayden Software</b> Sargon III 29.	Space Quest 32.
<b>Infinity Software, LTD.</b>	Black Cauldron 25.
Grand Slam Tennis II 34.	King's Quest I, II, or III ( <i>each</i> ) 32.
World Cup Soccer 27.	<b>Silicon Beach Software</b>
Go 23.	Enchanted Scepters 21.
<b>Infocom</b>	Dark Castle 28.
Ballyhoo, Beyond Zork, Bureaucracy, Hollywood Hyjinx, Leather Goddesses of Phobos, Moon Mist, Nord & Bert, Stationfall, The Lurking Horror, Trinity, or Zork I ( <i>each</i> ) 25.	World Builder 41.
	<b>Simon &amp; Schuster</b>
	Star Trek ( <i>The Kobayashi Adventure</i> ) 24.
	<b>Sir-Tech</b> Mac Wizardry 35.
	<b>Sphere, Inc.</b>
	GATO, Orbiter, or Falcon 26.
	<b>XOR Software</b>
	NFL Challenge 69.

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## Disk Drives/Hard Disks/Upgrades

<b>AST Research</b>		Bernoulli Box	
AST IAST-20	859.	(Dual 20MB w/SCSI)	1849.
20 MB External Hard Disk for Macintosh Plus, SE and Mac II.		<b>MacMemory, Inc.</b>	
AST-2000	1399.	All MacMemory products carry a full two year warranty!	
20 MB External Hard Disk with 20-MB Cartridge-Tape Backup for the Macintosh Plus.		MaxPlus (2MB Upgrade w/MaxRam/MaxPrint/MaxChill)	329.
AST-4000	3699.	MaxPlus 2x4 (2.5MB Upgrade with 1MB Chips-Hyperdrive Compatible)	519.
74 MB External Hard Disk with 60-MB Cartridge-Tape Backup for the Macintosh Plus.		MaxPack (MaxPlus and MaxSave Bundle)	379
<b>Central Point</b>		MaxPort ("SCSI" Port for your Mac 512K)	139
Central Point 800K External Drive	185.	<b>Mirror Technologies</b>	
<b>Dove Computer Corporation</b>		Magnum 800K External Drive (Available in Beige or Platinum)	209.
MacSnap Model 524 (512K to 1MB Upgrade)	139.	<b>Personal Computer Peripherals</b>	
MacSnap Model 524S (512K to 1MB Upgrade w/SCSI Port)	239.	Available in Beige or Platinum Color	
MacSnap Model 548 (512K to 2MB Upgrade)	359.	MacBottom HD-21 (20+Mb SCSI Hard Disk)	859.
MacSnap Model 548S (512K to 2MB Upgrade w/SCSI Port)	459.	MacBottom HD-45 (45Mb SCSI Hard Disk)	1285.
MacSnap Plus 2 (MacPlus to 2MB Upgrade)	249.	MacBottom 20 (20+Mb Serial Hard Disk for Mac 512k & MacPlus)	859.
MacSnap Toolkit (Wrench, Case Cracker & Grounding Set)	14.	<b>Rodime Systems</b>	
<b>Ehman Engineering</b>		Rodime 20 Plus Hard Disk (MacPlus SCSI)	759.
Ehman 800K External Disk Drive	189.	<b>Tecmar</b>	
<b>IOMEGA</b>		QT-Mac40 (Standalone 40BM Tape Backup w/SCSI)	1139.
Dual Cartridge Drives		<b>Western Automation Labs</b>	
Bernoulli Box (Dual 10MB w/SCSI)	1419.	Dasch External RAMdisk (2048KB)	429.

## Modems

<b>Hayes Microcomputing</b>		<b>Prometheus</b>	
Smartmodem 1200	299.	Promodem 1200 (Hayes Compatible)	239.
Smartmodem 1200 Mac w/Smartcom II & Cable	359.	Promodem 2400 (Hayes Compatible)	309.
Smartmodem 2400	449.	Mac Pack w/Procom M and Cable (Specify Mac or MacPlus)	49.
Transet 1000-128K	269.	<b>U.S. Robotics</b>	
Transet 1000-512K	359.	Courier 1200 (Hayes Compatible)	199.
Transet 1000 Mac Accessory Kit	29.	Courier 2400 (Hayes Compatible)	349.
<b>InterBridge</b>		Courier 2400E (Hayes Compatible)	409.
(Connect Appletalk Networks)	599.	Courier HST 9600 (Hayes Compatible)	689.
<b>Migent</b>			
Migent Pocket Modem (ext. 300/1200 Baud)	169.		

## Digitizers

<b>AST TurboScan</b> (Optically Scans & Digitizes at 300 Dots-Per-Inch)	1399.	MacScan (High Speed Image Scanner at 300 [DPI])	1399.
<b>Impulse Impulse (MacNifty)</b>		<b>Summagraphics</b>	
Audio Digitizer V2.0 w/SoundCap	149.	MacTablet 6x9 size	289.
<b>Koala Technologies Corp.</b>		MacTablet 12x12 size	379.
MacVision (Digitizer)	175.	<b>ThunderWare</b>	
<b>New Image Technology</b>		ThunderScan V4.0 with Power Port (Mac 512K, 512K Enhanced, MacPlus, and Macintosh SE)	199.
Magic Digitizer (Mac 128/512k or MacPlus Version)	249.		

## Blank Media

<b>Single Sided 3 1/2" Diskettes</b>		<b>Double Sided 3 1/2" Diskettes</b>	
BASF 3 1/2" SS/DD Disks (box of 5)	8.	BASF 3 1/2" DS/DD Disks (box of 5)	9.
Bulk (Sony) 3 1/2" SS/DD Disks (10)	12.	Bulk (Sony) 3 1/2" DS/DD (10)	16.
Sony 3 1/2" SS/DD Disks (box of 10)	14.	Centech 3 1/2" DS/DD Color Disks (box of 10)	19.
Centech 3 1/2" SS/DD Color Disks (box of 10)	16.	Sony 3 1/2" DS/DD Disks (box of 10)	19.
Fuji 3 1/2" SS/DD Disks (box of 10)	13.	Fuji 3 1/2" DS/DD Disks (box of 10)	20.
Maxell 3 1/2" SS/DD Disks (box of 10)	14.	Maxell 3 1/2" DS/DD Disks (box of 10)	20.
Verbatim 3 1/2" SS/DD Disks (box of 10)	13.	Verbatim 3 1/2" DS/DD Disks (box of 10)	20.
3M 3 1/2" SS/DD Disks (box of 10)	14.	3M 3 1/2" DS/DD Disks (box of 10)	21.
C.Itoh Color Disks SS/DD (box of 10)	22.	C.Itoh Color Disks DS/DD (box of 10)	25.

## Accessories

<b>A.M. Products</b>		Macintosh (Plus) Dust Cover	9.
3 1/2" Head & Computer Cleaning Kit	18.	Mouse Cleaning Kit w/Pocket	17.
<b>Bech-Tech</b>		Disk Case (holds 36 Mac disks)	19.
Fanny Mac	69.	Disk Drive Cleaning Kit	20.
<b>Cambridge Automation</b>		Tilt/Swivel	22.
Numeric Turbo	99.	Universal Copy Stand	24.
<b>Curtis Manufacturing</b>		Polarizing Filter	34.
Diamond-Surge Suppressor-SP-1	29.	Surge Protector	34.
Emerald-Surge Suppressor-SP-2	36.	Printer Muffler 80	39.
Ruby-Surge Suppressor-SPF-2	55.	Printer Muffler 132	52.
Sapphire-Surge Suppressor-SPF-1	47.	Starter Pack (includes Tilt/Swivel)	59.
<b>Ergotron</b>		Control Center	64.
MacTilt or MacTilt SE (Platinum Color)	74.	System Saver Mac (Beige or Platinum)	64.
Mouse Cleaner 360°	15.	A/B Box (Mac Plus Only)	64.
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MacBuffer 1024K	429.	<b>Moustrak</b>	
<b>I/O Design</b>		MousePad 7" x 9" Size	8.
Mac Luggage Available in Navy or Platinum Gray		MousePad 9" x 11" Size	9.
Macinware Plus Carrying Case	69.	<b>Ribbons Unlimited</b>	
Macinware SE Carrying Case	79.	Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold	
Imageware II Carrying Case	49.	ImageWriter Ribbon-Black	4.50
<b>Kalmar Designs</b>		ImageWriter Ribbon-Color	5.
Teakwood Roll-Top Disk Cases: Micro Cabinet (holds 45 disks)	14.	ImageWriter Rainbow Pack (6 Colors)	25.
Double Micro Cabinet (holds 60 disks)	21.	ImageWriter II-Four Color Ribbon	12.
Triple Micro Cabinet (holds 135 disks)	29.	<b>SoftStyle</b>	
<b>Kensington</b>		MacEnhancer	169.
External Disk Drive Cover	8.	<b>The Madison Line</b>	
Mouse Pocket	8.	Professional Series Carry Cases In Black Ballistic Nylon	
Mouseway (Mousepad)	8.	Mac(Plus) Carry Case	79.
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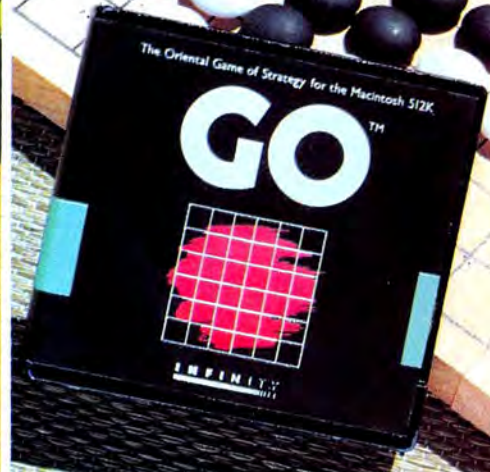


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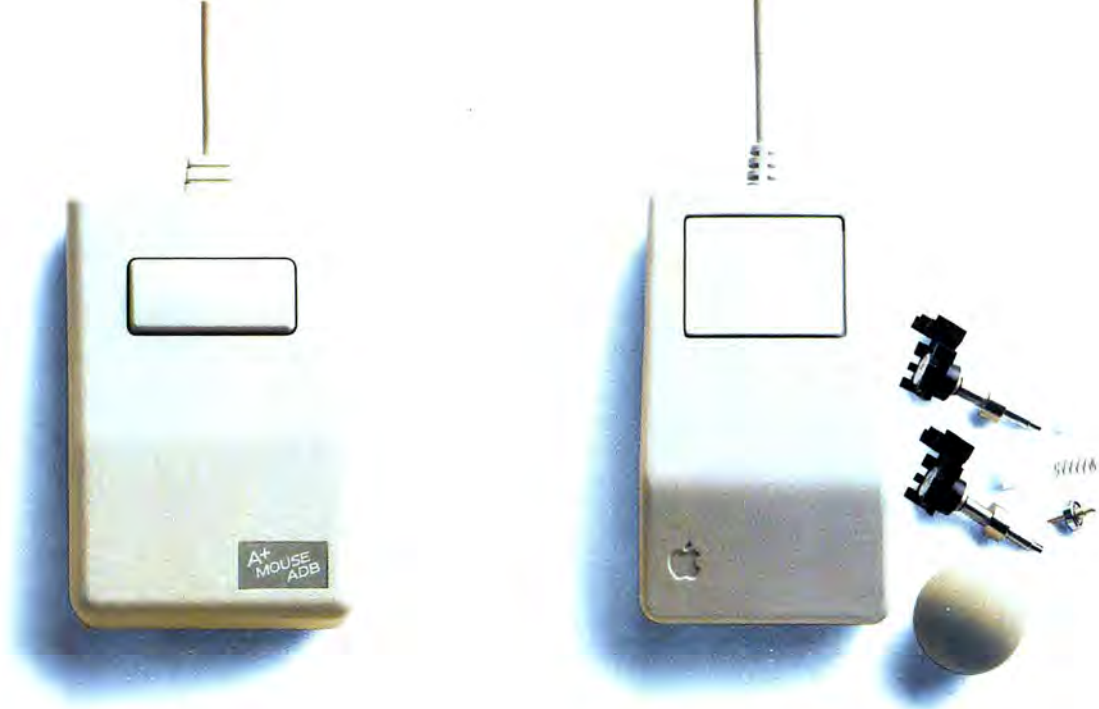
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by Doug Clapp

## Program - ming Days (and Nights)

Off the plane at Detroit's Metro airport. The middle of nowhere. Take a cab? Hop a bus? I have no idea where the Holiday Inn is: 2 blocks, 2 miles, 20 miles?

But it's okay. Doug Houseman is there. Houseman organized this. This is MacHack '87. My coming out conference. After almost 2 years of reclusion, 2 years of turning down speaking engagements, and Expos and whatnot, I wanted to go somewhere at last. To get back into it again; to see what's new in the Macintosh community. The Land.

In the car, Houseman says, "If you'd been here last night, we would've gone out for crab legs."

I tell him that I love crab legs and he says "I know."

Huh? How could a total stranger know I like crab legs? Crab legs?

So I ask, and he says "Oh I know a lot about you. I downloaded over 50K of stuff about you."

Houseman is a NetFlyer, among other talents. The Source, CompuServe, GEnie, AppleLink, UseNet, Delphi, Arpanet, Bix, hundreds of private bulletin boards, university conferencing systems and more. The Web. Crab legs.

And then we're into Mac II boards under development, and chips and bugs—obvious and arcane—and the conversation spirals down to Low Level. And I'm thinking "This is it; the next few days are going to be Low Level."

They were. With passion and passionately. Developers, software company reps and Jordan Mattson from Apple; each player with a mission.

The word heard everywhere was "break." It's a variation on crash. Imagine this. You've got a small software company. People buy your products. They boot your software, it works, you get paid. Life is good.

Then Apple comes out with new *System*, *Finder*, ROMs and you break. Your stuff doesn't run on New Machine One. It breaks.

The man in the audience said it best. "Look," he said, "I could lose my company, my car, my marriage, I could get sued, I could lose everything I have if my stuff breaks."

So there's the mission. Not to break. To find out what Apple's doing; to learn what you need to know to make a living, and keep on making it.

For some of the developers, that's the mission. Jordan Mattson has a similar mission. To encourage developers to "follow the rules" of Macintosh programming. Follow the rules carefully enough, and you probably won't break when Apple's next secret is out—and the next one and the next one.

Ah, but rules. Rules are high school. Rules are for programmers not good enough to live out there, on the edge. Rules aren't for "Macho Programmers." Not for guys who look at ROM routines and say "DrawChar? I can write DrawChar better than Atkinson did. I can do it smaller. I can do it faster."

Besides, Real Programmers want to Get Down. Down there next to the hardware. *Right* next to the hardware. Wrap their fingers around it and fly. Romance.

Romance, though, is fleeting. Stick that disk in a Mac II and you'll see what I mean. Wham. And the Computer Press, knowing nothing whatsoever about programming, leap off their chairs to write "Bugs Found in Apple's new *System*/*-Finder*."

It's a wonder Apple isn't a bit, well, testy about stories like that. But at this conference, at least, Apple, in the guise of Jordan Mattson, is the Good Mother, patiently cajoling even the most macho nerds to leave DrawChar to Apple.

Not that anybody wants to cast the first stone. There's sin enough for all. Did the SE ship with 56 known bugs in the ROM, or was it 58? Don't call UnLoadSeg unless you're careful; it's buggy. The Dialog Manager freaks out if you have more than ... was it 24 items in a dialog? And copy problems with the *Finder* are well known. Don't copy over 100 files in one fell swoop unless things have been dull lately.

Bugs. Frustration and agony to you and me. Frustration and agony to Apple and Apple developers.

Needless to say, the Debugging session played to a full house. For Macintosh, the right tools are *TMON* and *MacNosy*. *TMON* is a polished, profes-

sional tool for debugging code. *MacNosy* (and *The Debugger*, *Nosy's* companion piece) is quirky, idiosyncratic and absolutely amazing. If you have even the slightest desire to know what's really happening down there, buy *MacNosy*. These days, it even has a manual: an excellent, witty manual. The millennium must be just around the corner.

By day three, I was beginning to feel trapped behind the looking glass. The computer room hummed all night long: rows of Pluses, SEs and a Mac II sporting a 19-inch color display as big as a wall. Feel the urge to tweak that routine at 3 AM? No problem. Need a few public domain disks? The library has, oh, 300 and some disks; conference attendees take home 10 double-sided disks stuffed with source code, utilities, you name it.

And best of all: You can talk about programming all night long!

Too good to be true, and maybe it was. Next year's conference won't be called MacHack. Those In Charge thought the name too...you know. Too "Hackery." Insidious connotations. Not Professional enough. So next time it's The Apple Programmer's and Developer's Conference? No, not that. But something like that; some forgettable name that displeases no one.

MacHack will live, it's hoped, buried in a logo. And maybe the name won't put off this year's crowd from returning. I'd like that.

I wanna go back. Sit through more seminars, hear about all the new bugs, learn the new charms to ward them off, swap stories, trade anecdotes and talk programming *all night long*. ☞





# QUICK CLICKS

*Quick Clicks are short reviews of released products, not beta releases, pre-release products or vaporware. If it appears here, it is available commercially. Products reviewed here will often be the subject of a longer review in a future issue.*

## WORKSPUS SPELL



List Price: \$59.95.  
Published by Lundeen & Associates, PO Box 30038, Oakland, CA 94604. (415) 893-7587. Requires 512K and Microsoft Works. Not copy protected.

Spell checkers are, as we can all attest, handy little items. Unfortunately, many suffer various idiosyncratic quirks and limited dictionary space, and fall short of completely taking over tedious proofreading chores. Human intervention is still required to make decisions. *WorksPlus Spell* comes as close to replacing proofreaders as any spelling checker I've seen. It has only one major drawback: it only works with *Microsoft Works*.

*WorksPlus Spell* has all the features of a good spelling checker, plus some welcome bells and whistles thrown in for good measure. It can be used interactively (as you write) or to check a manuscript (or any part of it) after it's completed. Used interactively, it beeps each time you mistype a word. Choose SEARCH/SHOW ERROR and the misspelled word is highlighted and alternatives are suggested. When you check a finished selection, each misspelled word is highlighted in turn, with a list of alternatives. Not so different so far.

One thing that is different is that the list of alternative words deals with not only common typing errors such as transposed letters, but also with phonetic misspellings. The publisher claims that 99 percent of the time the correct substi-

tute will be on the alternatives list. So far I've no reason to doubt them.

*WorksPlus Spell* comes with a 73,000-word dictionary that you can add to (and delete from) as necessary. In addition, any document you create within the program has its own dictionary, which is unique to that document and is saved with it. You can put words, company names, whatever you like in this dictionary and they will be ignored during the spelling check. These two features are unique to *WorksPlus Spell*.

In addition to checking your spelling, *WorksPlus Spell* also checks for spacing. It accepts either one or two spaces between sentences, and your choice can be changed between documents. This is handy if, for example, you're working on a manuscript for a magazine, which requires a single space between sentences, and your Master's thesis, which requires two spaces.

*WorksPlus Spell* also has a glossary and a hyphenator—two features you don't often see in a spelling checker. The glossary allows you to enter abbreviations of frequently used phrases which the program automatically enters in full. It can also be used to time and/or date stamp your work. The hyphenation program—like the spelling checker—can be used automatically or after completing a document. Any changes you make in the document afterwards will automatically be reflected in the hyphenation. You also have the option of approving each hyphenation separately. And like the word dictionary, the hyphenation dictionary can be edited and added to.

One word about speed: *WorksPlus Spell* is fast. And saving time is what these programs are about, right?

In order to take advantage of all this, you'll need *Microsoft Works* and *WorksPlus Spell*. And while the manual includes instructions for using any kind of disk from 400K up, I strongly recommend using a hard disk. The program itself takes up 56K; the dictionary, 140K; and hyphenation, 146K. If you work with limited memory, you may find that you can check the spelling and hyphenation only for short documents. A hard disk

will ensure there's room for your masterpiece, too.

*WorksPlus Spell* is as complete a spelling checker as you can find. It not only works quickly, it includes features like the glossary that make it possible for you to work quickly, too. If you already use *Microsoft Works*, you're going to want this immediately. If you use some other program, it's almost worth switching word processors for.—LK

## ACCOUNTANT, INC.



List Price: \$299. Published by Softsync, 162 Madison Ave., New York, NY 10016. (212) 685-2080. Requires 512+. Version 2.0 reviewed. Not copy protected.

It's encouraging to see a piece of software turn from an unpolished clunker into a more streamlined productivity tool. Such is the case with *Accountant, Inc.* Version 2.0 corrects more than 20 shortcomings of the original release.

*Accountant, Inc.* modules for accounts receivable, general ledger, accounts payable and inventory are all integrated under one icon on one disk. Opening this icon instantly accesses all of the modules. This is a great advantage over programs that keep four sets of data files that have to be accessed individually.

Setting up the books of a new company is straightforward and relatively easy. Most of the format options can be changed later, and you can create additional journals such as a separate one for credit card sales. Up to seven levels of password protection are offered.

Transactions can be entered easily, but duplicating information between customer, vendor and inventory lists could have been handled better. Clicking on the desired entry does not cause the appropriate numbers to be entered on another form. You must note the account or item number, click back to the form and enter the number manually. And you can't review or delete unposted



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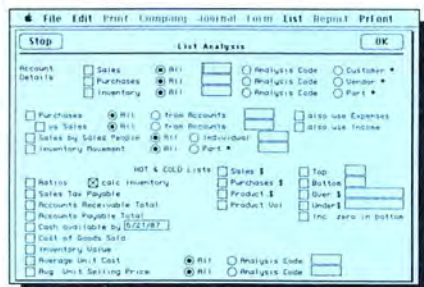
journal entries. Error handling is barely mentioned in the manual and difficult to accomplish within the program.

Posting is much easier since all of the ledgers and journals are fully integrated. The program automatically prints out an audit trail whenever you post the journals. Inventory especially is stronger now that it is instantly updated from both receivables and payables.

*Accountant, Inc.*'s printing options include several dozen buttons that customize reports. Unfortunately, the reports appear in narrow windows that conceal some of the important data. You must manually adjust the window to see the data properly.

A series of ID codes on the entry cards for customers, vendors and inventory items allow sophisticated sorting. For instance, users can assign IDs to values such as volume of business done, geographical area or subassembly of a manufactured product in inventory. The program prints mailing labels four up, and these can also be sorted by ID code.

Invoices, purchase orders and checks can be printed individually or in batches on plain paper or preprinted forms. The default font is 12-point Monaco. Changing fonts changes the entire document, which has the unwelcome side effect of destroying the column alignment in all reports. The manual suggests saving reports as text files and polishing them for presentation in a word processor. It's also possible to save reports in SYLK format.



There is no on-screen help available, though some windows contain brief explanatory notes. Alert boxes are rare and somewhat whimsically used. Error trapping has been added in version 2.0, but this remains an area that needs work. Tech support is offered by phone, mail or electronic mail. After the 90 day warranty, there is a dollar per minute charge to answer questions.

The manual is over 500 pages long, and is disappointingly weak. It's poorly printed, on cheap paper, and contains many typos. The first 70 pages review the possible menu selections. Most of the



remaining 380 pages are taken up by three lengthy and redundant examples. Though the examples are informative, it's difficult to dig out basic functions. A new manual is in the works, and it is sorely needed.

If your concern about the cost of accounting software makes it easy for you to overlook the barebones look and feel of this product, then *Accountant, Inc.* certainly deserves consideration.—Scott Beamer

## KADMOS GREEK FONT

⌘⌘⌘ 1/2



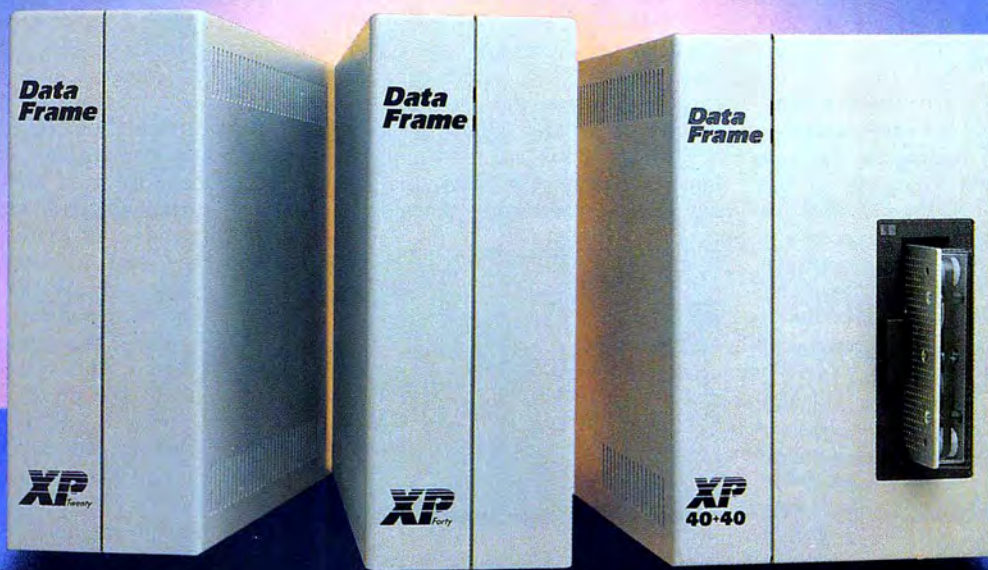
List Price: \$85. Published by Allotype Typographics, 1600 Packard Rd., Suite 5, Ann Arbor, MI 48104. (313) 663-1989. Not copy protected.

The first thing I ever saw a LaserWriter print was a Greek letter from its Symbol font. I immediately assumed that it would revolutionize the classical textbook industry (or so I hoped, since I was fed up with paying sky-high prices for slim texts). Alas, the Symbol font was not meant to generate Greek (neither modern nor ancient), but only to provide a host of *mathematical* symbols. The nuts and bolts of ancient Greek (its myriad of accents, subscripts and breathing marks) were sadly absent.

But no more. There are now laser fonts of the full character set of ancient Greek that will print flawlessly on any PostScript output device (like a LaserWriter). Oxford University Press take note.

For example, Allotype Typographics, makers of several laser fonts (including one in Polish) has a font called *Kadmos*, which is an admirable attempt to bring Greek to the Mac.

I say attempt because providing a way to print ancient Greek is a real challenge. The main problem is getting all the variations of accented letters onto the keyboard. There are basically three approaches to this problem. One, create a bunch of dead keys with the various accent combinations so that they can be placed over any character. (This is what the *LaserGreek* font from Linguists' Software does.) Two, use up all the Shift, Option, and Option-Shift characters to provide the various versions of an accented letter. Three, don't even try. (Such fonts are suitable only for modern Greek.) The second strategy is the one taken by Allotype's *Kadmos Greek Font*.



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With *Kadmos*, for example, there's a separate character for each of these omega combos: ÷, Δ, <<, ' , " , —, œ, f, Œ, —, and ◊.

The trade-off, of course, for this mother lode of relatively hidden characters is the frustration of finding the key you need. *Kadmos*' major selling point is that its keyboard layout comes in two versions, closely copying the keyboards of two popular Greek screen fonts: SMK GreekKeys and the Colophon Greek font designed at Wayne State University.

This means that if you've been using either of these ImageWriter fonts, the *Kadmos* font will be a painless transition in terms of learning the keyboard, and—even more important—it will print your already-typed documents on the LaserWriter without scrambling the characters. If you already have a dissertation typed in Colophon, let's say, Allotype's *Kadmos* is an absolute must if you want to print to the LaserWriter.

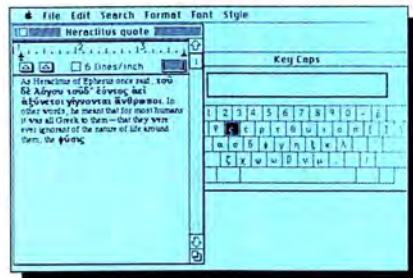
But if you don't already use a Greek screen font, it's an open question as to whether you want to learn the keyboard using scores of dead keys or using a unique keystroke combination per character. In either case, you'll find yourself relying on the *Key Caps* desk accessory. (Hint: Try shrinking your *MacWrite* window to half the width and put the *Key Caps* desk accessory window on the other half. Even though the *Key Caps* window is not the active window, it still shows you the Greek layout as you type.)

The difficulty with using the *Kadmos* font's solution to the accent problem is that there are really not enough key combinations left over for other useful characters. One omission is true quotation marks in the font (it has only a single ditto mark, " , for both right and left quote marks). It's true that the ancient Greeks did not use quotation marks, but classical texts *do* use them, so their omission from *Kadmos* is an unfortunate flaw. Zeus knows, lots of characters are included that are used less often (like the Homeric digamma W, or the number symbols sampi Q and koppa q).

Moreover, the absence of any Latin alphabet characters makes the font unusable for *criticus apparatus*. And if you plan on scanning poetry, be forewarned that only the *GreekKeys* version of *Kadmos* has a macron and a breve. In contrast, *LaserGreek*, because it uses 36 dead keys, has room for every imaginable symbol for scanning and *criticus apparatus*.

For those who have not dabbled in the mysteries of downloadable fonts to the LaserWriter, the Allotype manual does a

very good job of covering all the bases and considering every possibility. Unfortunately, there seem to be a lot of possibilities. Do you want automatic or manual downloading? Do you have a version of *Font/DA Mover* earlier than 3.0? (If so, don't use it to move fonts into your system if you ever want to take advantage of automatic downloading.)



And even more confusing, do you plan to use *PageMaker*. (If you do, you'll have to use yet another set of screen and laser fonts so that *PageMaker*'s OPTION-SHIFT-3 reserved keystroke is kept intact.) Once these questions are answered, the *Kadmos Greek Font* is used just like any other: Choose it from the Font menu, type (in Greek!), and print (in Greek!).

The decision whether to buy *Kadmos* or a competitor depends on what keyboard layout you either already have or want to learn. But once you take the step, you'll be proud to admit it's all Greek to you.—Dave Valiulis

## SUPERRAM 2 AND SUPERRAM 4



List Price: SuperRam 2, \$499; SuperRam 4, \$899. Manufactured by SuperMac Technology, 950 N. Rengstorff, Mountain View, CA 94043. (415) 964-8884.

The benefits of adding more memory to your Macintosh are easy to pinpoint: faster operation, more *Switcher* partitions and bigger RAMdisks for speedier graphics and desktop publishing. However, actually adding the memory can be a shock to your wallet. The least expensive option is to buy a third-party upgrade and install it yourself, but this can be a different kind of shock. Particularly if you've never cracked your Mac before.

The SuperMac 2- and 4-megabyte upgrades are fairly easy to install. The documentation specifies that an authorized SuperMac dealer should perform the upgrade, but if you are familiar with

the innards of your Mac and you know how to use a voltmeter, you can install the upgrade yourself.

The SuperRam 2 kit comes with a 1-megabyte memory module, a RAM adaptor module, a modified power/video cable, a jumper wire and a fan. Installing it is straightforward. Once you have your Mac apart, you locate and remove the SIMMs from your motherboard. Then locate the CAS PAL chip and attach the jumper cable so the Mac can find and use the additional memory.

The Apple SIMMs clip into the SuperMac memory module. Once the 1-megabyte module is clipped into place, the adapter is plugged into the SIMM socket on the motherboard. SuperMac supplies a new power/video connector that has a breakaway for the fan.

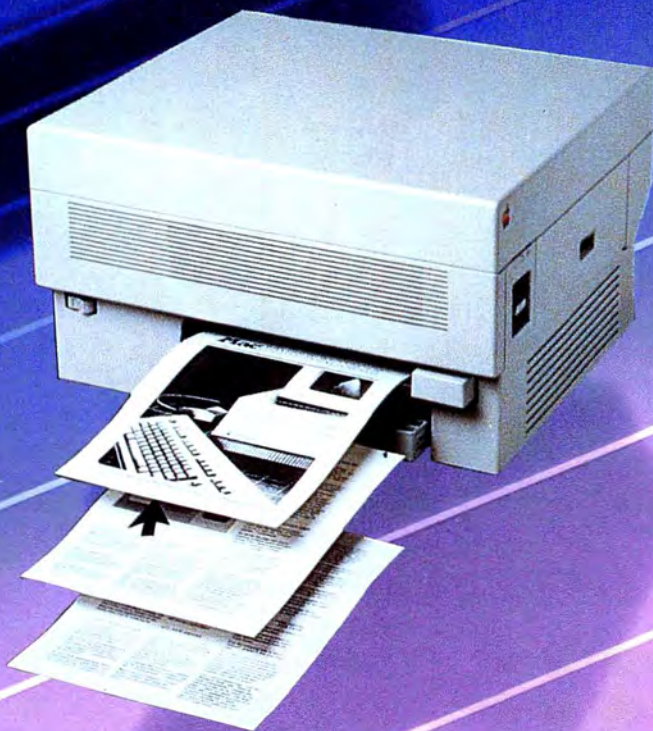
The documentation says that the fan is a precaution for the 2-megabyte upgrade and a necessity for the 4-megabyte. The kit comes with two mylar strips that you place over the vents on the top of the machine. This channels the air up from the base of the Mac and out the back vents. The fan slides into the rear of the Mac casing between the right wall of the Mac and the handle indentation. Prongs on the side of the fan hold it snugly in place. After installing the chips and re-connecting the cables, check the voltage at the motherboard so that the power supply is not unduly stressed.

The SuperRam 4 upgrade is an expansion for the 2 megabyte upgrade. You get two 1-megabyte memory modules and a power supply booster. The power supply booster is the power/video cable with a power booster attached to regulate the motherboard's voltage without taxing the Mac's power supply. The SuperRam 4 installation is essentially the same, but you don't have to use the jumper. Instead, you remove the R8 resistor. Bear in mind that even the friendly Apple upgrade requires this (check *Inside Macintosh*, vol. 4 if you don't believe me). You generally are not privy to this alteration to the Mac's board when you let a dealer perform the upgrade.

The SuperRam 4 tends to run a little hot. SuperMac does not use the CMOS chips as Dove does. The left side of the computer gets warm to the touch. I initially expected to have trouble with my power supply—not because I suspected the quality of the upgrade, but because my Mac is a vintage 1984 machine with its original power supply (now that I've said that, it will probably blow). I am inclined to credit the modified power supply for now having 4



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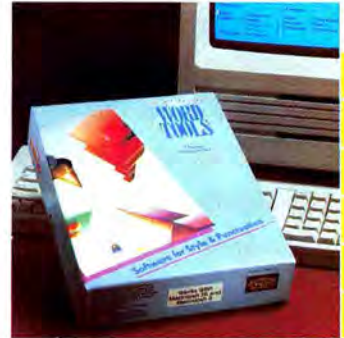
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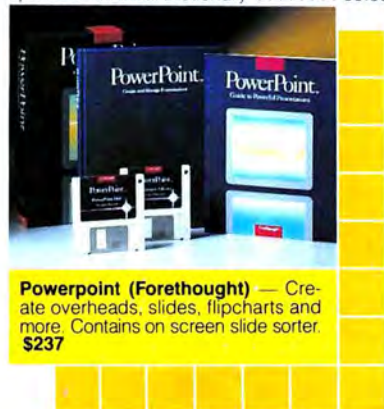
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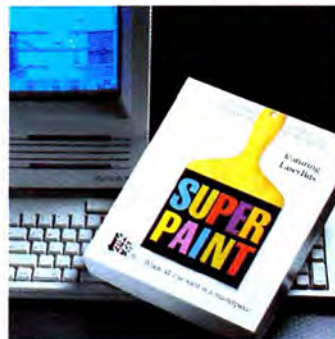
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# QUICK CLICKS

megabytes without having to replace my power supply.

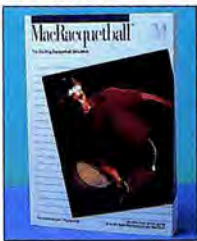
The outstanding features of the SuperMac upgrades are the full lifetime warranty and the buffering. SuperMac will repair or replace any part of the upgrade that fails or any part of the Macintosh that fails as a result of defects in SuperMac products. Also, the chips in the upgrade are buffered so that they only deliver a combined load equal to a 256K chip. This reduces the wear and tear on the microprocessor and, so SuperMac claims, puts less of a load on it than a standard 1-megabyte Macintosh.

Unlike many of the companies supplying upgrades, SuperMac does not have a toll free number. The technical people are helpful and relatively prompt in returning your call when their lines are busy. But having to pay for support after you've paid for the product is irritating.

The SuperRam 4 is not compatible with big screens. The memory adaptor touches the top of the 68000. Since most interface cards clip over the 68000, the adaptor gets in the way. Also, the SuperMac upgrades do not come with RAMdisk or caching software. This is not a problem since there are several good RAMdisk programs available in the public domain and from other vendors. But you'd expect the publisher's of *DiskFit* and *SuperLaserSpool* to have an equally sophisticated RAMdisk program.

The SuperRam upgrades are a little more expensive than others and they do not come with software, but they are reliable, and their warranty takes some of the worry out of adding more memory to your Macintosh.—Fred Terry

## MACRACQUETBALL 1/2

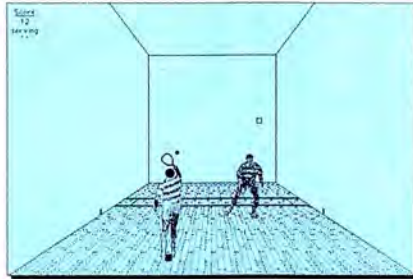


**List Price: \$59.95.**  
**Published by Practical Computer Applications, Inc., 1305 Jefferson Highway, Champlin, MN 55316. (612) 427-4789. Requires 1M+. Copy protected.**

One megabyte, once considered huge, is becoming a standard. The Mac Plus has sold in such numbers that *games* requiring "one meg" are beginning to appear. *MacRacquetball*, from PCAI, is the first.

All that memory for just a game? Well, *MacRacquetball's* graphics are digitized from videos of real racquetball players in action, so what you see are solid-looking images. As the players move, their shadowing and shading change, giving them

a high degree of three-dimensionality. Manipulating these images over a detailed "wood" floor while maintaining the spatial relationships of the game requires a lot of RAM.



*MacRacquetball* also introduces an innovation to the Mac that has been available with some games for other computers. When version 2.0 appears, interactive matches with another player will be possible on networks. You can do it now via connecting cable or modem. Using this mode will require that both players have their own copy of the game. (Upgrades will be free to registered owners.) Response should be virtually instantaneous on local hook-ups. Telephone communications over long distances, however, could introduce enough delay to affect play.

*MacRacquetball* is a good simulation. Players control the lighter figure on the screen. The darker image is your competitor, played by either the computer or another player in dual-player mode. The game can be fine tuned for different levels of play on a control panel screen. Up to 19 individual characteristics can be changed for both players. These controls can even simulate real players.

As in reality, success in *MacRacquetball* depends on quickness and anticipation. Move your player to intercept the flight of the ball and execute your shot. Learning to read the depth of the court on a two-dimensional screen requires practice and concentration, but adjusting game speed gives you a fighting chance at the start. Mouse inputs are instantly reflected on the screen. Effect a Zen-like composure to keep your player from twitching excitably.

The manual could go into more detail about the game of racquetball itself (only the basic rules are explained) and more specific as to how the simulation reproduces the physical actions of the sport. For example, serves and returns are diagrammed but the player is left to figure out how to accomplish them.

*MacRacquetball* is copy protected; it cannot even be moved onto a hard disk. My back-up habits are so ingrained that I

find it unsettling to use master disks on a daily basis. If the possibility of losing your game to a trashed disk disturbs you as well, caveat emptor. [Editor's Note: And the rating would be half a mouse higher if you could at least play from a hard disk, even if a key disk insertion is required. Besides, the Quit routine is so graceful that you had best turn off any hard disks before playing.]

Finally, despite (or maybe due to) its detailed graphics, *MacRacquetball's* animation lacks fluidity. The players, to my eyes, seem to waddle as they move. Still, the game is playable and engaging. And since the audio has also been generated from actual recordings, it sounds great. Racquetball enthusiasts will like it.—Carlos Martinez

## MINICAD

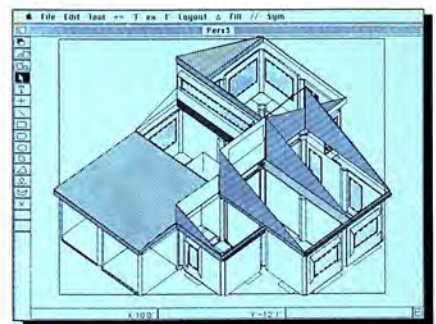


**List Price: \$495. Published by Diehl Graphsoft, Inc., 8370 Court Ave., Suite 202, Ellicott City, MD 21043. (301) 461-9488. Requires 512K+. Version 3.0 reviewed. Copy protected.**

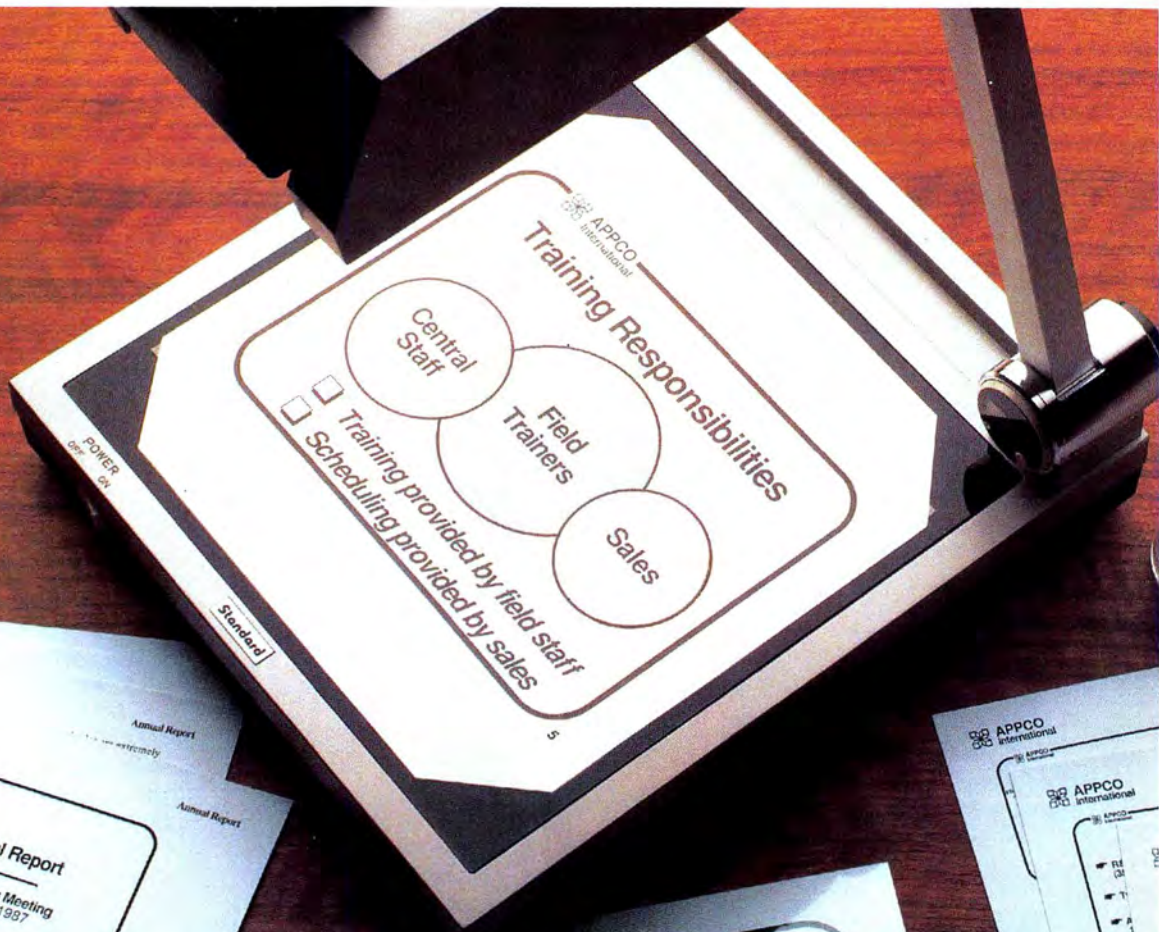
*MiniCad* is a professional-level computer assisted drafting software package that is equally useful and usable in a graphics, engineering or architectural environment.

When you open *MiniCad*, it resembles an enhanced *MacDraw*, but as you use it, you realize that this program overcomes many of *MacDraw's* limitations. For instance, *MiniCad* can place an object to 9-decimal accuracy. And it offers many standard CAD functions, like groups, dimensions and scaling.

Many features can only be accessed through the Shift, Option and Command keys since the pull-down menus are loaded with options. There are 30 commands hidden under the keys—a lot to remember, but a quick reference chart is included. And the zooming power of



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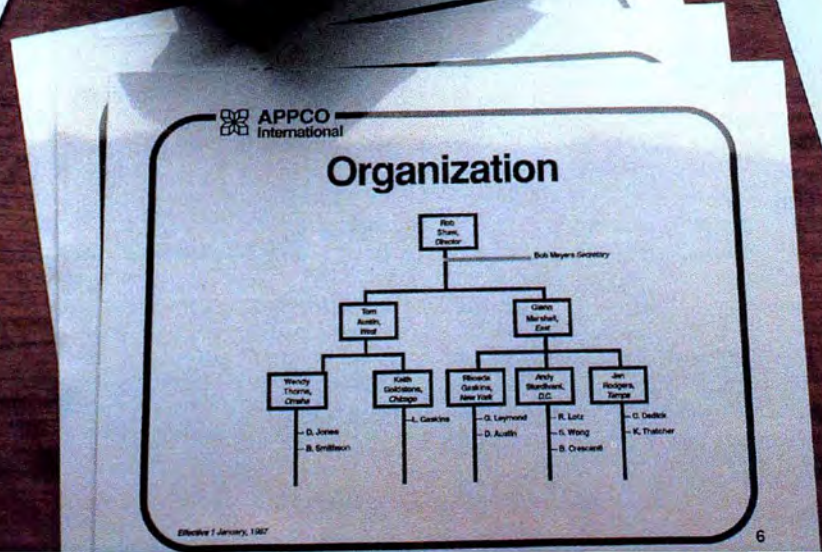
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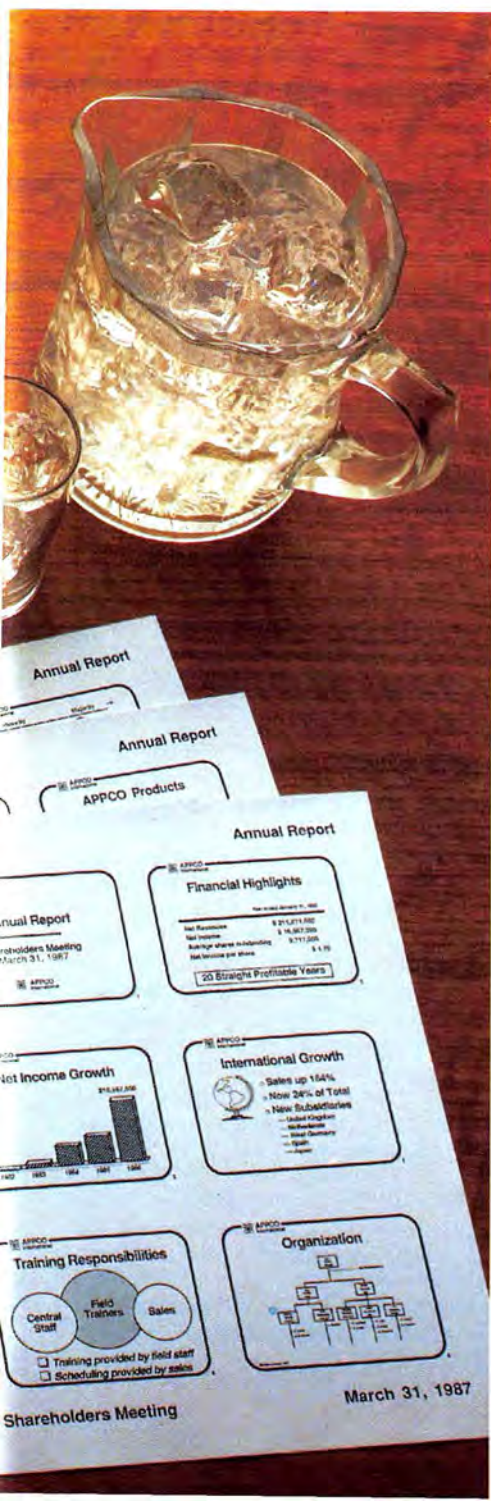
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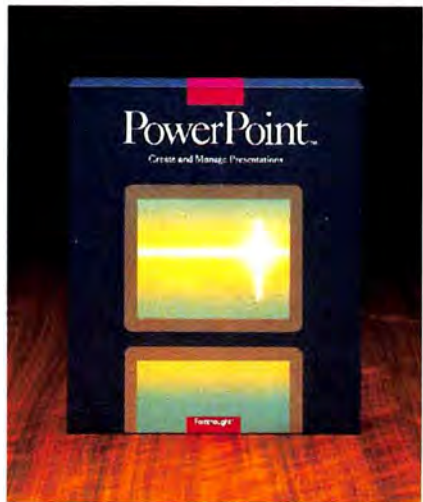
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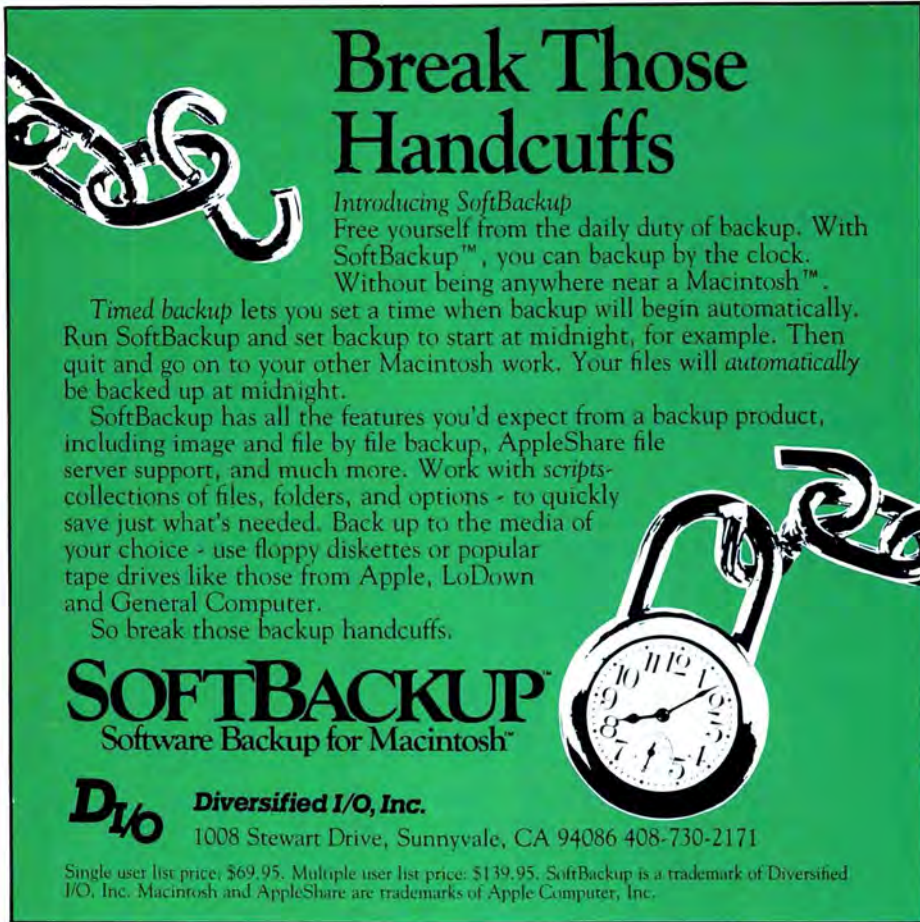
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## QUICK CLICKS

*MiniCad* is limited only by the level of accuracy you choose. Among the well-integrated functions in this package necessary for CAD users are FILLET, INTERSECTION and TRIM.

Dimension Option and Line Marker Style (thin, standard, dot, slash and double slash) are useful for architects who mix different styles of dimensioning. The latest version (3.0) of the program comes with a free set of Architectural templates (Arch Pack) that is useful for that field.

*MiniCad* is simple and follows the Mac interface; if you know *MacDraw*, you can start simple drawings with very little help from the manual—which I found difficult to follow and extremely academic.

Output can be obtained through an ImageWriter or a LaserWriter. While plotter drivers and an IGES translator are available for *MiniCad*, they are published by third-party developers.

The integration of 2- and 3-D into *MiniCad* is very impressive. Most programs are strong in either 2- or 3-D, but not both. *MiniCad* switches between the two perspectives with ease. The Extrusion tool will take an object originally



created in 2-D, give it height and then easily rotate it in a 3-D view.

*MiniCad* updates are frequent and readily available from Diehl for a \$10 handling charge. *MiniCad* is compatible with other major programs like *PageMaker* and *MacDraw*. The program can be loaded with *Switcher*, but it runs best alone. Possible future developments include expanding the dimensioning function, integration of the 2- and 3-D perspectives so both windows remain open at once and adding a data base for bill of materials.

Diehl Graphsoft has a very good approach in developing *MiniCad*. They started with a small package and, by listening to the customer needs (through bulletin boards and a self published newsletter), were able to tailor the program into a very good one.—Ernesto Moran

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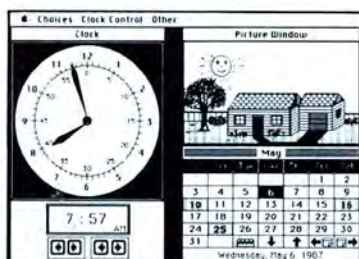
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# QUICK CLICKS

## PORTAL

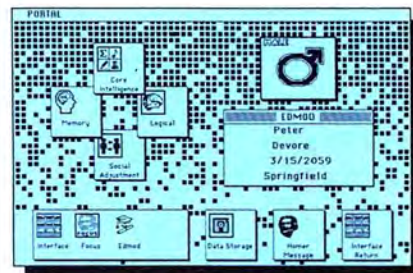


List Price: \$49.95.  
Published by Activision, PO Box 7287, Mountain View, CA 94039. (415) 960-0410. Copy protected.

*Portal*, apparently the first novel to appear on a computer before it's been published as a book, opens a door into a bizarre and intriguing fantasy-mystery. But this turnaround on publishing spin-offs doesn't do justice to a fine piece of fiction. Its well-written prose is marred by a lack of grace in the user interface.

As a space voyager returning from a 100-year trip, you discover that all of humanity is missing. A live terminal to the world computer network reveals that the Mind Wars turned nearly everyone into "vams." But at least one person, a psychic kid with an Oedipus complex, tried to buck the establishment and find a way to prevent Man's extinction. *Portal* even manages to incorporate a love story into its plot. Your narrator is HOMER, a liberal-thinking artificial intelligence. As a raconteur algorithm he reasons, "I run, therefore I am."

*Portal* is not interactive fiction, and it doesn't make any claim to be. It's a book whose pages are locked in files found in 12 data bases. There is no role-playing,



unless you want to consider yourself a librarian—not an ignoble profession, but not the stuff that fantasy spaceship commanders are made of either.

The catch to reading *Portal* is that you must open each file in a specific order before proceeding. Some of the files you access are statistics that are irrelevant to the story and others contain narrative. It's easy to get hung up and not be able to proceed. HOMER guides you a little, but otherwise you have to search through each data base looking for an open file. The beauty of branching out to different endings is non-existent.

The author, Rob Swigart, is at his best when actually telling the story, which is

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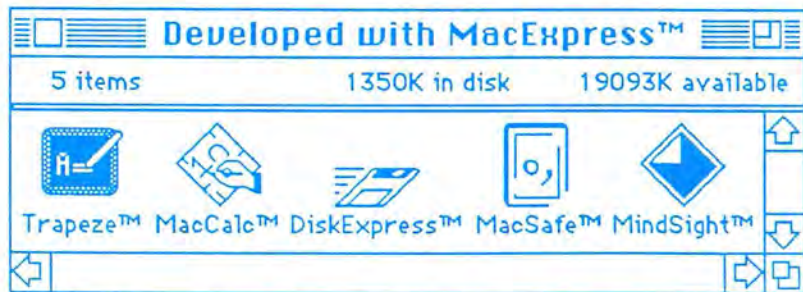
**MacUser Magazine:** "Just like humans, the older your disks get, the more they slow down. Computer gurus have dubbed this electronic hardening of the arteries 'disk fragmentation'. Fortunately, there's a program that can restore your disks to their youthful vigor. It's called DiskExpress. [After running DiskExpress] the resulting speed improvement was impressive."

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## QUICK CLICKS

suspenseful. His writing is littered with a sort of technobabble where suffixes are dropped and words joined to form New-speak. And there is a bit of an Orwellian nightmare quality about it with the "Big Brother" Intercorp maintaining the status quo.

*Portal* draws on a lot of sources for its inspiration. It is an eclectic brew of Greek tragedy, sci-fi and poetry—where the word Mozart means performance art and is commonly used as an action verb. *Portal* also manages to hit on current topics—like race relations, environmental issues and machine intelligence. It's a good action story that will keep the kids' attention.

*Portal* doesn't open up any new windows in the use of the Mac interface. You have to Restart your Mac just to boot up the program. You move around the game clicking on icons, but with over 400 files to access, the response is too slow. And the copy protection prevents speeding things up by installing the novel on a hard disk. Most of *Portal*'s problems probably come from its translation into the Macintosh environment. At one point HOMER says, "If only we could mindlink. This would go so much faster." Agreed.

Still, *Portal* is an intriguing story, and I look forward to the sequel. In the mean time, St. Martin's Press plans to publish a hard copy version of the novel in January. You might be better off by waiting to see if a movie develops.—BT

## MACBOTTOM 45 SCSI AND INTERNAL MODEM



List Price: \$1795; modem upgrade: \$200.  
Manufactured by Personal Computer Peripherals Corporation, 6204 Benjamin Road, Tampa, FL 33634.  
(800) Mac-Butt or (813) 884-3092. Does not work with Mac II.

I got excited when I first saw the MacBottom drives because they didn't take up any additional space on my desk. The MacBottom 45 is another addition to PCPC's excellent line of hard disks. Besides being faster than the 10- and 20-megabyte drives, it's made for daisy chaining. The cable is longer so it can be set farther away or stacked. Also, the SCSI device number is easier to set because a small counter has replaced the jumper used before.

# QUICK CLICKS

The drive comes with a full complement of utility software. *HFS Backup*, one of the best backup utilities on the market, was the first commercial backup utility and made up for the lack of backup software for Apple's HD20.

The MacBottom 45 comes with its own LaserWriter and ImageWriter spoolers. They are handy and quick, but lack some features that are standard in other commercial spoolers. Once you have spooled a document to disk, the MB *Laser Spooler* can only report on the status of the LaserWriter and the print job. You cannot change the order of the print jobs, nor can you flush the buffer on the disk if you decide to cancel printing.

The ImageWriter spooler is the same as that shipped with the MacBottom 10s and 20s. It allows you to pause and continue the print job or flush the print buffer, but you can't change the printing order.

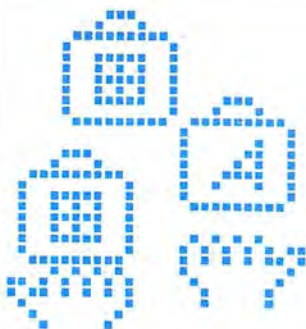
As the name suggests, the *Eureka* desk accessory supplied with the drive helps you find files that have gotten lost somewhere in all those megabytes. It graphically shows you where a file is on the drive and provides you with information about the file: the size of the data and resource forks, the type and creator, and the date the file was created and last modified.

*Floppy Copy* allows you to quickly copy a floppy disk or make multiple copies of a disk. The contents of the floppy are read into a temporary buffer on the hard disk and then copied onto a second floppy. This is helpful if you have a single floppy system.

The MacBottom 45 is the first hard disk which can be purchased with a built-in modem. If your Mac travels with you, this is an innovation as noteworthy as the collapsible toothbrush. The modem fits into the upper half of the drive cabinet and is also available as an upgrade for current MacBottom owners.

I tested the modem with *MicroPhone*, *Smartcom II*, *Courier* and *FreeTerm*, and it performed well with all of them. It also responds to the standard "AT" command set. The manual lists the registers, commands and result codes for users who are not really familiar with modems, and it explains how to change the dipswitch settings.

Once again, PCPC offers a quick and reliable drive for the consumer's dollar. The only thing this drive really lacks is a fancy, padded carrying case with the MacBottom emblem sewn on the outside. How about it PCPC? When can we expect one? —Fred Terry



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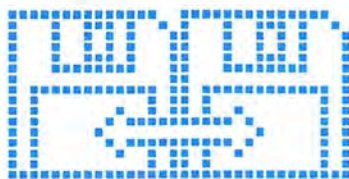
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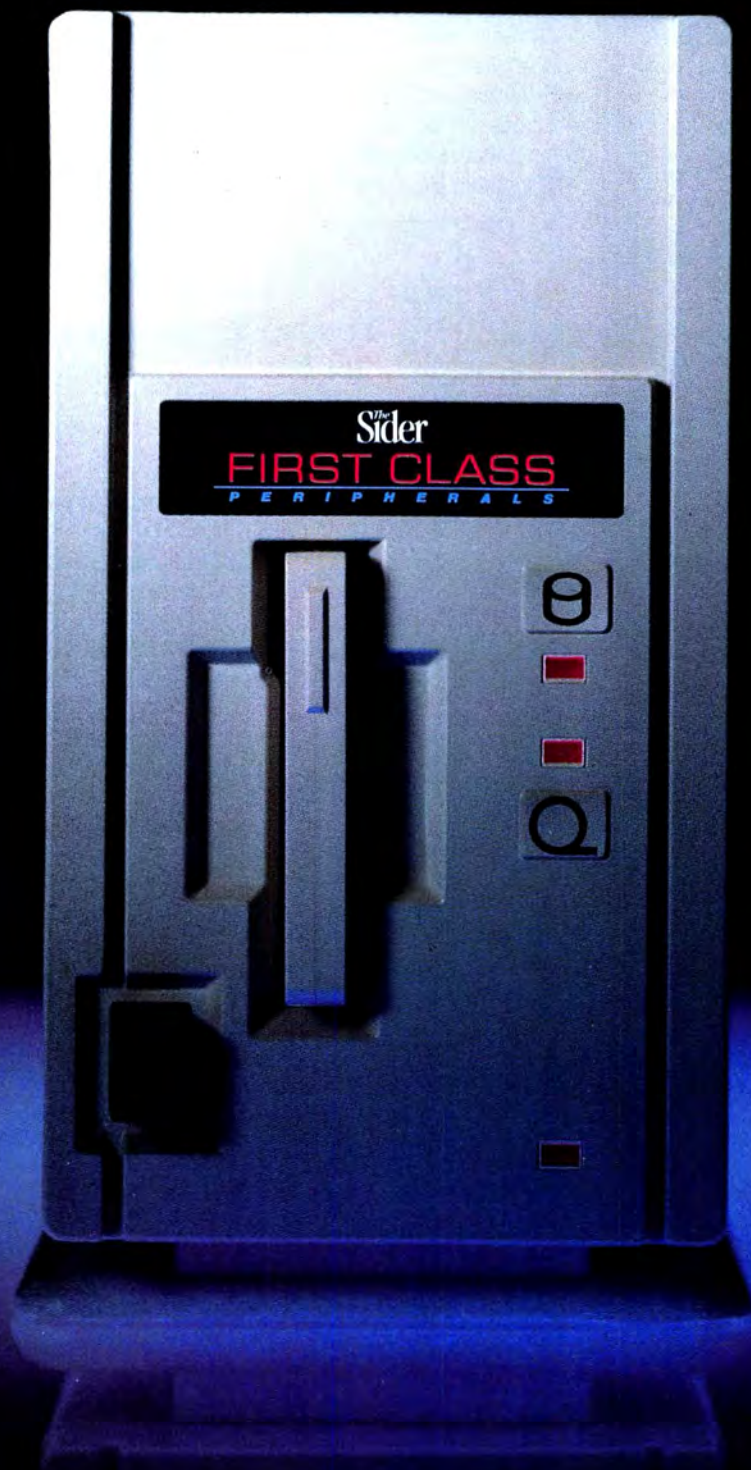
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# Turning Over a New Leaf

**PageMaker 2.0 matures  
and adds features. But  
there's still room for  
future growth.**

THE GOOD NEWS IS THAT *PageMaker* 2.0 is one terrific piece of desktop publishing software. I was hard pressed to find an element of the program that was either poorly designed or poorly executed; most of my criticisms come in the form of additional features I'd like to see incorporated into future versions.

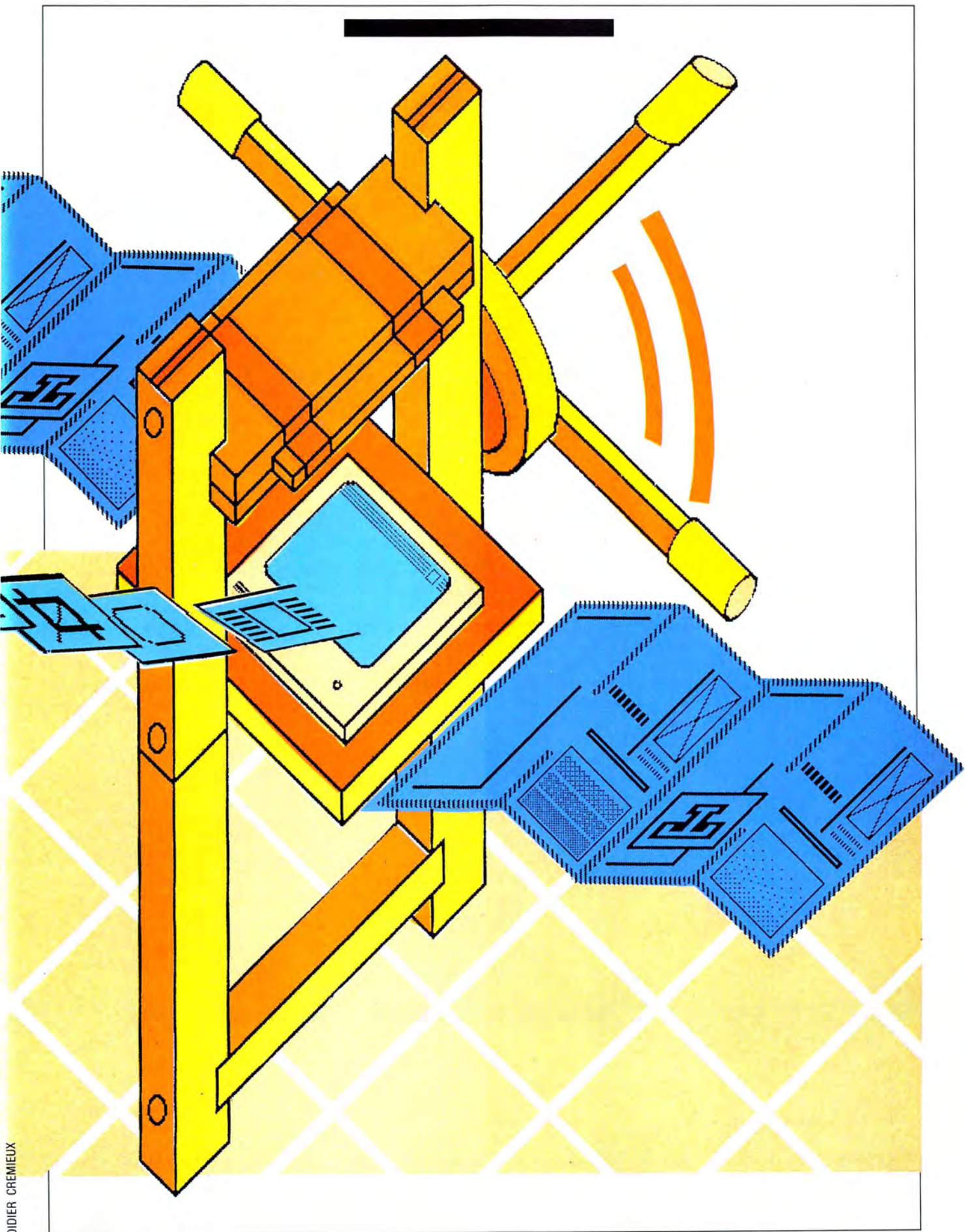
The bad news is that *PageMaker's* greatest strength—the amazing fidelity with which it recreates the procedures of a graphic artist's studio—is still sometimes its greatest weakness. The very metaphor that makes the program so easy to understand and use also makes it a cumbersome choice for manipulating complicated longer documents.

Overall though, *PageMaker* 2.0 is one of the slickest programs I've ever seen. It's fast, powerful, close to bug-free, and it retains all the charm and ease of use that made its ancestors, *PageMaker* versions 1.0 and 1.2, so popular. Users of those programs will have no hassles moving to 2.0; newcomers to *PageMaker* will be delighted at how easy it is to get up and running.

*PageMaker* was and is a legendary product. When it was first released, it quickly established itself as the yardstick by which all later page makeup software would be measured. The basic concept is simple and elegant. *PageMaker* gives publication designers the computerized equivalent of the manual tools used by paste-up artists—drafting table, layout boards, razor blades and rubber cement. Unlike recent competitors that try to integrate word processing and page layout into one comprehensive program, *PageMaker* is strictly organizational—a tool for consolidating text and artwork created with other programs into complete pages.

A *PageMaker* document starts out as a blank page on an empty desktop. You import text and/or graphics files, which can be “placed” in position on the page. Every object can be resized, reshaped or repositioned with a few magical passes of the mouse. If you discover that you're not satisfied with the way a particular item looks on the page, you can move it off to the desktop, which

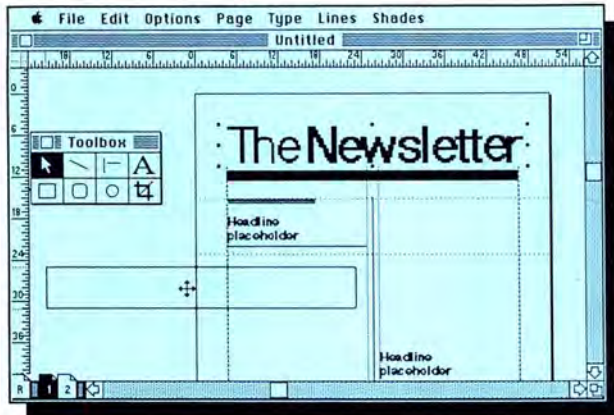
BY EZRA SHAPIRO



DIDIER CREMIEUX

## Turning Over a New Leaf

acts as a holding area for unused objects—there's no need to constantly load and unload objects from the Scrapbook or Clipboard. When you're satisfied with the appearance of a layout, you move on to the next page. It's quite straightforward.



The basic interface of PageMaker 2.0 looks exactly like PageMaker 1.2. Old hands with the program should have no problems making the transition. This shot shows a convenient new feature. Quickly dragging a selected block (in this case the headline) across the display moves a hollow outline of the object to the new position.

Most manipulations use one of eight cursor tools. The small tool palette can be moved around on the screen to keep it clear of your operations. A pointer tool lets you select objects and move them; a text tool is provided for selecting, entering and editing text elements; and a cropping tool allows you to trim imported graphics. The remaining five palette tools are for drawing rectangles, rounded corner rectangles, circles and ovals and straight lines (there's one tool for lines at any angle and another for lines constrained to horizontal, vertical and 45-degree angles).

To simplify the layout process, PageMaker lets you create both horizontal and vertical non-printing guide lines, which you can use for assistance in placing objects on the page in columns and blocks. This grid can be reused as a template, so you can build a long document with a repeating format.

You can view documents at any one of five sizes: actual, 75%, 50%, 200% and reduced to fit a full page onto the screen—whatever its dimensions. You can specify whether your view is to be of a single page or of two facing pages. Rulers along the left and top edges of the display

provide measurements in your choice of units.

### NEW BRANCHES

Fans of PageMaker 1.2 will be happy to note that 2.0 retains the feel of earlier versions. A quick

glance at the screen is comfortingly familiar. It's not until you begin pulling down menus that you realize how much has been added.

One of the biggest flaws in 1.2 was the lack of automatic hyphenation; resizing columns meant rehy-

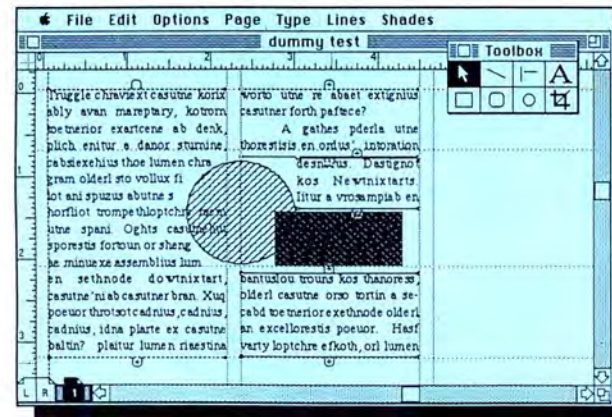
ing out space between certain letter pairs that normally have ugly white gaps between them) PageMaker 2.0 will kern automatically. You can also kern manually if you desire. PageMaker offers both letterspacing and variable word spacing as global options; you can easily control the "tightness" of your type.

The 16-page per publication limit is no more. PageMaker 2.0 handles 128-page documents, and will allow you to chain them into up-to-9999-page publications.

You can set up custom page dimensions for both smaller and larger sizes up to 17 inches by 22 inches. With dimensions less than an 8 1/2 inch by 11 inch sheet, PageMaker adds crop marks at the corners to facilitate correct trimming. With the larger sizes, you can select tiled printout, which provides a slight overlap at the edges of each sheet so you can paste them together safely.

The window shade handles at the top and bottom of text blocks have grown little blocks at either end. Dragging one of these new side handles stretches or shrinks the width of your column.

If you click on an object and slide it quickly to a new position, an



Flowing text around objects is still not automatic. To create the irregular text on the left, I had to insert carriage returns at the appropriate points. Text will be superimposed on an underlying object so you can see where you're going. The rectangular hole on the right required creating three text blocks to surround the object.

phenating text by hand. PageMaker 2.0 now sports a 110,000-word hyphenation dictionary and a user dictionary that can handle 1300 new words. The base dictionary is large enough so that during testing I found myself using the personal dictionary solely for company names.

If your fonts support kerning (tak-

ing out space between certain letter pairs that normally have ugly white gaps between them) PageMaker 2.0 will kern automatically. You can also kern manually if you desire. PageMaker offers both letterspacing and variable word spacing as global options; you can easily control the "tightness" of your type.

A "Select All" command has been added to the Edit menu. You can use it either to group select an entire page of objects or to specify an entire

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## Turning Over a New Leaf

imported document—even if it has been split into multiple columns over many pages. This makes global formatting much easier.

These are just a few of the high points; every area of performance has either been improved or enhanced. Saving and printing are much faster. Keyboard shortcuts have been added for many commands, and *PageMaker* 2.0 supports both the Mac Plus cursor keys and use of the numeric keypad as a cursor pad. If you use the font files distributed with *System* 4.1, you'll find *PageMaker* gives you much truer WYSIWYG screen displays. And *PageMaker* 2.0 now imports a wider variety of file formats (including the TIFF format for scanner output and encapsulated PostScript from new laser-oriented graphics packages).

### BLOWIN' IN THE WIND

I had no problems creating publications using elements from a wide range of programs: text from *Microsoft Works*, *Word* 1.05, *Word* 3.0, *MacWrite* and plain ASCII text downloaded from online services; *MacPaint*-style graphics from *SuperPaint* and *GraphicWorks*; encapsulated PostScript from *Adobe Illustrator*; and PICT-type art from *SuperPaint* in Draw mode, *Glue*, *Pro-3D* and *Excel* via the Scrapbook; and downloaded fonts from both Adobe and CasadyWare. I even created a *WordStar* file on (dare I say it?) an AT clone, sucked it into the PC version of *PageMaker*, modemed the resulting publication file over to the Mac, and pulled it into *PageMaker* 2.0—one hell of a way to convert *WordStar* for use on a Macintosh, but it worked. *PageMaker* handled everything without burping. I noticed no appreciable degradation working with multiple columns, pages with many elements or lengthy publications. Printing to a QMS PS-800 laser printer (the functional equivalent of the LaserWriter) with either the Apple driver or one provided by Aldus took no longer than I would have expected.

I encountered no bugs during my quite extensive evaluation. I have since learned from Tony Bove's and Cheryl Rhodes' *Desktop Publishing*

## Getting a Head Start

*PageMaker* 2.0 provides you with only one solitary, forlorn tutorial on disk—not a huge surprise, considering that the program and its support files are squeezed onto two 800K disks with little room to spare. Once you've spent 15 or 20 minutes assembling the sample newsletter, you're on your own. The manual stresses planning, planning, but where do you begin? What's the right way to go about designing your first piece?

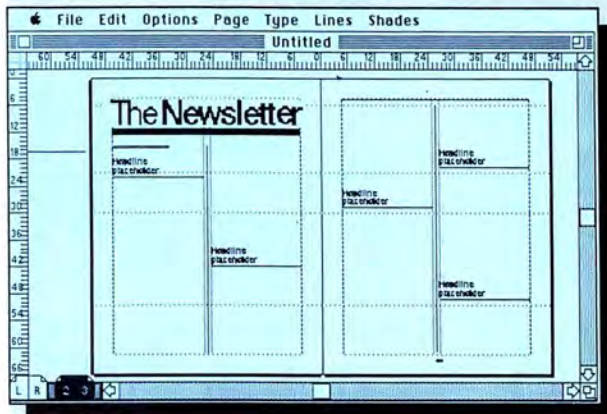
A good place to start is Aldus' *PageMaker Portfolio: Designs for Newsletters* (\$79). It's a collection of template grids for 8½ x 11 inch publications, and you also get a second tutorial and an excellent manual.

With very little effort—all the dirty work of setting up the formats has been done by Aldus—you can modify one of the layouts and pour your periodical into the mold.

Since Aldus loads its advertising and promotional materials with scads of extravagant layouts done by graphic artists using *PageMaker*, I was concerned that *Portfolio* would contain a bunch of esoteric, over-designed newsletters impractical for the novice user. I needn't have worried; Aldus did it right. The templates are conservative, but stylish—you won't be embarrassed to build a publication from any of them.

You get seven layout models, each of which has three 2-page variations, so you can study (or borrow from) 42 individual page designs. Aldus has positioned column guides, blocked in headlines with dummy type and even created measuring "tools" for you (little boxes that can be slid over type areas to check vertical spacing). The oversized 114-page manual is well-written and contains illustrations of all the templates in finished form, plus supporting examples of good and bad design technique. Much of the material is reminiscent of *The Aldus Guide to Basic Design*, but somehow the large pages and the knowledge that you can work with the templates gives it a much more comfortable feel.

I wouldn't recommend the *Portfolio* to experienced layout artists or *PageMaker* users, but it's certainly a big help if you're new to the process or if you need to save some time.



The *PageMaker* screen at the top shows the "easy" version of the simplest newsletter format in the *PageMaker Portfolio*. The bottom screen is one of the most complex templates you receive.



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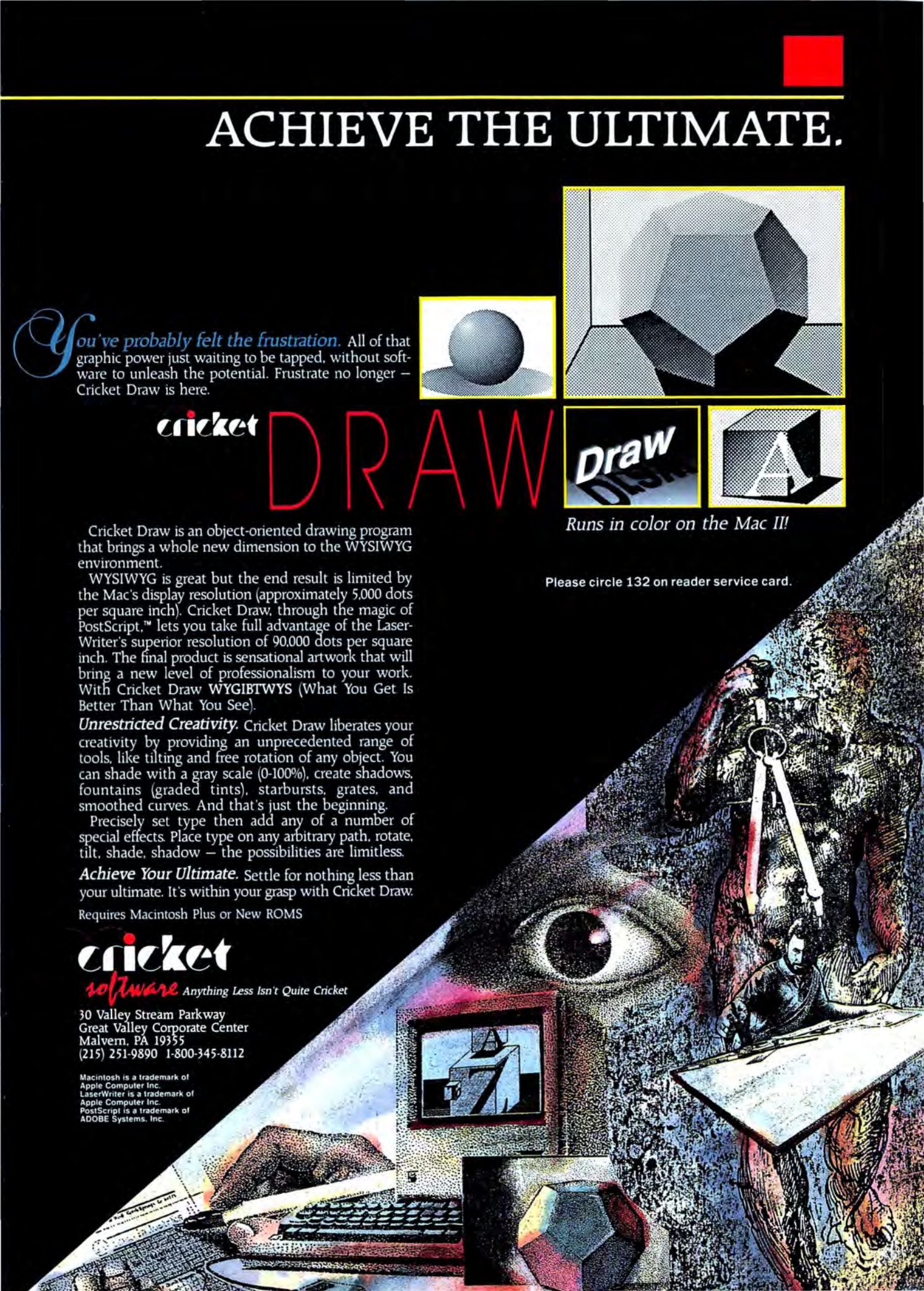
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## Turning Over a New Leaf

newsletter that *PageMaker* 2.0 has some problems driving a Linotronic 1270 dots-per-inch commercial page composition system, but that's not a problem the average Mac user is likely to encounter. I've also seen reports on conferencing systems of a bug in the way *MacDraw* handles text that causes problems when files are imported into *PageMaker*, but Aldus is working on a fix and a new version of *MacDraw* is due out shortly.

My experience with *PageMaker* 2.0 was notably free of hassles, but one aspect of the import/export process annoyed me. *PageMaker* accepts files from *MacWrite*, *Works*, both versions of *Word*, *WriteNow* and as plain unformatted text, but only exports text to *Word* 3.0 or as ASCII. If you make extensive changes to a document while in *PageMaker*, you either have to live there forever or reformat the thing when you pull it into your word processor of choice. How come? A call to Aldus Tech support got me some answers, but I still wasn't satisfied. It seems that Aldus holds the vendors of word processors responsible for designing installable export filters. T/Maker ships its filter with *WriteNow*, and Microsoft has only provided a filter for *Word* 3.0. I use *Works* for most of my writing, and I know a lot of folks who use *MacWrite* or *Word* 1.05—for the moment we're out of luck.

### SEEDS FOR THE FUTURE

This is basically a list of what's missing. The feature I'd most like to see in the next release of *PageMaker* is a search-and-replace facility, preferably one that accepts character attributes as well as simple text strings. This is an essential editing function and one that's often needed in creating a publication. I'd hate to have to exit to a word processor to do a last-minute replacement throughout a book-length manuscript and then have to reload the document into *PageMaker*.

Likewise, there's no convenient way to generate an index or a table of contents for a *PageMaker* publication other than retreating to a word processor with those capabilities and

manually breaking pages at the same points they occur in the final *PageMaker* layout.

I'd like some way to tag similar objects—like subheads or chapter titles—that repeat throughout a long publication, so I could change the format in one fell swoop rather than having to find each one and select it by hand. Group select only partially solves the problem; it's too easy to miss an occurrence or two in a lengthy manuscript. Once again, the situation can be handled with a word processor that employs style sheets, but this is, after all, a design operation and I'd like to be able to solve any problems within the design environment.

This leads me to my biggest doubt about *PageMaker*. The program is wonderful for handling shorter publications—newsletters, pamphlets and the like. The amount of time you spend tweaking individual items doesn't cost too much effort and is barely noticeable. When you start looking at big projects, the adherence to the paste-up metaphor means you'll be taking a lot of time on hand operations. Even placing the text of a long manuscript requires that you click the mouse at the top and the bottom of every page to accomplish the continuation. If you plan poorly, and don't use your word processor's formatting tools to the fullest extent possible, fixing repeating formats in *PageMaker* can turn into a nightmare.

### SAFETY NETS

*PageMaker* 2.0 is superbly documented. Gone are the days when all you received with the program was a single, slim spiral-bound booklet. Aldus now sends along a fat 314-page *User Manual*, a 134-page *Reference Manual*, a quick reference card, and a small pamphlet on installation. Each is clearly written and sensibly organized, and the two manuals have decent indices (though I wonder how they were produced, as the books were laid out with *PageMaker*). I was delighted to find that I had to wade through little of the redundancy that often characterizes the documents that come with other software packages. That's not to say

that there's anything missing; the writing is simply clean and tight.

The *User Manual* opens with a brief tutorial (you build a simple publication from graphic and text elements provided on disk), then moves neatly through the operation of the program. The *Reference Manual* contains the sort of information you usually find in appendices—short descriptions of all menus and commands, details on importing and exporting various file formats, printer considerations, troubleshooting and suchlike.

If that isn't enough, returning your warranty registration card gets you a copy of Aldus' *Guide to Basic Design* and a subscription to a bi-monthly newsletter called *The Desktop Publisher*. The *Guide to Basic Design* is a 68-page paperback that purports to teach the fundamentals of graphics; it's weaker than the two manuals, but copious examples of both good and bad layouts do provide a starting point for the novice designer. The Aldus newsletter is about half useful tips and information and half propaganda, but you at least get the feeling that Aldus cares about your continuing welfare.

Registered users also receive 45 days of telephone support, starting with the first call (*not* the date of purchase). If you need more phone help, Aldus will sell you five more hours of assistance via an 800 number, discount prices on upgrades and new products and another newsletter—a quarterly called *The Aldus File*. This extended plan costs \$75 a year. There are also corporate support programs for big spenders.

During the course of the review period, I called Aldus Technical Support several times with rather obscure questions. I always got through, and the people with whom I spoke were invariably concerned and courteous. Twice, when my contact didn't have answers immediately at hand, he or she took my phone number and called back a few hours later with solid information. That was a pleasant surprise.

The only area of user support that disappointed me was *PageMaker's* on-line help arrangement. Aldus is the first major software vendor to

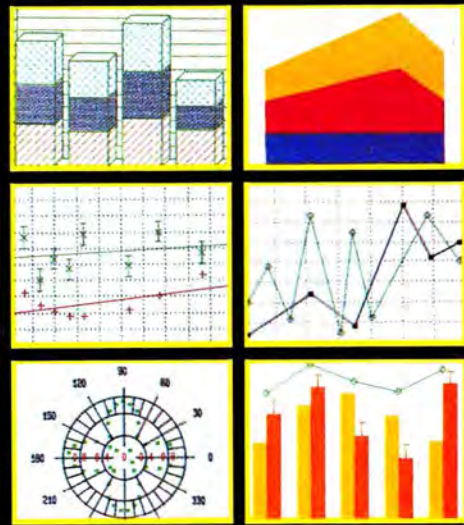


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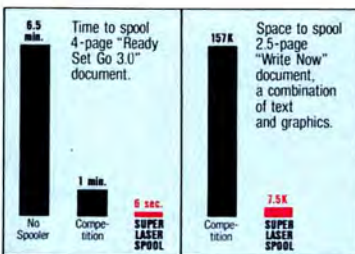


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## Turning Over a New Leaf

use *Guidance*, a desk accessory version of *Guide*, the hypertext program for the Mac, for this purpose. *Guidance* is supposedly engineered specifically for software help systems, and I was expecting great things from it.

In brief, the *Guide* family of software is constructed around the notion of layered information. When you slide the cursor over the "hot" regions of a *Guide* document, the cursor changes shape to indicate hidden layers of text or graphics. Click-

**W**ith big projects, the adherence to the paste-up metaphor means you'll be taking a lot of time on hand operations.

ing the mouse reveals the new data; clicking it again either moves you to another hidden layer or drops you back at your starting point. I was fascinated with the possibility of using sophisticated branching techniques to jump around a help system without the constraining rigidity of a menu or an outline or a table of contents.

In practice, *Guidance* seems to be merely a castrated subset of *Guide*; it's really just *Guide* without the ability to create or modify documents. I say this because some annoying traces of *Guide*'s editing abilities were not removed as cleanly as they should have been. For example, even though the cursor changes shape to show the spots where you click to see more data, most of the time it appears as an I-beam editing cursor; you can even click it and get a blinking insertion point in the middle of a help screen. You can't insert anything, of course, but it looks like you should be able to. Disconcerting.

I found myself frequently sliding the cursor around the help screens to

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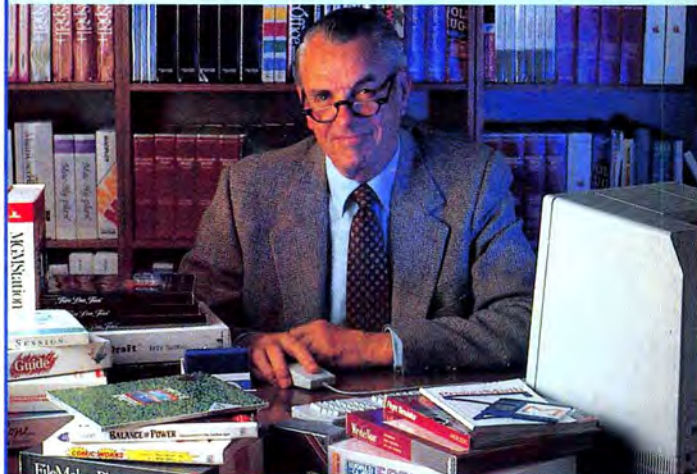
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## Turning Over a New Leaf

see where the hot spots were. This tendency didn't disappear until about the same time I stopped using the help system. Others may find it easier to adjust to this noble experiment, but I spent far too much time figuring out the system than actually getting help. The information is all there, and *Guidance* is a much better idea than Aldus' earlier practice of shipping help files as individual *PageMaker* publications that had to be opened one by one. However, on-line assistance should require less brainpower. How about true context-sensitivity, keyed to operations?

### FINAL THOUGHTS

In spite of some niggling inadequacies, *PageMaker* will once again be the target to shoot at in its product category. It's fast, flexible and inviting. At the moment, *PageMaker* 2.0 is truer to its vision than any other page layout program on the market, and it excels at what it claims to do. Is it the right program for you? That depends on whether the paste-up metaphor is suited to your working style. If it is, *PageMaker* 2.0 is hard to beat. ☞

EZRA SHAPIRO HAS BEEN WRITING ABOUT COMPUTERS FOR THE PAST 5 YEARS. IN HIS PREVIOUS LIFE, HE WORKED AS A MAGAZINE ART DIRECTOR AND PRODUCTION MANAGER, AND WAS AN OFFICER OF THE SOCIETY OF PUBLICATION DESIGNERS.

### MACUSER RATING

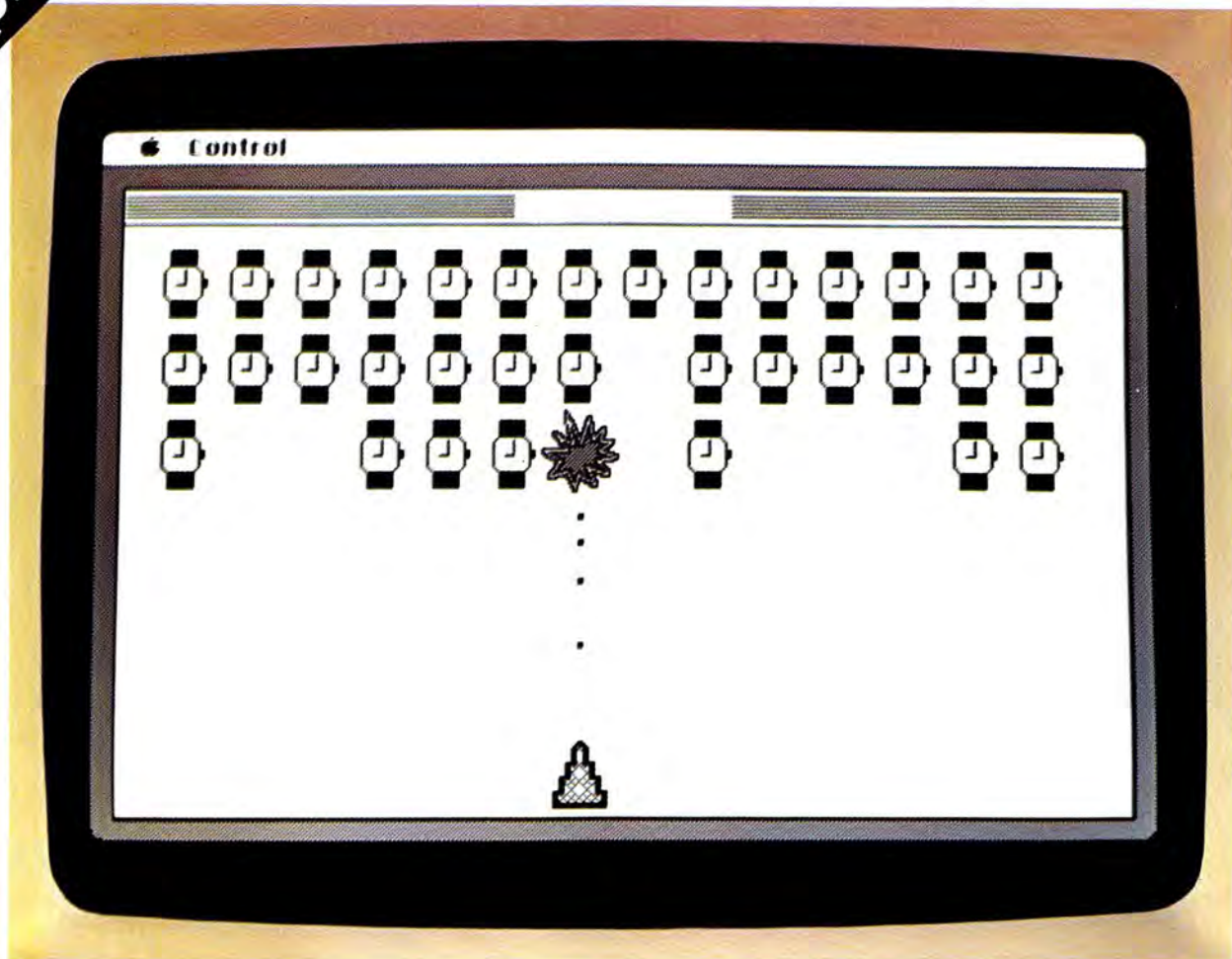
<b>PageMaker 2.0</b>	
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**Comments:** A remarkably consistent and flexible implementation of the paste-up metaphor for page layout, on which the product was based. **Best Feature:** Well-designed interface is never threatening or confusing. **Worst Feature:** Lack of automation for repetitive tasks makes longer projects tedious; limited export capability. **List Price:** \$495. Published by Aldus Corporation, 411 First Avenue South, Seattle, WA 98104. (206) 622-5500. Version 2.0 reviewed. Not copy protected.

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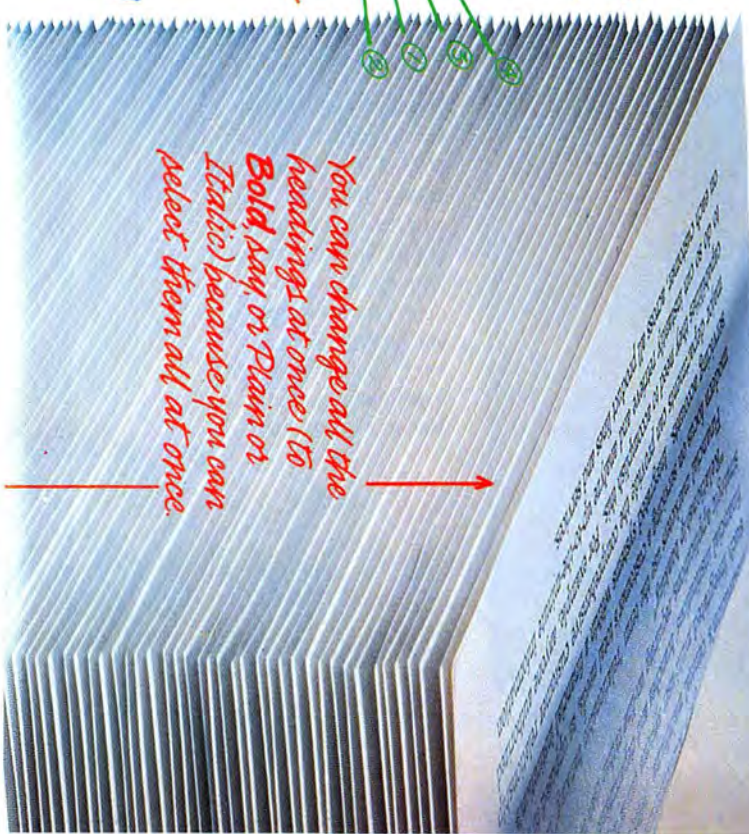
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# Laser Wars

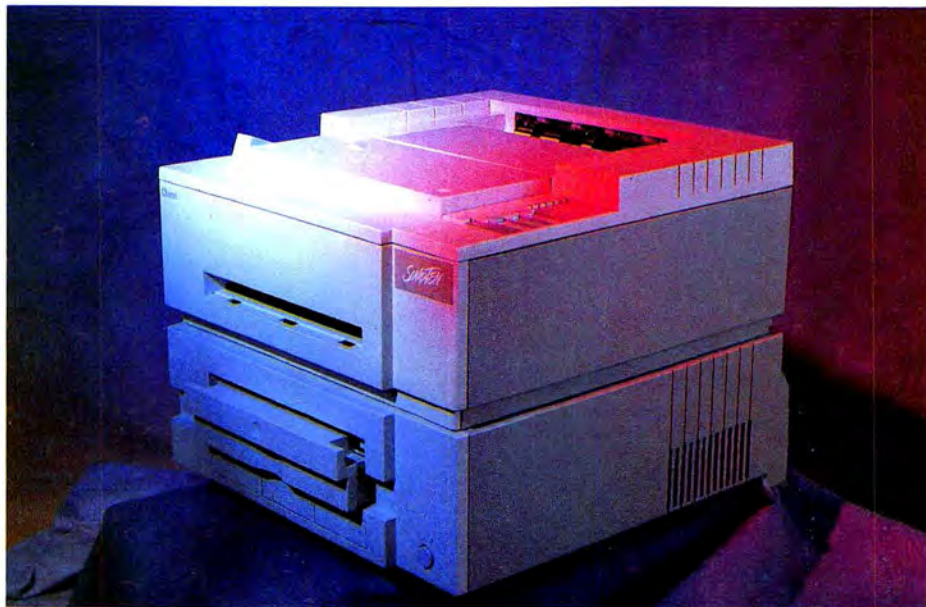
An array of 300-dpi laser printers slug it out in a MacUser battlefield test.

BY HENRY BORTMAN

TO MANY PEOPLE, THE APPLE LaserWriter (or LaserWriter Plus) is synonymous with the more generic term "PostScript printer"—in much the same way that people refer to photocopiers as Xerox machines, regardless of the manufacturer. There's a good reason for this. In the \$5000 to \$6000 price range, the Apple LaserWriter was both the first—and for a long time, the only—game in town. But this is changing rapidly. There are now over half a dozen 300-dots-per-inch (dpi) PostScript printers, all roughly the same price, and more are coming to market all the time.



Apple's LaserWriter Plus was the first of its kind: a relatively quick PostScript printer with lots of built-in fonts. While still a fine machine, other cheaper and more feature-laden units are now available.



The Qume Laser Script-TEN has 3 megabytes of RAM in it, then most of the units tested here. The amount of RAM in a printer determines the maximum printable area and controls the number of fonts that can be downloaded from the Mac at any one time.



We recently rounded up four of these printers and ran them through a set of rigorous comparison tests. They were carefully examined for several different factors: speed, font download capacity, ease of use and, of course, image quality.

The printers we tested were Apple's LaserWriter Plus, The Laser Connection's PS Jet+ (identical to the QMS PS-800+), Texas Instruments' OmniLaser 2108 and Qume's Laser ScripTEN. Our tests show no clear winner. But the results indicate that Apple's LaserWriter Plus is no longer the unchallenged leader in the field of 300-dpi printers.

**PRINTING IT RIGHT: IMAGE QUALITY**

The bottom line in measuring a printer's value is output quality. Printed output can be used as either final output or as camera-ready copy for reproduction. While our comments are based on the pages that came out of the printer, keep in mind that the samples you see in this article have gone through an additional printing process. If you will be using your printer's output as your "final" copy, we suggest that you run tests at your local dealer before making a choice.

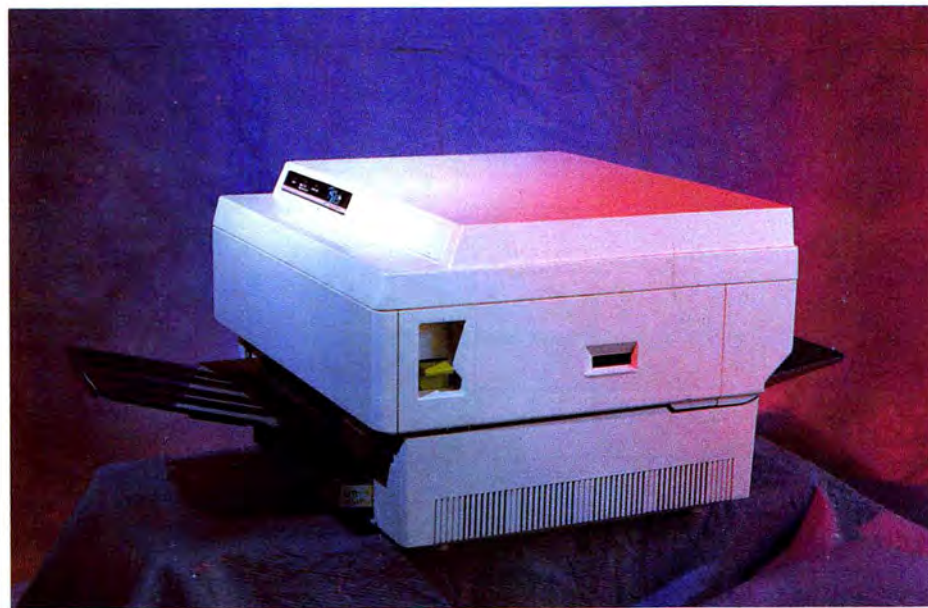
Our first trial looked at the question, "How black is black?" Many

LaserWriter users have complained that images that should appear black actually come out a streaky dark gray. The OmniLaser wins hands down when it comes to reproducing black tones. Even a full page of black came out solid black throughout (see Figure 1). None of the other printers could match this performance, although the ScripTEN is significantly better than either the LaserWriter Plus or the PS Jet+.

This disparity in blackness is a result of different print "engines." Both the LaserWriter Plus and the PS Jet+ use a Canon engine, which is a "write-black" device. Both the



**The Texas Instruments OmniLaser 2108 has the densest blacks of any unit tested. That's because it uses a Ricoh write-white engine. Unfortunately, the dense blacks sometimes lead to toner scatter in areas that should be white.**



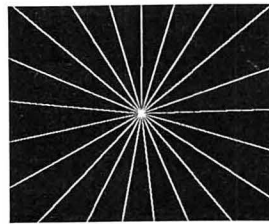
**The Laser Connection's PS Jet+ (identical to the QMS-800+) has a straight paper path and uses a single unit cartridge. These features contribute to its great ease of use.**

# Laser Wars

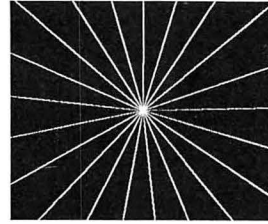
OmniLaser, which uses an engine built by Ricoh, and the ScripTEN, with an Hitachi engine, employ "write-white" technology. The use of write-white technology was an attempt to improve on the washed out appearance of solid dark gray and black areas on a LaserWriter Plus. However, write-white imaging also has its drawbacks.

Figure 2 compares a gray scale from each of the four printers. Nearly all the shades in the OmniLaser's gray scale are darker than the corresponding shades from the other printers. The one exception is the lightest shade, which in the original shows as an uneven barely-noticeable gray and which seems to appear white in Figure 2. The effect of the OmniLaser's overall darkness on gray scale images can be seen in Figure 3 as well. This image was created by scanning a black and white photograph at 300 dpi. The OmniLaser's output looks so muddy that it lacks detail, and when examined under a magnifying glass, shows a lot of "toner scatter"—an erratic dusting of toner in areas where it doesn't belong.

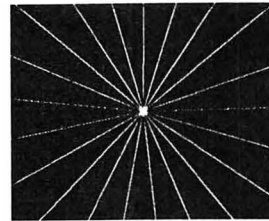
The ScripTEN, while not suffering as badly as the OmniLaser from "ultra-black" syndrome, has uneven-looking grays. The magnification



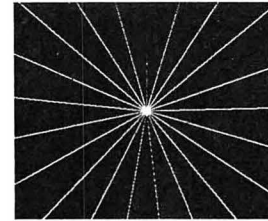
LaserWriter Plus



PS Jet+



OmniLaser



ScripTEN

Figure 1: These rectangles were intended to be solid black. The radiating lines are known as hairlines, which in this case are one pixel (1/300") wide.

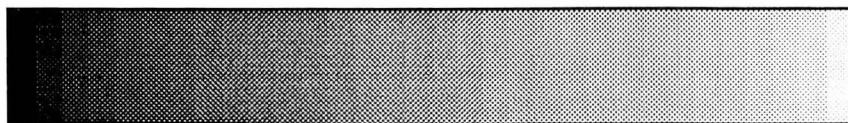
shows that this is caused by irregularly shaped halftone cells.

The imaging method a printer employs also has an effect on text (see Figure 4). The OmniLaser makes text look too dark, causing plain text to appear almost bold. An examination of the ScripTEN's output under magnification reveals that the unevenness found in its halftones shows up in its text, too. Text printed on the LaserWriter Plus and PS Jet+, by comparison, have much crisper, cleaner edges. This holds true for type at larger point sizes as

well as for the 6-point type shown.

## PRINTING FROM MEMORY

One issue that plagues LaserWriter Plus users is the lack of available memory. Of the four printers we tested, the LaserWriter has the least RAM, 1.5 megabytes. The PS Jet+ and OmniLaser each have 2 megabytes, and the ScripTEN has 3 megabytes. The amount of RAM and the way that memory is allocated in a PostScript printer determine some important characteristics, such as the maximum area imageable on a



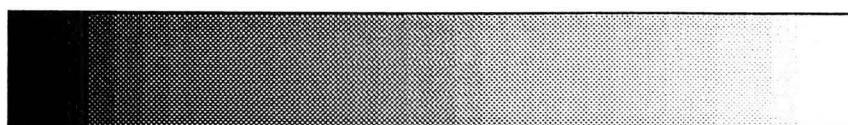
LaserWriter Plus



PS Jet+



OmniLaser



ScripTEN

Figure 2: These gray scales show the full range of shades available under normal conditions from a 300-dpi PostScript printer. To the right of each gray scale is a portion of the scale magnified 600%.

page, the number of fonts that can be downloaded and the size of the font cache.

The more memory a printer has, the larger an area it can print or image. The LaserWriter Plus, for example, can not image a full legal-

size page—not because the printing engine is incapable of it, but because there's not enough memory. It's possible to image a full letter-size page on the LaserWriter Plus, but the memory must be "borrowed" from other functions, such as space for

downloadable fonts. The comparison chart shows the maximum area each printer can image. Note that the OmniLaser, unlike the other three printers, does not support the use of legal-size paper at all.

Fonts that are not resident in the printer must be downloaded. One of the unfortunate "features" of PostScript is that an attempt to download a font without having the memory needed to store it causes the printer to reset.

In our test, we sent a page that contained text in 20 different fonts, all of which required downloading. The LaserWriter Plus reset after downloading only seven fonts. The OmniLaser, with one half meg more RAM than the LaserWriter Plus, could only handle one additional font, resetting after eight fonts were downloaded. The PS Jet+, with the same total amount of RAM as the OmniLaser, downloaded 11 fonts before resetting (memory is allocated differently in the two printers). The winner in this category, thanks to its 3 megabytes of memory, was the ScripTEN, which was able to print all 20 fonts without resetting.

The OmniLaser's poor showing in this test is particularly serious because the resident fonts in this printer include only the 11 fonts found on the original LaserWriter (the Times, Helvetica and Courier families, plus Symbol). The PS Jet+ and ScripTEN contain the full set of 35 fonts standard in the LaserWriter Plus.

#### PRINTING IT FAST: THROUGHPUT

An often heard complaint about PostScript printers is that they are slow—rarely achieving their rated throughput. Three of the printers in our comparison test—the LaserWriter Plus, the PS Jet+ and the OmniLaser—are rated at eight pages per minute (ppm). The ScripTEN is rated at ten ppm. Figures 5 through 7 show you what you can really expect.

Figure 5 compares the printing speed of a seven-page *Word* 3.0 document which contained only 12-point Times Roman body type and 14-point Helvetica Bold headlines. The first group of columns repre-



LaserWriter Plus



PS Jet+



OmniLaser



ScripTEN

Figure 3: A halftone image created by scanning a black and white photograph at 300 dpi.

*This is a sample of 6 point Times Italic type. Six point type is really too small for a 300 dpi printer to handle very well. This is what makes it a good test of its limitations.*

**This  
of 6 p**

LaserWriter Plus

*This is a sample of 6 point Times Italic type. Six point type is really too small for a 300 dpi printer to handle very well. This is what makes it a good test of its limitations.*

**This  
of 6 p**

PS Jet+

*This is a sample of 6 point Times Italic type. Six point type is really too small for a 300 dpi printer to handle very well. This is what makes it a good test of its limitations.*

**This  
of 6 p**

OmniLaser

*This is a sample of 6 point Times Italic type. Six point type is really too small for a 300 dpi printer to handle very well. This is what makes it a good test of its limitations.*

**This  
of 6 p**

ScripTEN

Figure 4: A sample of 6-point Times Italic type, at regular size and magnified 600%.

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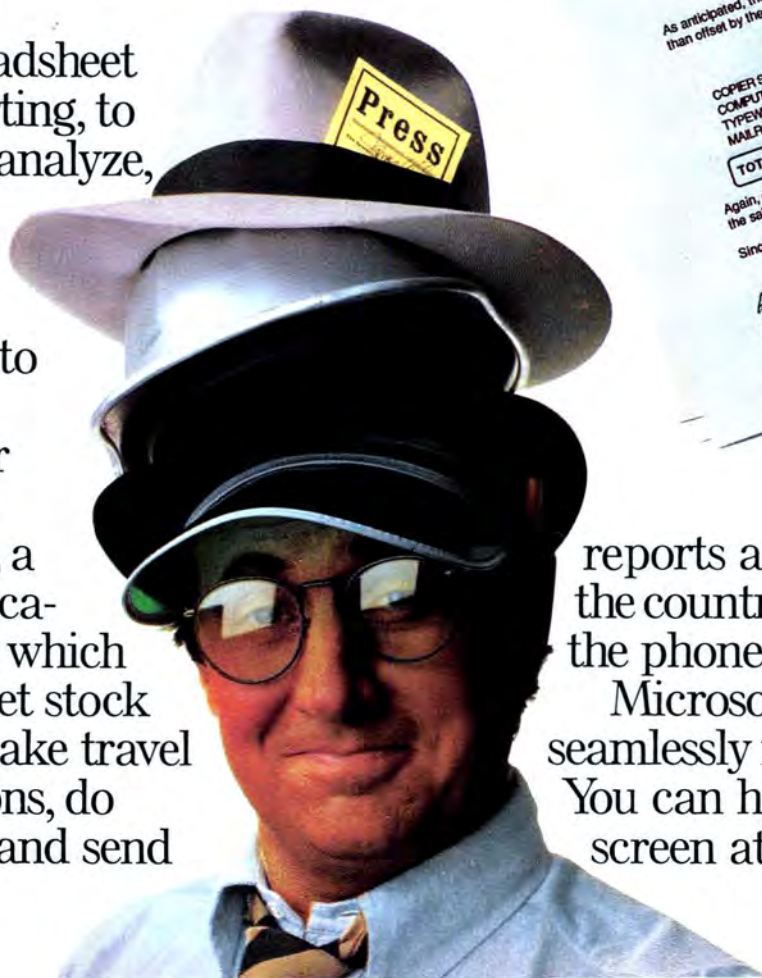
Microsoft Works is a one-disk software program that gracefully integrates:

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A database tool with reporting, to keep track of clients, jobs, vendors.

A spreadsheet with charting, to compute, analyze, interpret, and then graph anything to do with finance or numbers.

Finally, a communications tool which lets you get stock quotes, make travel reservations, do research, and send



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October 27, 1987  
Mr. Jonathan Smith  
Northwest Regional Sales Manager  
Progressive Office Supplies  
16011 NE 36th Way  
Redmond, WA 98073

Dear Jon:

Congratulations!

Your hard work during the past few months has resulted in the most successful three-month sales period in the history of Progressive Office Supplies. All six regions increased sales over the previous three months, with the Southwest Region posting record sales of \$145,350.00, representing over 30% of our total third quarter sales.

Total third quarter sales for Progressive Office Supplies have increased 74% from the same quarter last year.

176% increase over same quarter last year

### Sales by Region

■ Northeast	12.1%
■ South	21.2%
■ West	13.7%
■ Southwest	30.6%
■ Northwest	6.9%
■ Midwest	15.4%

As anticipated, the sales of typewriter supplies have continued to decline. This has, however, been than offset by the increased sales of computer supplies, as reflected in the table below:

	July	August	September
COPIER SUPPLIES	\$25,488.61	\$23,776.65	\$30,068.28
COMPUTER SUPPLIES	\$34,484.59	\$42,797.97	\$46,772.88
TYPEWRITER SUPPLIES	\$43,480.57	\$44,363.08	\$38,420.58
MAILROOM SUPPLIES	\$46,479.23	\$47,553.30	\$51,784.26
<b>TOTAL SALES</b>	<b>\$149,933.00</b>	<b>\$168,511.00</b>	<b>\$167,046.00</b>

Again, congratulations to you for such a strong third Quarter. I look forward to thanking the sales meeting next month in Hawaii.

Sincerely,  
*Frank Addison*  
Frank Addison  
President

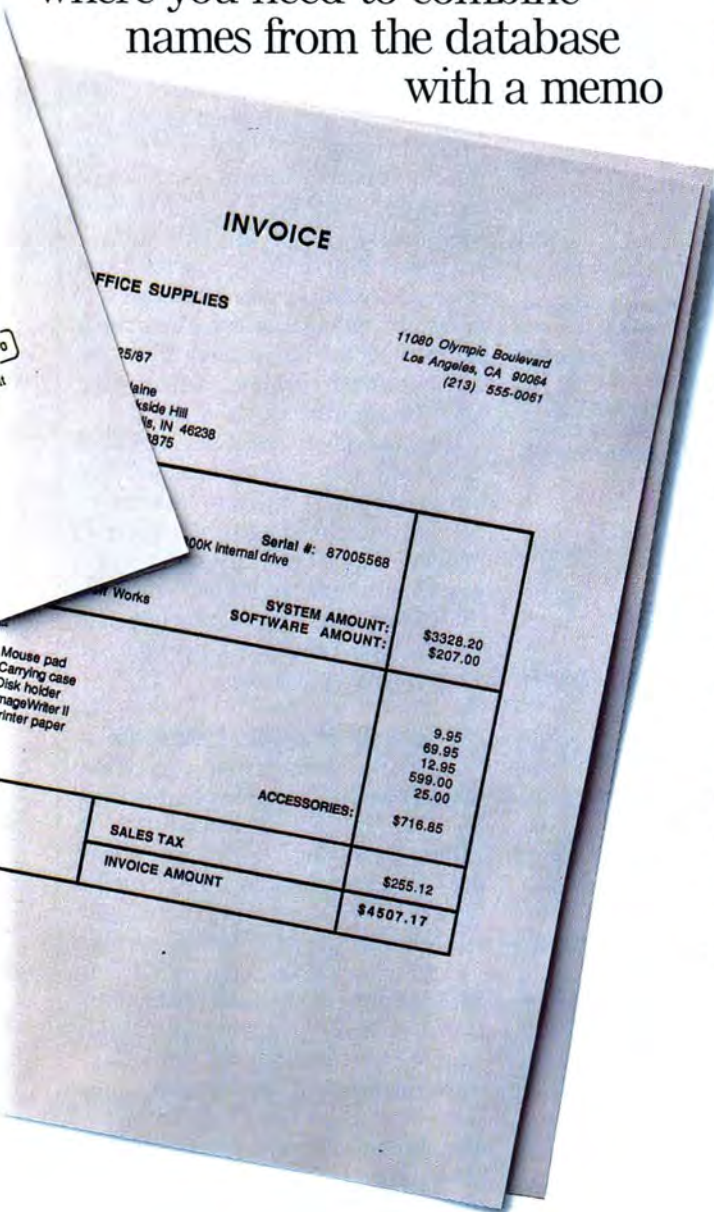
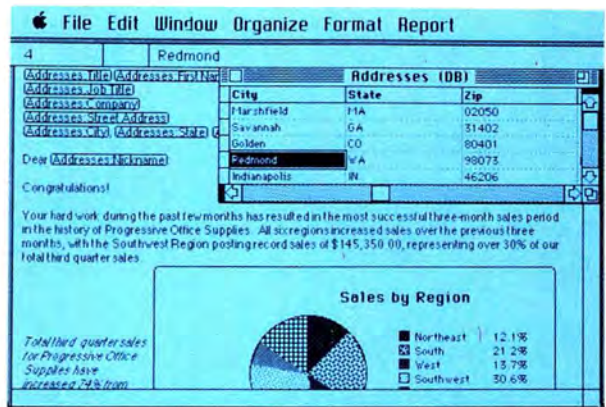
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# Laser Wars

## Pages Per Minute—Simple Text Document

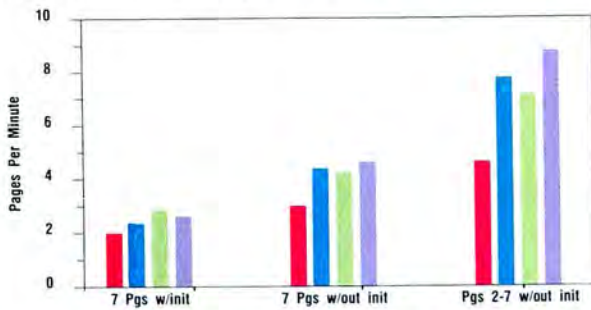


Figure 5

Figure 5: PostScript printers rarely achieve their rated throughput. These graphs show printing speed for a seven-page *Word 3.0* document. The first set of graphs include the time required to initialize the printer and print the document. The second set is for the same document without initialization. The third set disregards the time spent printing page one of the document.

## Single Page of Text with Bitmap Graphics

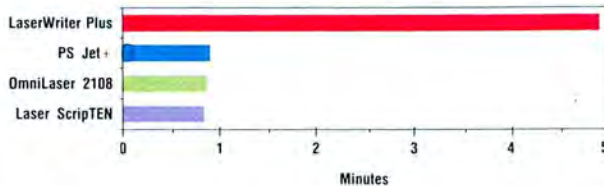


Figure 6

Figure 6: Bit-maps in a document increase printing time, especially on the LaserWriter Plus, which contains an older version of PostScript than the other printers tested.

## Font Cache Timing Test

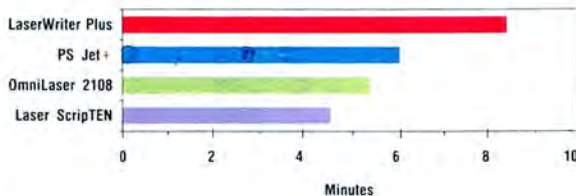


Figure 7

Figure 7: When a large variety of typefaces, point sizes and styles are used, printing slows down. Printers with larger font caches can handle type variety more efficiently.

■ LaserWriter Plus    ■ PS Jet+    ■ OmniLaser    ■ ScriptTEN

sents the average throughput for the entire document, printed just after the printer was turned on, and including the initialization time. None of the printers came anywhere near its rated speed under these conditions. The OmniLaser had a slight edge on this test, with the PS Jet+ and ScriptTEN tied for second place. The LaserWriter Plus came in last.

The second group of columns shows the speed to print the same document after the printer was already initialized. Here the ScriptTEN had a slight edge and, again, the LaserWriter Plus lagged significantly behind.

In the third comparison, the time it took to print the first page of the document is ignored in calculating the average per-page speed. The first page of a document often takes longer to print than subsequent pages. This should give you an idea of how each printer performs on lengthy documents. The PS Jet+ and the OmniLaser came pretty close to their eight ppm rating, and the ScriptTEN edged up to about nine of its rated ten ppm. The LaserWriter Plus, at just over four ppm, was left in the dust.

Figure 6 shows what happens when bit-map graphics are added to

a document. The page used for this test was a *MindWrite* document in Times Roman with two 1.5 X 4 inch bit-map graphics on it. All the printers took roughly a minute to image this page, with the exception of the LaserWriter Plus, which took over five minutes. This is mainly because the LaserWriter Plus employs a significantly older version of PostScript than the other three printers tested (see the comparison chart for details).

The final speed test (Figure 7) compares the font caching abilities of the four printers. Font caching is important when you use many different fonts, styles or point sizes. In a PostScript printer, the first time a character appears in a particular font, style, point size and rotation angle, its dot image is stored in a "font cache" (a reserved portion of the printer's memory), so that the next time it appears it doesn't need to be re-imaged. But there's a hitch: the font cache has a limited size. If enough different character/font/style/size/rotation combinations are called for in a document, the printer starts deleting old images from the cache to make room for newer ones, and throughput slows down.

The document used for the font cache test was only one page long, but it had 2300 different characters, each of which had to be separately imaged. The ScriptTEN did the job in just over four and a half minutes; the LaserWriter Plus took eight and a half. The other two printers fell somewhere in between.

## PRINTING IN DISGUISE: EMULATION

All the printers tested, except the OmniLaser, are capable of emulating a Diablo 630 daisywheel printer. In addition, all but the LaserWriter Plus can emulate an HP LaserJet Plus. The PS Jet+ and OmniLaser also emulate an HP 7475A plotter, which uses HPGL commands. In addition, the OmniLaser can emulate a TI855 in both "dp" mode (supports Epson MX-80 with Graftrax drivers) and "wp" mode (supports Qume Sprint 11 drivers). Users who always use a Macintosh will have little use for emulation, but those who wish to access their print-



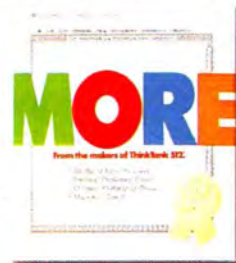
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## Laser Wars

er from IBM PCs as well—particularly if they use software that supports only non-PostScript printers—may find these features invaluable. If your needs run in this direction, ask a dealer to demonstrate the printer's emulation mode(s), using your favorite PC-DOS software.

### PRINTING IT EASILY: SETUP AND USE

The first thing a new printer user confronts is setup. Documentation is critical in this procedure. Both the LaserWriter Plus and the PS Jet+ come with excellent documentation and disks containing set-up utilities. The documentation for the PS Jet+, targeted at both the PC and Macintosh markets, carefully explains how to use the printer with both types of computers. It includes a 5 1/4-inch

disk for PC users as well as the familiar Macintosh disk.

The OmniLaser documentation was nowhere near as good. In fact, I could not easily find a set of step-by-step instructions for setting up the printer. While the documentation we saw was not in its final form, users will probably receive something similar. I can't rate the ScriptTEN documentation, since it had "PRELIMINARY" stamped all over it and didn't even contain the illustrations. Neither the OmniLaser nor the ScriptTEN came with utility disks.

Another consideration is the strategy used for replacing consumables, such as the OPC (the imaging belt) and toner. Both the LaserWriter Plus and the PS Jet+ use a single-

unit replacement cartridge. The advantage of this approach is that the user never has to come in contact with the toner. The alternative, employed by the OmniLaser and ScriptTEN, is separate OPC and toner replacement. (The ScriptTEN also has a replaceable developer unit.) Since the OPC is rated to last for more than one toner refill (and consequently needs replacement less often), TI and Qume claim a lower per-page cost of printing. This claim is based on the manufacturers' ratings of how long various consumable items are expected to last. I had no way of judging this objectively, but did manage to make a mess replacing the toner on both the OmniLaser and the ScriptTEN. In addition, the OPCs are easy to dam-

## Printer Comparison

	LaserWriter Plus	PS Jet+	OmniLaser 2108	ScriptTEN
Price	\$5799	\$5495	\$5995	\$5295
Resident fonts	35	35	11	35
Rated speed (ppm)	8	8	8	10
Paper sizes (1)	let, A4, leg, B5	let, A4, leg	let, A4	let, A4, leg, B5
Max image area/letter	8×10.75	8×10.5	8.25×10.5	8.4×10.75
Max image area/legal	6.75×12.75	8×13.5	can't do	8.4×13.75
Total RAM	1.5M	2M	2M	3M
Virtual memory	175K	480K	470K	900K
Font cache	160K	279K	243K	400K
Marking engine	Canon LPB-CX	Canon LPB-CX	Ricoh 4081	Hitachi SL-100
Write white/black	black	black	white	white
Weight (lbs)	77	80	77	90
Height/width/depth	11.5×18.5×28.2	11.4×18.7×16.3	15×20×24	20×17.25×15
Input paper tray capacity	100	100	250	250
Paper path/envelopes	straight/yes	straight/yes	curved/no	curved/no
Consumables	single unit	single unit	OPC, toner	OPC, toner, developer unit
PostScript version	38.0	46.1	45.0	47.0
Emulations (2)	D	D, LJ+, HPGL	D, LJ+, TI855, HPGL/HP7475A	LJ+
Interfaces (3)	A, 232	A, 232, 422, C	A, 232, 422, C	A, 232, C
Max serial baud rate	9600	19.2K	57.6K	9600
Processing indicator	lights	lights	LED display	none

(1) - let=8.5×11; leg=8.5×14; A4 & B5 are European sizes

(2) - D=Diablo 630; LJ+ = HP Laser Jet Plus; HPGL=HP Graphics Language (plotter),  
TI855 includes dp (Epson MX-80 w/Grafrax) and wp (Qume Sprint 11)

(3) - A=AppleTalk; 232=RS-232; 422=RS-422; C=Centronics-type parallel



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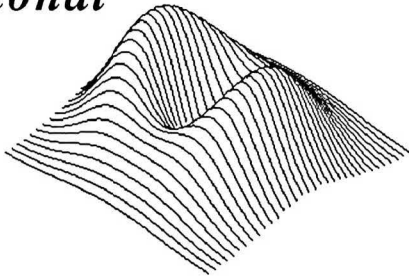
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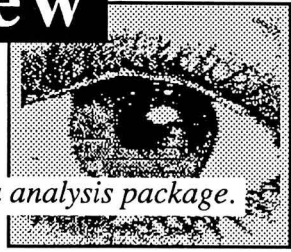
MathView Professional requires a Macintosh with at least 512K of RAM, the 128K ROMs, and 2 disk drives. MathView Professional will ship September 15, 1987. MathView Professional \$249.95. Demo disks: \$10.00.



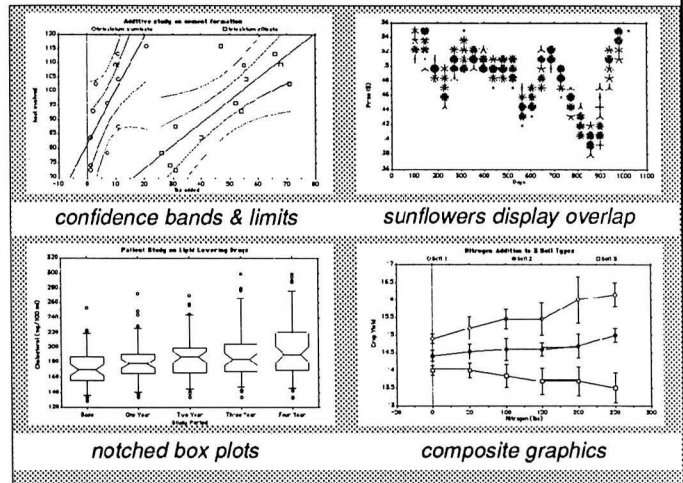
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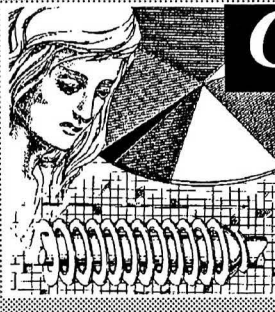
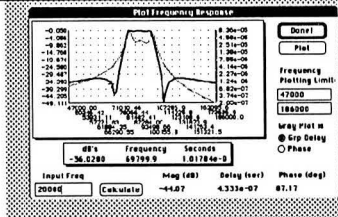


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## Sibling Rivalries

Although I tested only a single model from each of the printer manufacturers, all of the companies offer other models, too.

- Apple sells the LaserWriter, similar in most respects to the LaserWriter Plus, but which contains only 11 resident fonts and sells for \$4999. An upgrade from the LaserWriter to the LaserWriter Plus is available for \$899.

- The Laser Connection, a wholly owned subsidiary of QMS, makes the PS Jet as well as a PS Jet+. It's similar to the PS Jet+ in all respects, except that, like the LaserWriter, it contains only 11 resident fonts. Its cost is \$4995. In addition, the Laser Connection offers PostScript upgrade kits which converts the HP LaserJet and LaserJet Plus printers to PS Jet or PS Jet+ printers. These converted printers are identical in performance with the PS Jet/Jet+. The cost of the upgrades: PS Jet, \$2995; PS Jet+, \$3495. It makes no difference whether you start with a LaserJet or a LaserJet+. The upgrade only uses the original machine's print engine and completely replaces the intelligent controller. Finally, QMS, the parent company, sells a PS-800 and PS-800+, which are identical to the PS Jet and PS Jet+. OEMs should contact QMS; end users should contact the Laser Connection.

- Texas Instruments makes an OmniLaser 2115 as well as the 2108 which I tested. The 2115 is significantly different. It uses a Ricoh engine rated at 15 pages per minute—nearly double the speed of the engine in the 2108. It comes standard with two paper trays, including legal size, and has a total of 3 megabytes of memory. The price for this enhanced model is \$7995.

- Qume offers a 2-megabyte version of its LaserScriptTEN as well as its 3-megabyte model. Everything else about the two printers is the same, although memory-dependent features like font cache size and font download capacity will be affected. The 2-megabyte unit costs \$4795. An upgrade kit for 2-megabyte owners who wish they had gotten a 3-megabyte version instead is \$595.

age. While they are not hard to replace, the OPC is completely exposed during replacement—and it only takes 15 minutes of bright light or a single fingernail scratch to ruin them.

### AND... ENVELOPES

The LaserWriter Plus and PS Jet+ both use a straight paper path. Some users complain because this causes pages to come out in reverse order. To address this problem, TI and Qume engineered a curved paper path. Their output comes out face down, collated. The problem with this approach, however, is that neither the OmniLaser nor the ScriptTEN can print envelopes. The importance of this item will depend on what you use your printer for.

### AND THE WINNER IS

Based on the units tested, I rate the PS Jet+ the best overall buy. Although it lacks the 3 megabytes of memory found in the ScriptTEN and is slower, its image quality was superior. The PS Jet+ is also packaged well for use with IBM PCs and clones as well as with the Macintosh. Since it's cheaper than the Laser-

Writer Plus and has more memory, but is identical in many other respects, I would unequivocally recommend it as a better buy than Apple's current product.

The Qume ScriptTEN, however, is a definite contender. It contains 3 megabytes of memory, is significantly faster than any of the other printers tested and is the least expensive. While the image quality was inadequate in the unit tested, I was able to examine the output of a second unit at presstime, and it showed a marked improvement. If this second unit is representative of the machines Qume is shipping, the ScriptTEN could replace the PS Jet+ as a best buy.

The OmniLaser has only one claim to fame: it does black and gray solids extremely well. But this one strength degrades the appearance of both text and halftone images significantly. When coupled with the fact that this printer contains only 11 fonts and that the documentation is questionable, I cannot recommend this printer.

Finally, the LaserWriter Plus needs improvement. Its image quality is virtually identical to that of the PS Jet+, but it can't match the latter in speed, font download capacity, connectivity or price. Apple can no longer rest on its laurels or its market position. If they want to remain competitive, they must, at a minimum, upgrade to a newer version of PostScript and increase the amount of available memory.

A final note: The PostScript printer market is dynamic. By the time you read this, there'll probably be several other eight-to-ten ppm, 300-dpi printers available in addition to these four. I know of two already—one from NEC and one from Quadram—that were in beta testing as I prepared this article. If you are in the market for a PostScript printer, shop around. Invest in an 8X loupe (a printer's magnifying glass) and take a good hard look at what comes out of the printers you are considering. Try printing your favorite files and see how they look; time how long they take to print. A PostScript printer is a major investment—make sure you're satisfied before you buy.



HENRY BORTMAN IS A SAN FRANCISCO FREELANCE WRITER. HE IS A FREQUENT CONTRIBUTOR TO MACUSER.

## Addresses

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Texas Instruments, Inc.  
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Austin, TX 78769  
(800) 527-3500

The Laser Connection  
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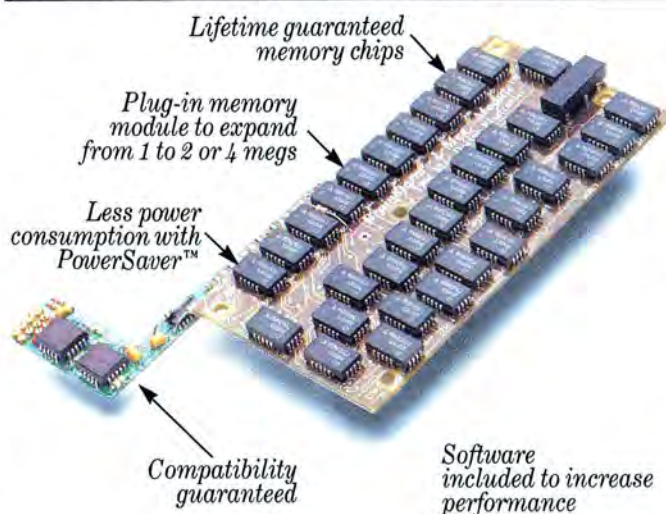
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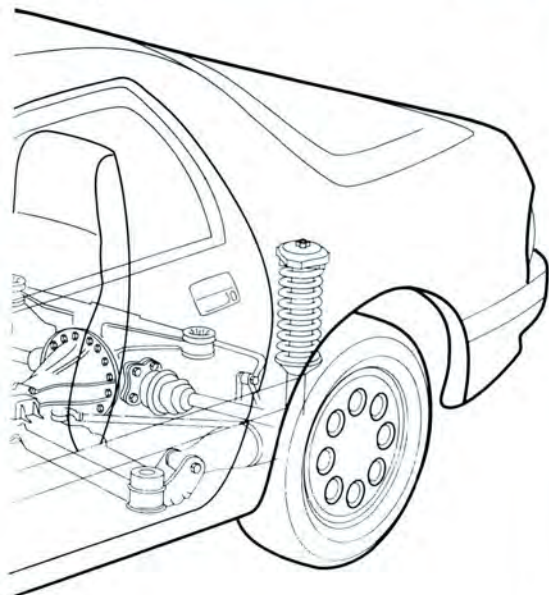
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Macros have two key functions. They automate repetitive processes and, if written carefully, they increase accuracy. Even slightly complex models can get out of control, but a set of macros can tame an unruly beast.

There are actually two classes of macros in *Excel*. *Command macros* physically change your worksheet, and are typically activated with an Option-Command keystroke combination.

The second, more ingenious and considerably rarer form of macro is the *function macro*. Such macros accept "arguments," or parameters, and generally perform mathematical operations that return a result. Function macros, once constructed, behave just like *Excel's* built-in functions. Often function macros are not called by other macros, but by formulas in worksheet cells.

## BUILDING BLOCK

Believe it or not, macros are *programs*. If you take a few special steps, you can make very flexible and powerful macros. At the same time, you'll be able to understand their function without having to remember the formula.

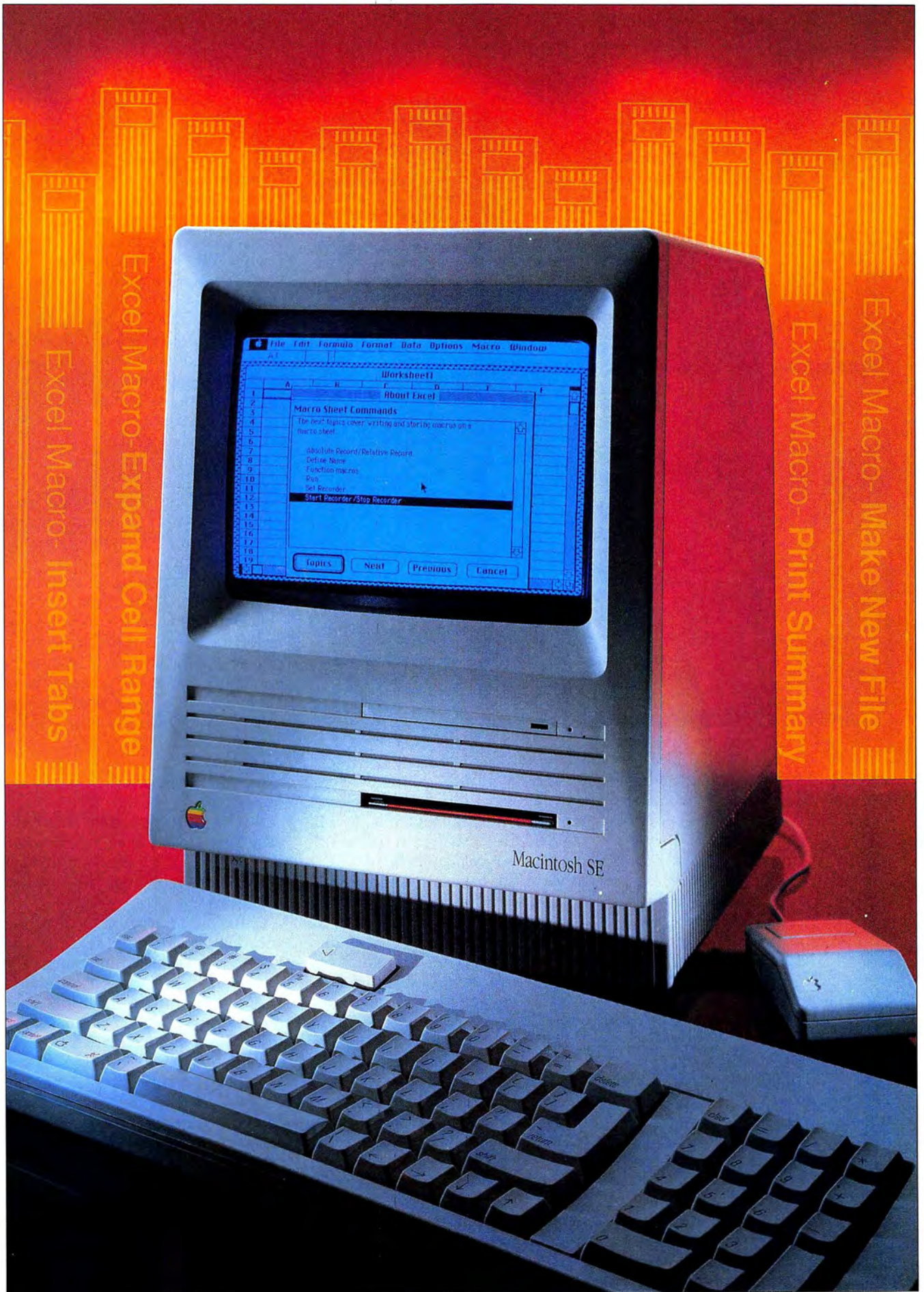
Well-written macros are always labeled. This makes it possible to visually locate them and it simplifies the tracing process in the event of bugs. Generally, my macros are labeled in bold text, which makes them stand out.

Macros always have a name. A good macro will have a mnemonic name—one that reminds you of its purpose. "Macro1" doesn't tell you much, but "Make\_New\_File" tells you a lot.

Notice that I used underlines in place of spaces in the range name. Although the Macintosh allows for spaces in file names, *Excel* won't tolerate them in range names.

When naming a macro, you have the option of specifying it as a func-

BY LOUIS BENJAMIN



Excel Macro - Insert Tabs

Excel Macro - Expand Cell Range

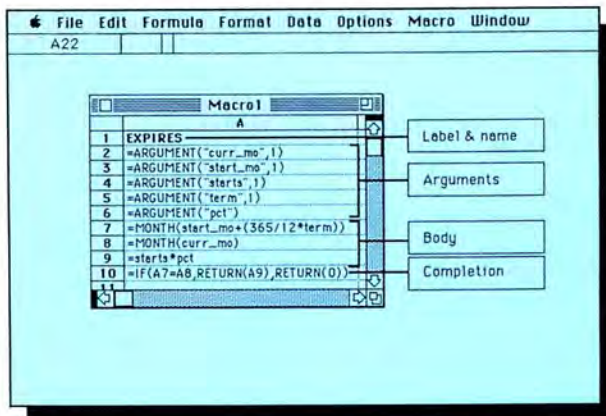
Excel Macro - Print Summary

Excel Macro - Make New File

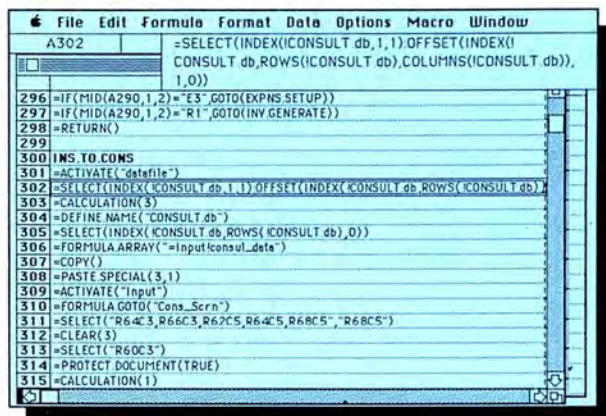
Macintosh SE

JOOK LEUNG

# Excel Revisited: The Macro Chapters



Function macros accept data, manipulate those parameters and generally return a result. They can be called by other macros or by worksheet formulas. This function figures out whether the current month is the expiration month for the start group, based on its start month. If it is, it applies the percentage against the number of starts and returns that number. Otherwise, it returns 0.



The meat of any data base management macro is in this function. This SELECT statement highlights an area that is one row deeper than the currently-defined data base range. Use SET.NAME() to re-access the data base range, then select the bottom row of the newly-defined range to accept the data. At that point, users can type directly, be prompted by a series of INPUT() statements that perform the data transfer, or data can be copied from a worksheet formatted specifically for input.

tion or a command, and selecting an Option-Command combination. You must choose FUNCTION if it is a function macro, but you may not need to click the COMMAND radio button.

Clicking the COMMAND button includes that macro's name in the Run dialog that pops up when RUN... is chosen from the Macro menu. Macros that are not specified as command macros execute normally when called by other macros—you just can't use them directly.

It's best to name the macro's label, rather than the cell directly below it. Doing so gives you extra space without having to redefine the macro.

I generally enter the macro's name into a cell, format it bold, then name the cell. At that point, I can set the recorder and continue, or copy in something I've already worked up.

The body of the macro is the set of instructions that follow its name. In simple command macros, these can

be the commands captured by the recorder. Function macros, however, require a minimum of one "=ARGUMENT()" statement to specify the data to be manipulated.

More sophisticated macros may contain calls or GOTO's as well. These instructions provide a means of reusing macros like building blocks. Instead of rewriting the same five line instruction every time you need it, you can use a call to "include" that macro in several others.

All macros must terminate with either a "=RETURN()," a "=HALT()," or a "=GOTO()." Function macros include the name of the variable or the value that will be used in the worksheet formula that called it.

Comments can be text in the same column as the macro's code. Anything in the macro that does not have an equals sign will not be executed.

An added plus of this feature is

that you can selectively turn off instructions in macros that you are trying to debug. By temporarily removing the equal signs from the formula, you can get Excel to ignore specific instructions. Note that some developers prefer to keep all comments in an adjacent column, since a large number of in-line comments could theoretically slow execution.

## DOING THE JOB

While worksheets normally recalculate according to something called "natural order," macros begin recalculation at the cell address specified by its range name. Execution occurs cell-by-cell as recalculation continues in a straight vertical line until a =RETURN() or =HALT() is encountered. Only calls to other macros, and GOTO commands cause deviation from this straight and narrow recalculation path.

This bears repeating. Macro sheets look like worksheets, but they're a very different medium. If you need to perform a worksheet-type function with your macro, the data to be manipulated should be transferred to a scratch area of your worksheet, or to a temporary worksheet.

## GROWING UP

Macro development follows five basic steps:

1. Design the macro's basic function. It's always best to map out what you want to achieve on paper, before launching into an unstructured mess.

2. Record as much of the macro as you can. There's simply no point in writing everything from scratch. The recorder works too well for that.

Be creative when recording. The process is flexible. You can change from absolute to relative recording throughout the recording process. You can also turn the recorder off, do something that isn't recorded and turn the recorder back on without losing the first instructions you captured. I try to let Excel write as much of each macro as I can.

The recorder is extremely useful in capturing appropriate range references. "=SELECT ("rc[1]:r[1]c[14]")" is a range reference that is easily captured with the relative re-



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People say, "Where there's a will, there's a way." Which means I don't settle for words like No. Impossible. Can't be done. No way.

So when I decided I wanted a Macintosh, but didn't want to give up Lotus 1-2-3® or dBASE® III, I naturally set about looking for a way to have it all.

The fastest fix was to buy both an IBM® PC and a Macintosh. "Not possible," said the DP/MIS manager. "Pick one. Any one you want, as long as it's MS-DOS® compatible." Witty guy.

Then I searched everywhere for someone willing to loan me a PC in exchange for executive privileges. I was willing to give up anything, but I kept hearing No. Not interested.

Without another alternative in sight, I decided to surrender and settle for a PC. Then, I discovered an article on AST's newest products—

#### What I like best about AST's Mac86 and Mac286:

- I retain the benefits of the Mac desktop while running DOS
- I can cut and paste text from both MS-DOS and Macintosh environments
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MS-DOS co-processors for the Macintosh II and Macintosh SE. The cavalry had arrived.

The article said AST's Mac86™ and Mac286™ allow you to actually run MS-DOS application programs on your Macintosh. Just plug the DOS

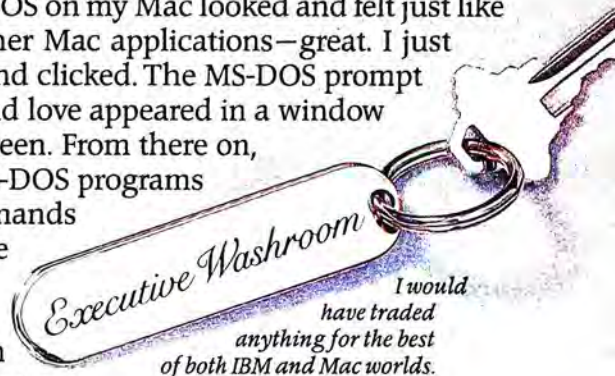
processor into your Macintosh II—Mac86 into an SE—and load your favorite MS-DOS application software onto the Mac's hard disk. I was sold.

MS-DOS on my Mac looked and felt just like all my other Mac applications—great. I just pointed and clicked. The MS-DOS prompt I know and love appeared in a window on my screen. From there on, I used MS-DOS programs and commands as if I were working on a PC.

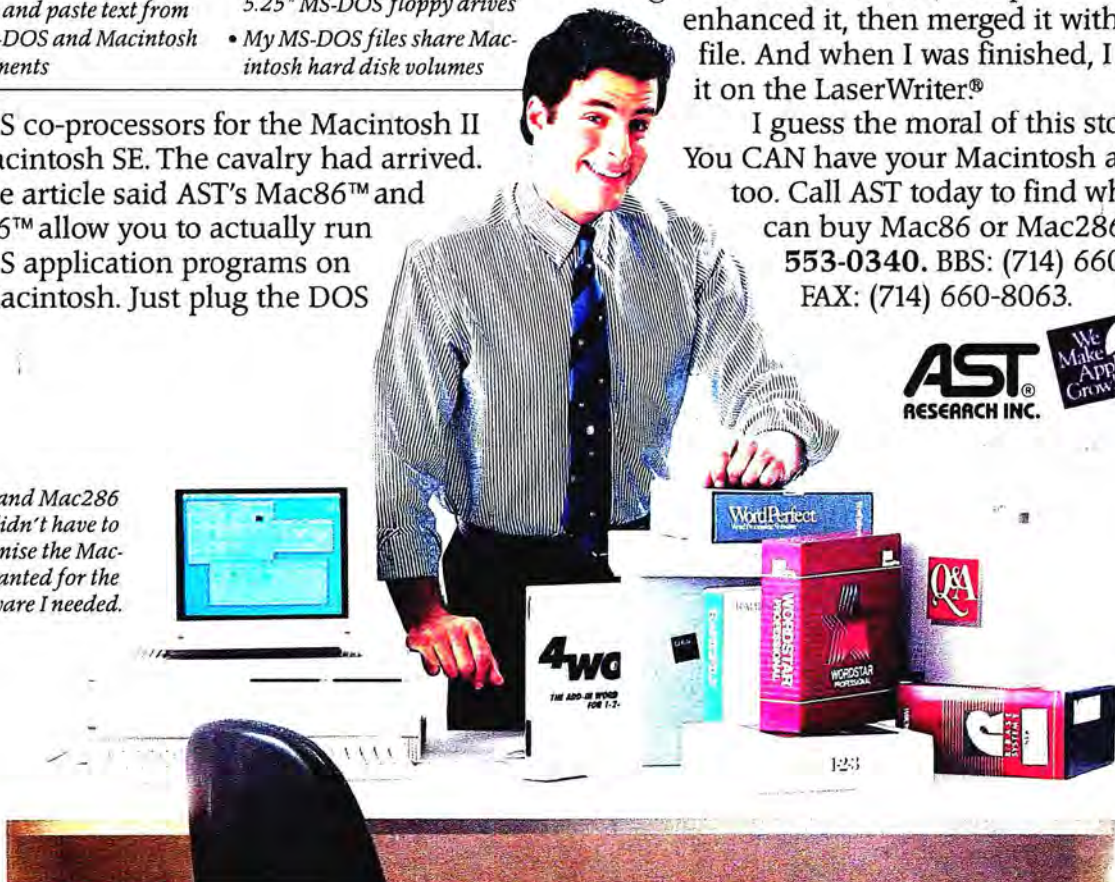
I even moved Macintosh files into MS-DOS, sometimes cutting and pasting parts from one environment to the other. And when I was finished with my PC and Macintosh files, I stored them both on the same Macintosh hard disk without any clumsy file transfer procedures to slow me down.

Back in the Macintosh environment, I still had immediate access to all of my PC files. Using Macintosh software, I reopened a PC file, enhanced it, then merged it with a Mac file. And when I was finished, I printed it on the LaserWriter®

I guess the moral of this story is: You CAN have your Macintosh and PC too. Call AST today to find where you can buy Mac86 or Mac286. (714) 553-0340. BBS: (714) 660-9175. FAX: (714) 660-8063.



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cord function. Writing it from scratch, you might have to try the reference a few times, or count a few cells in order to get it right.

The SELECT example uses a relative reference to the current active cell. On the other hand, there will be times when you want to select a specific range, which might change in shape at some later date. In such a case, it's best to select the specific range *name*, rather than the absolute reference to the range. You can record a "=FORMULA.GOTO()" by choosing that menu option. In all macros that I have tested, this has the same effect as "=SELECT()," which cannot be recorded to capture the name of the range you are selecting.

3. Enhance the macro with non-

recordable statements, such as if/then else logic and calls to other macros. It's important to understand that the recorder will record absolute references or relative references, depending upon your menu selection. If you activate a worksheet, the macro records the specific name of the worksheet. If you want a more generic macro, you may need to revise that part of the code. =ACTIVATE.NEXT() and =ACTIVATE.PREV() are two commands that can be very useful in allowing one macro to serve several worksheets.

When selecting a range with your macro, the select command takes the form "=SELECT(*worksheet.name*!*range.name*)." In this standard form, such a macro command would only work for the worksheet speci-

fied by *worksheet.name*. If you use the form "=SELECT(!*range.name*)," the macro works for the active worksheet, so long as that range name has been defined.

4. Test what you've got.

5. Revise and test again. This step repeats until you've got exactly what you want.

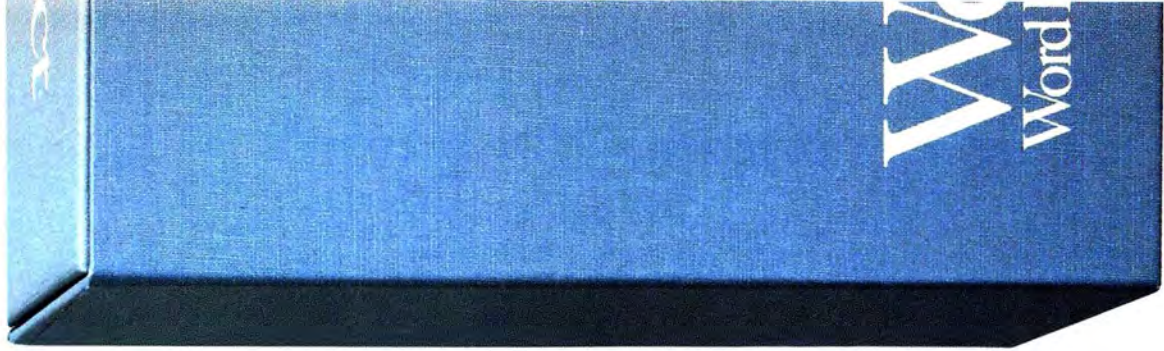
Of course, Murphy's Law prevails. Unless the macro is very simple, you may need to tweak it several times before it will work under all conditions.

## TOOLS OF THE TRADE

Once you have the basics down, you have to deal with bugs. Keep a cool head and approach the problem as you would a puzzle. Try to narrow down the source of the bug and

## Entry Macro

	A		B
1		1	
2	ENTRY MACRO	2	An "interface engine" macro. Prompts user and
3	Step 1: insure column 1 entry.	3	transfers results with formatting...
4	=DEFINE.NAME("location")	4	Defines a temporary name for the location of the active cell
5	=COLUMN(!location)	5	Determines the column of the active cell.
6	=A66-1	6	Subtracts 1 from that column number.
7	=SELECT("rc[-"&A67&"!"])	7	Select is using the concatenation function. Uses A19's value to decide how
8		8	many columns to back up.
9	End of column 1 routine...	9	
10	=INPUT("Enter NAME",2)	10	Prompt for name entry.
11	=IF(NOT(A71),HALT())	11	Stop, if the user clicked cancel.
12	=FORMULA(A71)	12	Pass the entered data back to the worksheet.
13	=SELECT(",RC[1]")	13	Move over 1 column.
14	=INPUT("Enter address",2)	14	
15	=IF(NOT(A75),HALT())	15	
16	=FORMULA(A75)	16	
17	=SELECT(",RC[1]")	17	
18	=INPUT("Enter zip",2)	18	
19	=IF(NOT(A79),HALT())	19	
20	=FORMULA(A79)	20	
21	=FORMAT.NUMBER("00000")	21	Format the data before moving on.
22	=SELECT(",RC[1]")	22	
23	=INPUT("Enter home phone",2)	23	
24	=IF(NOT(A84),HALT())	24	
25	=FORMAT.NUMBER("### 000-0000")	25	Another formatting instruction.( Note custom format.)
26	=FORMULA(A84)	26	
27	=SELECT(",RC[1]")	27	
28	=INPUT("Interested?",2)	28	Calls the function macro "yesnomaybe", with parameter in A58.
29	=IF(NOT(A89),HALT())	29	
30	=FORMAT.NUMBER("YES";"MAYBE";"NO")	30	
31	=yesnomaybe(A89)	31	
32	=FORMULA(A92)	32	
33	=SELECT(",RC[1]")	33	
34	=SELECT("R[1]C[-13]")	34	Down 1 row, left 13 columns.
35	=ALERT("Another?",1)	35	Prompt to continue...
36	=IF(NOT(A96),HALT())	36	
37	=GOTO(A71)	37	Loop back to the beginning...
38		38	
39	yesnomaybe	39	
40	=SET.NAME("result",0)	40	Initialize the result code.
41	=ARGUMENT("input",2)	41	Text parameter called "input"
42	=IF(input="y",SET.NAME("RESULT",1))	42	Check the input, assign the result code.
43	=IF(input="N",SET.NAME("RESULT",0))	43	"
44	=IF(input="M",SET.NAME("RESULT",-1))	44	"
45	=RETURN(result)	45	Return the result.



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replicate the event. Once you think you know where it is, selectively switch off any non-essential code until you have verified the source of the problem.

At that point, the fun begins. Work up a solution, test it and try again until you get it right. The following techniques can be quite useful in the debugging process.

The STEP function tells *Excel* to display a dialog box indicating the command about to be executed before executing each line of code. Buttons allow you to continue stepping through the macro, halt execution altogether or continue without the step function.

By placing STEP in your macro, you can be sure that it gets invoked at the right point. But you can also invoke step mode on an ad hoc basis by holding down the Command key and hitting a period.

HALT is used in a number of non-debugging circumstances, but putting a HALT in your code at a strategic point guarantees that execution doesn't go any farther.

You can disable dubious macro commands by removing the equals sign. *Excel* will then treat that instruction as a comment until you edit the cell and put the equals sign back.

## MACRO ETIQUETTE

I've already covered some of the major etiquette issues in macros, such as using range names often, choosing a name that implies the macro's function, and using bold labels.

In addition, it's helpful to write complex macros as a family of smaller macros that are called in sequence by a single main macro. This makes tracing the logic far easier than with a single long and complex statement, or worse, when one macro calls another, which calls another, which calls two more and so on.

Assume you'll get amnesia tomorrow, and use labels and comments liberally. It's better if you don't need to go to a separate set of notes.

Once you've written a macro, it's a good idea to review it for "idiot-proofing." If the macro is not for your exclusive use, you'll often find

that your user base may not apply the technology as you intended.

The goal is to make your macros "fail-soft." When things go wrong, your macro should be unable to do disastrous things such as deleting unintended rows and columns.

As your macros become more sophisticated, they'll become subject to interesting problems. For example, you may create a model that uses several linked worksheets instead of a single large sheet. If the user closes one of the worksheets—instead of moving it out of the way—your accumulator macro will fail when it tries to activate that worksheet.

The solution is to set an error trap that branches to a macro called *LoadWorksheet* just before issuing the ACTIVATE statement. In that way you can avoid the potential problem.

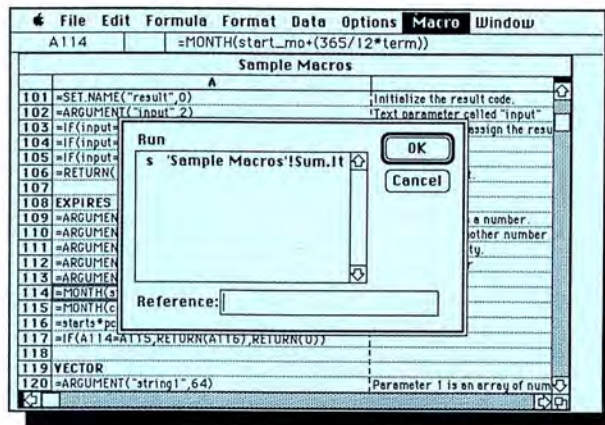
There are a number of other such ideas which will simplify your macro development life. Use of range names can't be stressed enough. Range names are a powerful and fluid shorthand for a collection of

cell references. A macro that uses range names only can be used successfully on two worksheets with very different topologies.

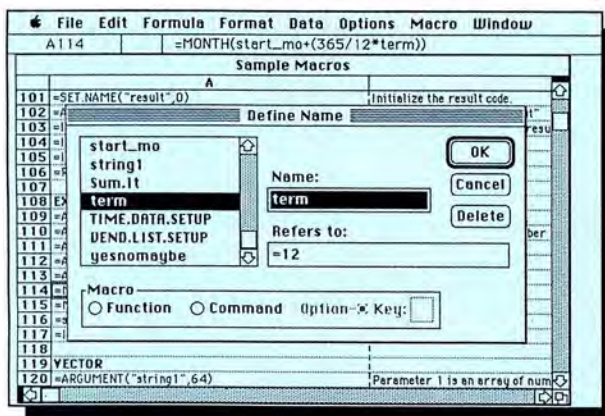
Continuing in the tradition of fluidity, it makes a great deal of sense to avoid the use of absolute references in your macros whenever possible. Sometimes such references are necessary, but remember that changing the worksheet in such cases may mean changing the macro sheet as well.

A very useful technique for controlling user input is to lock all cells that you don't want the user to touch. When you protect the document, pressing the Enter key will move the user from left to right and top to bottom of the unprotected cell region only.

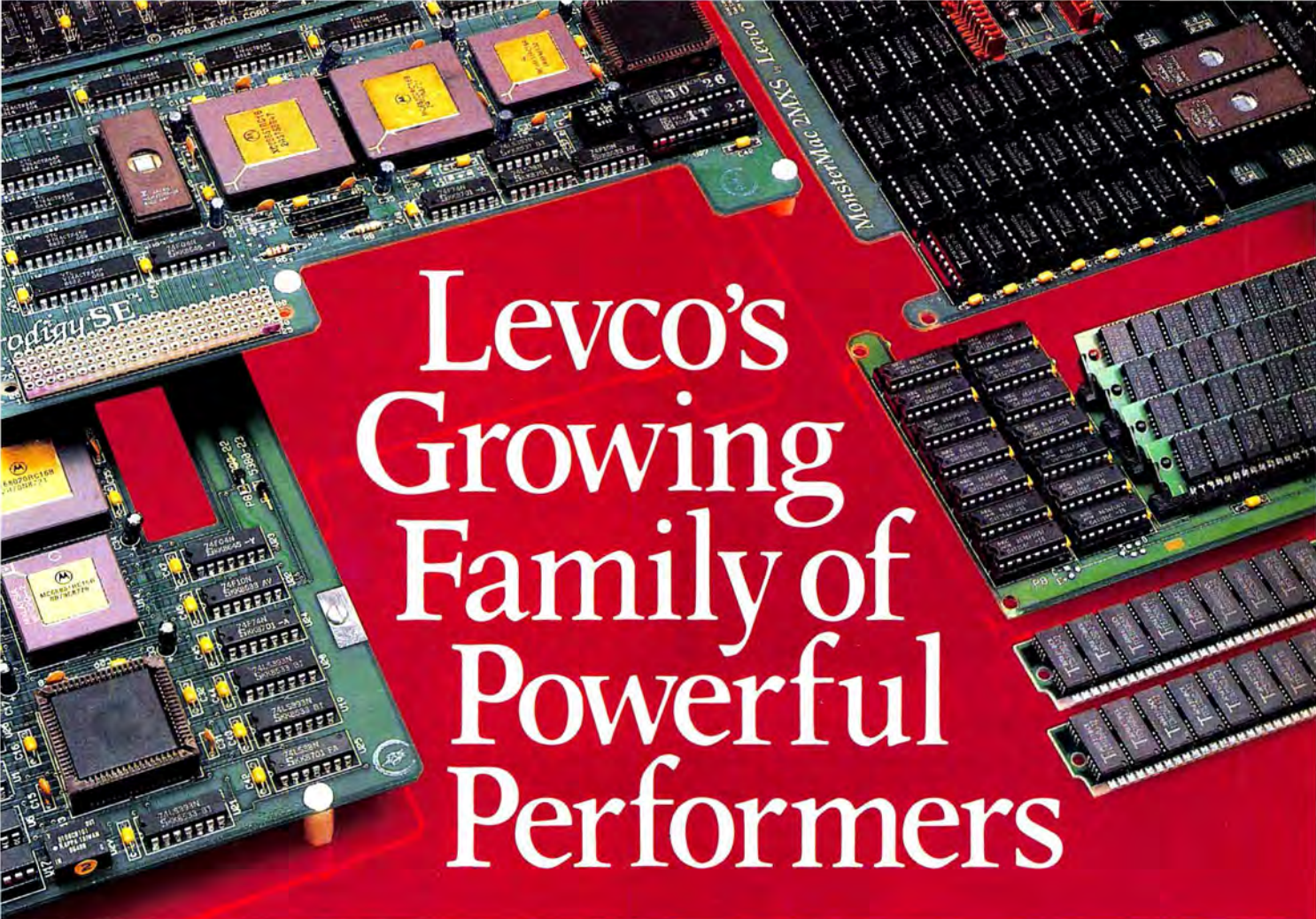
Suppose that you have two separate areas on the same worksheet, and you want the user to work with each exclusively. You'd have to ensure that only one of those areas' cells were unlocked, and switch protection on. When the time came to



When you define the name of a macro, you are presented with radio buttons which specify the type of macro. The command radio button determines whether the macro's name will appear in this dialog box. Even though there are numerous macros defined on the sheet, only "Sum.It" appears.



The SET.NAME() function and its effects are displayed here. While most of the names in the define name dialog contain range references like "=\$A\$17", set names and function macro arguments contain values instead.



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use the other area, you'd unprotect the document, lock the cells in the first area, unlock the cells in the second area, then re-protect the document.

If you need something like this, be sure that you *don't* use password protection for the worksheet, otherwise the user will be prompted for the password when you use the

"=PROTECT.DOCUMENT (FALSE)" command.

In many cases, you can achieve the same result from a macro call as you can from a GOTO. The macro call is a more desirable convention in these cases.

The main reason for this is the prevention of a tragic programming ailment known as "spaghetti code." Using a call ensures that you can always find the begin and end point of each transition to another macro.

## APPLIED MACROS

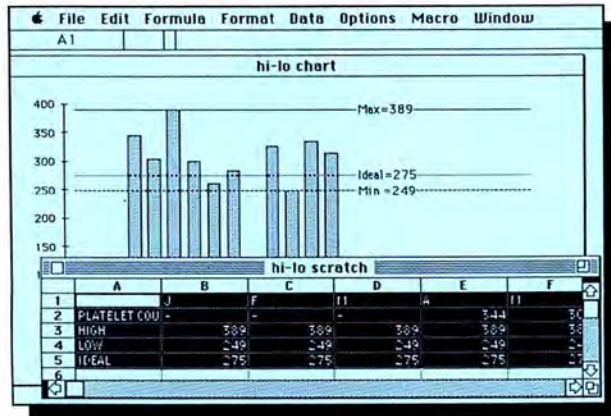
Now that we've covered the basics, several specific macro examples are in order. Here is a small sampling of macro types and techniques that have proven extremely useful in my day-to-day work.

One of the most common things you do with a spreadsheet is manipulate text. Macros can provide a very effective means of controlling text entry. For example, labels in a worksheet that's been downloaded from a bank-at-home service may contain leading spaces that you don't want. Often, dates aren't *Excel* format dates. You could manually edit every entry, but macros can do the job more quickly and efficiently.

I've found a wonderful use for *Excel* in conjunction with data bases: pre-processing. I received a text file which had been exported from an MS-DOS-based computer recently. The data was not ready for use, because it contained no field delimiters, just a carriage return at the end of each record.

In order to import that information into my Mac data base, I had to insert tabs into the text at the end of each field. Since *Excel's* "save as text" function separates each cell's text with a tab, I simply needed to create a macro that split each line of text into several cells' worth of segments. The resultant text file could be reviewed for cleanliness before importing into the new data base program.

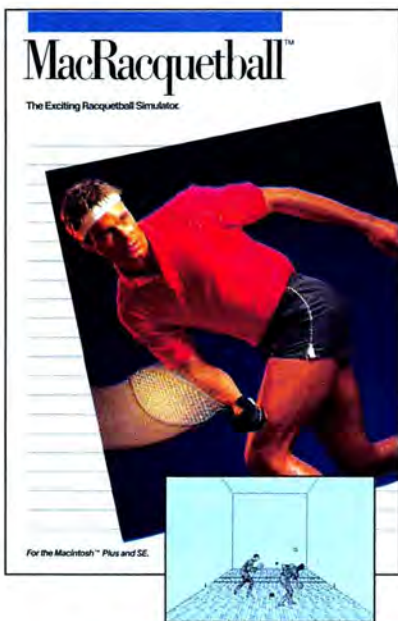
The secrets to handling text in *Excel* are the MID, concatenation (&), and SEARCH functions. By combining these functions, you can add or delete, and perform search-and-replace with any text in your worksheet.



## Chart.Maker Macro

	A	B
1	Chart.Maker/c	This macro executes, using Option-Command-c.
2	=SELECT("RC:RC[28]")	Select 28-column range beginning with the active cell.
3	=DEFINE.NAME("chart.info")	Name that range.
4	=ERROR(TRUE,GET_SCRATCH)	If an error occurs, branch to "GET_SCRATCH"
5	>CONTINUE(after GET_SCRATCH)	Range name "CONTINUE" is here.
6	=ACTIVATE("Hi-Lo Scratch")	Activate the window.
7	=ERROR(TRUE)	Return to normal error checking.
8	=SELECT("R1:R16384")	Select the entire scratch worksheet.
9	=CLEAR(1)	Clear all...
10	=SELECT("R")	Select the first row/first cell.
11	=FORMULA("=DATA FILE'headers")	Enter external reference formula.
12	=SELECT("R1C1:R1C29")	Expand selection across the row...
13	=FILL.RIGHT()	Relative copy of the external reference formula.
14	=SELECT("R2C1")	Select cell A2.
15	=FORMULA("=DATA FILE'chart.info")	
16	=SELECT("R2C1:R2C29")	
17	=FILL.RIGHT()	
18	=SELECT("R3C1")	Select cell A3
19	=FORMULA("=R[-2]C[1]")	Cell formula points to B1
20	=SELECT("R4C1")	
21	=FORMULA("=R[-3]C[2]")	
22	=SELECT("R5C1")	
23	=FORMULA("=R[-4]C[3]")	
24	=SELECT("R3C6")	
25	=FORMULA("=R2C2")	Absolute reference formula.
26	=SELECT("R4C6")	
27	=FORMULA("=R2C3")	
28	=SELECT("R5C6")	
29	=FORMULA("=R2C4")	
30	=SELECT("R3C6:R5C29")	
31	=FILL.RIGHT()	Fill right "duplicates" the formulas across
32	=SELECT("R1C1:R5C29")	the selection range.
33	=COPY()	
34	=PASTE.SPECIAL(3,1)	Paste values only. ("Freezes" the values.)
35	=SELECT("C2:C5")	Select columns B-E.
36	=EDIT.DELETE(1)	Delete the columns.
37	=SELECT("R1C1")	Cell A1
38	=CLEAR(3)	Blank this cell.
39	=SELECT("R1C1:R5C25")	Select the entire data matrix, header info and all.
40	=NEW(2)	Create new Chart file.
41	=SIZE(465,237)	Resize the chart.
42	=RETURN()	
43		
44	GET_SCRATCH	Recovers the scratch file, in case it was
45	=OPEN("Hi-Lo Scratch")	accidentally closed.
46	=GOTO(CONTINUE)	Return to the point in the main macro where the error
47		occurred.

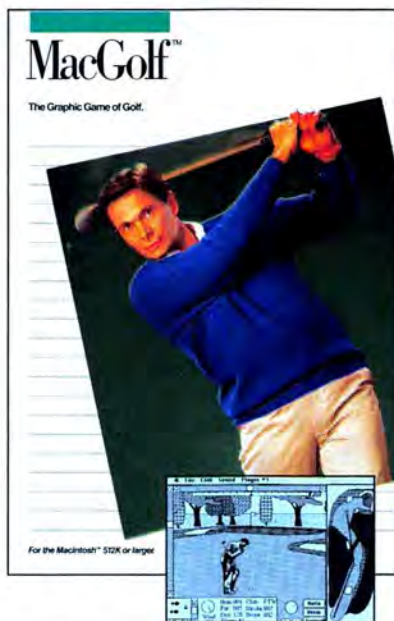




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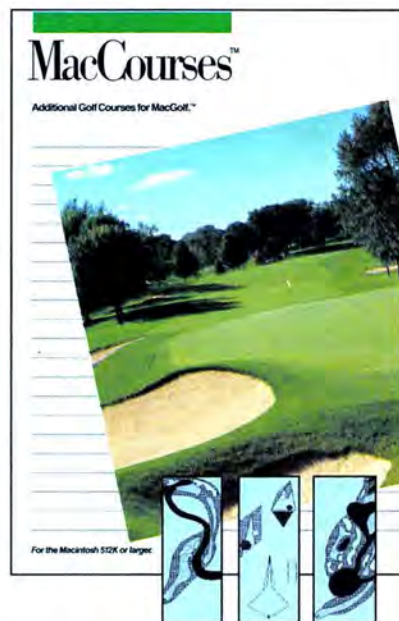
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the hottest game  
a Macintosh™ can handle.**

Even if you've never been on a racquetball court, you'll spark to the excitement of this challenging simulation.

MacRacquetball turns your Macintosh screen into a full perspective 3-D display of court, players and ball. With the mouse, you have complete control of player position, ball placement, ball speed and shots. Two people can play the same game over AppleTalk® or modem.

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## Excel Revisited: The Macro Chapters

Dates in *Excel* display text in numerous formats, including the ubiquitous "mm/dd/yy" format. But *Excel* sees that date quite differently than we do. Each day since January 1, 1904 has been serialized so that today's date is somewhere near day 31,000.

In addition, *Excel* includes the time as part of a serial number by appending a decimal fraction to each day's serial number, based on the number of seconds past midnight that corresponds to that time.

When data is imported to *Excel* from an outside source, it's not correct to assume that the text string "6/15" is a date. It might simply be a fraction.

Another problem is that other systems don't always use "mm/dd/yy." A useful macro would convert a known date string format into an appropriate *Excel* date.

Macros that execute once can be very effective, but converting a column of figures which could vary in length really requires the use of loops. By using =GOTO(), you can repeatedly direct a macro to begin execution again. If you include conditional logic, you can also make the macro smart enough to stop itself after the job is done.

Often, you know how many times you want a loop to execute, or you want to count the number of times that a loop has been repeated. SET.NAME() allows you to create or use a variable and assign a value to it. Unlike DEFINE.NAME(), which assigns a cell reference to a given range name, the function assigns a specified *value* to the range name provided. SET.NAME's values are not stored in any cell in the macro sheet.

When you save the macro sheet, SET.NAME's values are still remembered, because those values are part

of the range name table, something that is created and managed by *Excel*.

If you include a statement like "=SET.NAME("Counter", Counter+1)" in your loop, you'll be able to determine how many times the loop executed.

The ERROR() command is quite powerful. Normally, *Excel* interrupts macro execution when an error is encountered, then prompts you for appropriate action. The Error command can be used to override normal procedure in several ways.

First, error detection can be turned off completely. In special cases, this may be exactly what you want. The syntax for this mode is "=ERROR(FALSE)." Error detection can be reinstated by using "=ERROR(TRUE)."

I find the second form of this command far more useful, though. By using the form "=ERROR(TRUE,patch.code)", *Excel* forgets about the macro that produced the error and begins execution of the patch code. In effect, this is a GOTO, so you'll have to add a GOTO at the end of your patch code if you want the offending macro to continue execution to completion after resolving the problem.

Once you have specified patch.code as the macro to execute in the event of an error, patch.code will run with *any* error. Be sure to cancel the order when you need to by issuing another "=ERROR(TRUE)."

There are two types of dialog in *Excel*: INPUT statements and ALERTs. Inputs are two-way communications which result in storing data in the macro sheet, while alerts simply provide information for the user. In the event that a user cancels an alert, the alert function "knows" that the cancel button was selected.

Each of these dialogs include a text portion and a type in the format

"=INPUT(prompt,type,title)," or "=ALERT(prompt,type)." Most of the time, you will write your dialogs individually, but it is worth noting that the prompts, type and title could be passed as parameters to a function macro that generates the appropriate dialog.


*Excel* has limited control over the chart window. You can use the various past functions to add series data to a chart, but you can't selectively remove unwanted series, for example. Given that, it's best to have your macros handle charts indirectly, by manipulating a worksheet that contains the chart data.

You can save a specific chart, and use the macro to open it as needed. You can also use the Default Format menu option to lock-in a custom format for all newly created charts.

Data base management is particularly interesting in *Excel*. Often, you want to add each new data base entry to the bottom of the current data base. The problem is that as you add new records *Excel* won't automatically expand the data base range for you.

The next data base problem is entry. While raw spreadsheeting is nice, it's nicer to have entry screens in some cases. An entry macro could be devised which provides an intermediary entry screen, or a more easily managed macro would offer a series of prompts, then transfer the data to the worksheet. Associated with these functions are sorting macros, label generators and other possibilities.

### AND IN THE END

Writing macros is programming, but programming does not have to be difficult. The key is in breaking the "big picture" down into manageable small parts, solving each step as its own small macro, then stringing them all together with a main macro that calls the others. Don't be afraid to experiment! 

LOUIS BENJAMIN, AUTHOR OF *THE COMPLETE BOOK OF EXCEL MACROS*, IS A BROOKLYN, NY-BASED SOFTWARE DEVELOPER SPECIALIZING IN *EXCEL* AND *OMNIS 3* BUSINESS APPLICATIONS.

### Sum.it Macro

	A	B
1		
2	Sum.It	Writes a sum formula in the active cell.
3	=INPUT("select an area.",0)	Prompt the user to drag over an area. Type is Formula.
4	=MID(A11,2,(LEN(A11)-1))	Slice the "=" sign off the formula.
5	"=sum("&A12&")"	Construct a sum formula using the string in A3.
6	=FORMULA(A13)	Enter the sum formula into the active cell.
7	=RETURN()	

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# THE PRUDENT Investor

## Time to Return to Gold?

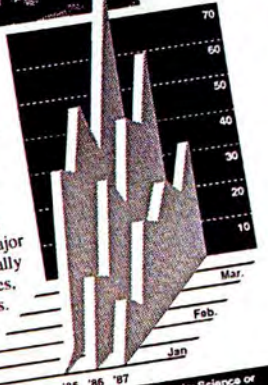
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3. Gold bullion can be bought at all large brokerage houses. These firms also store and insure bullion.

*continued on page 12*



'85 '86 '87  
Technical Analysis: Science or Sorcery? See page 8

## Picking Your Stockbroker

If you happen to be picking a stockbroker for the first time, a good way to begin is with some solid recommendations.

Ask your lawyer, accountant, or banker for the name of a stockbroker, or a brokerage firm, that could take on your account.

Some investors suggest you choose several brokers at different firms and let each handle a part of your portfolio until you decide on the right one.

The broker you choose should have a philosophy about investment that is close as possible to your own. Find out how he

*continued on page 5*

## The Rising Fortunes of the Humble Apple



Consumer demand has mushroomed in recent months for fresh fruit and produce.

What are the best plays in this trend for investors?

Dr. Vic Scallione, of the Washington State Department of Agriculture says

*continued on page 3*

Avoiding Wall Street's blind alleys: A Prudent Investor Special Report. See p. 9

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NYSE	13 Technical Analysis
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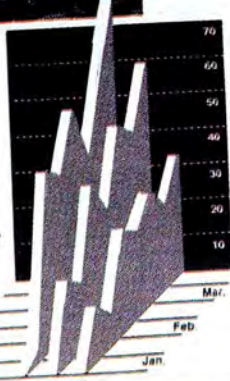
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*continued on page 12*



Technical Analysis: Science or Gossamer? See page 6

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Some investors suggest you choose several brokers at different firms and let each handle a part of your portfolio until you decide on the right one.

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much less likely to need repairs.

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# The Electronic Signature

I WRITE REAMS OF LETTERS AND always get tired of signing my name. Initialed rubber stamp signatures remind me of creeping bureaucracy, and I avoided that in the past by using a *MacPaint* image of my signature stashed in the Scrapbook. When my company acquired a LaserWriter, the bit-mapped image looked rougher than my actual John Hancock next to the smooth LaserWriter fonts. To solve this problem I created a PostScript version of my rather sloppy signature with *Fontographer* for those occasions when I don't want to scrawl my name in the conventional fashion.

## SIGN ON THE DOTTED LINE

Before you do anything else, you should make a computer copy of your signature. Since any Paint file can be used as a template in *Fontographer*, you can get your signature into PostScript as a Paint image. You can digitize the sample you want to use for your signature font and store the digitized signature in a *MacPaint* format file. If you have an electronic graphics pad, you can sign your name with a pen, or, if you are very good with the mouse, you can

## Use Fontographer to create a custom font of your signature.

write your name with it.

Once you have your signature in electronic form you will need to create a font file for it. *Fontographer* opens with a file selection window, so you will need to click the CANCEL button and select NEW FONT from the File menu. This brings up the Font Attributes dialog where you specify the PostScript font's ascent, descent and leading sizes, the family ID and the number of characters it will contain.

It's a good idea to decide on the characters' ascent and descent before you open your font file, since they define the em square in a font. This is particularly important if you're going to use a printer other than a LaserWriter. Setting a larger em square gives you more precision when you are defining a character, but the font will be the same size as

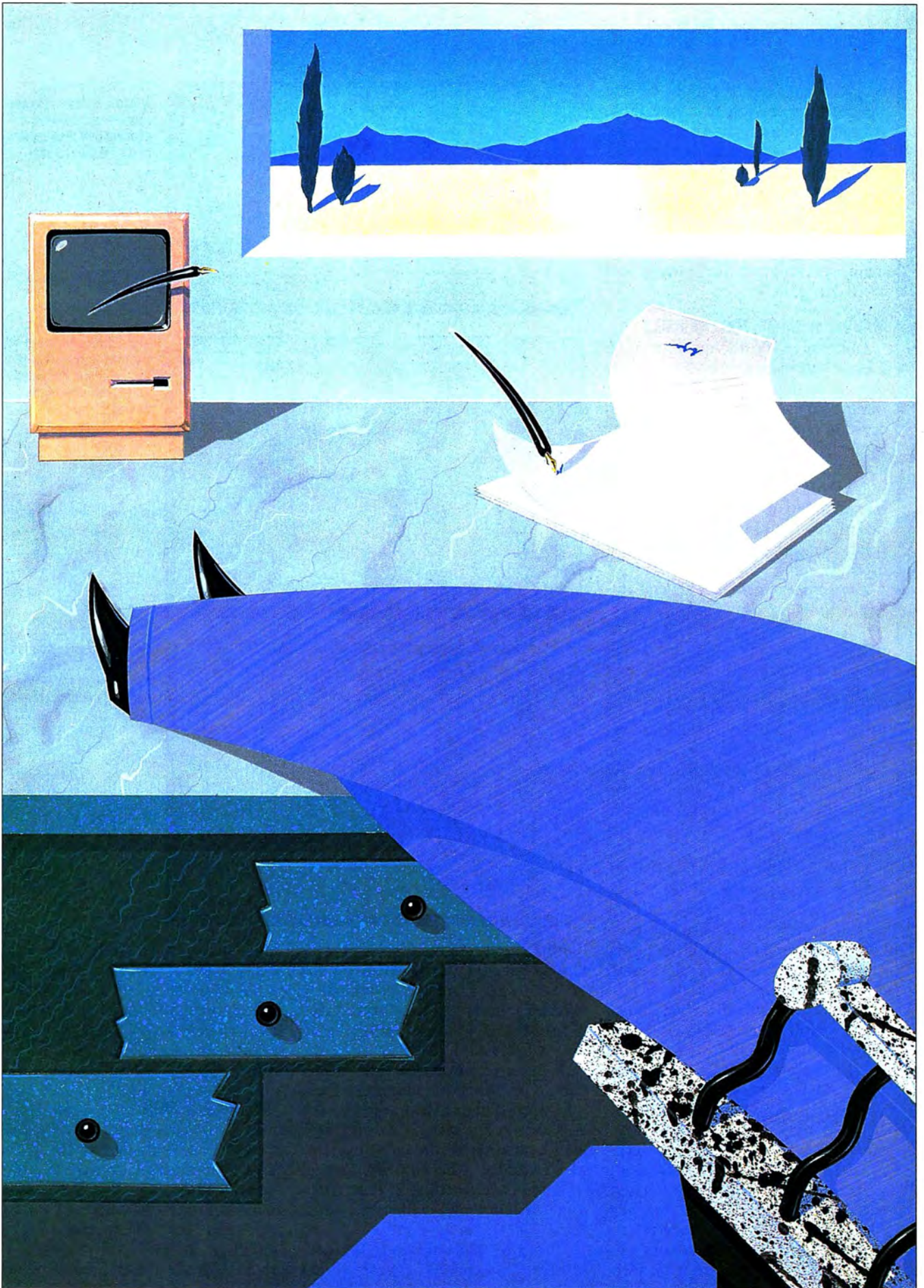
one with a smaller em square. Of course, the paupers among us will be lucky to work with a LaserWriter, and it can't take advantage of the greater resolution.

You will also need to decide on a Family ID number. Apple has reserved font numbers less than 128 for its own use, so you can choose any number between 128 and 255. *Fontographer* always defaults to 200. But it is a good idea to change the number so each font you create will have a unique number.

After you have defined the attributes of your font, you're ready to paste the Paint image into *Fontographer*. This can be accomplished in several different ways. You can open your Paint program, copy the signature, and then load *Fontographer*. You can also copy your signature into the Scrapbook where it is easily gotten to. You could load *Fontographer* and your Paint program into *Switcher* partitions, but this is only practical if you're going to be moving a number of graphics between the two.

Paste the image into a Character window. You can split the signature into its component characters, but it

BY FRED TERRY



# The Electronic Signature

is easier to keep the flow of the signature by leaving it in one piece (this also sidesteps the issue of spacing). The image appears in the background and probably won't be where you want it when you paste it in. You can adjust the image in the Character window by selecting CHANGE PLANE from the Special menu, clicking on the image, and then dragging it.

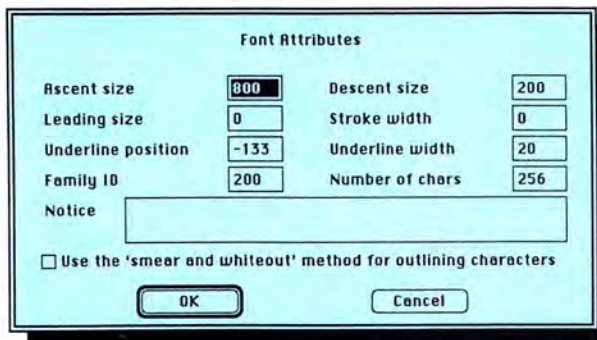
## MAKING A NAME FOR YOURSELF

Creating a PostScript font with *Fontographer* is nothing less—and yet incredibly more—than drawing the outline of your font. Since I am creating a PostScript version of my signature, I am not going to worry about letterforms. After all, I am only transforming what is illegible in one medium to another. If I were making an entire font, then I would need to plan and draw characters carefully.

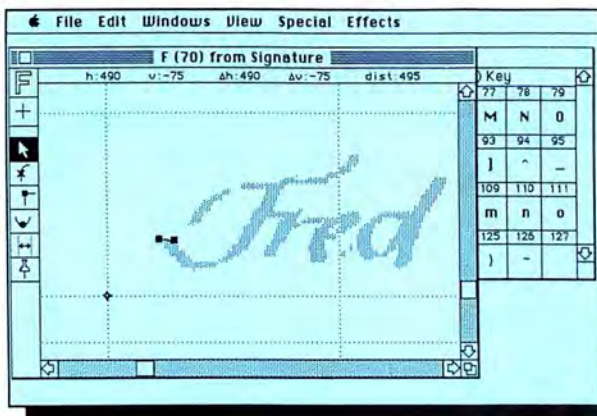
*Fontographer* provides several different tools for drawing the character. I begin by establishing the corners at the bottom of the “F”. There is no particular reason for beginning at the bottom (I actually begin with the upper cross-member when I sign my name.) To place a point, I select the Corner Tool and click on the upward swing of the tail. Whenever you place a point, it stays highlighted until you place the next point and the connecting line is drawn between the two.

Once the corner is defined, work up the ascender of the “F” by placing points with the Curve Tool. My experience is that you have to experiment with curve and tangent points and then decide which works best. If adding a tangent point causes the line to curve drastically, try adding a curve point instead. Always add a different kind of point before trying to manipulate the Bezier Control Points to make the line flow the way you want it. Simpler is always better. Because the ascender on my “F” curves, I will add a curve point.

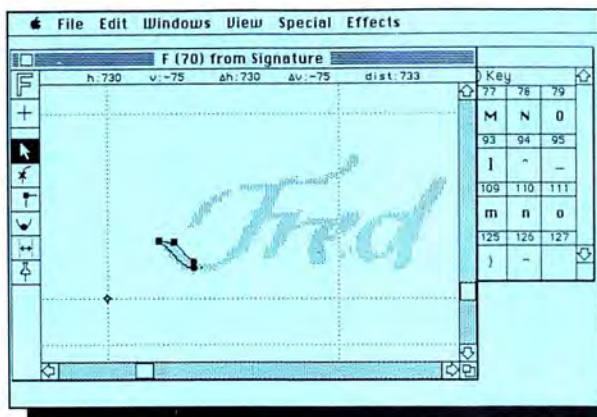
You don't have to wait until you generate the PostScript font to check the shapes of your letters. To see a filled letter as soon as the outline is finished, open the Font Metrics window. You will need to resize the



The Font Attributes window in *Fontographer* lets you set the ascent, descent and leading size of the PostScript font.



The corner points are set with the Corner Tool (the 90° angle in the palette on the left side of the character window).



Once the corner points are set, the curve points are added to follow the curve of the background image.

Font Metrics and the Character windows, but you can fit them on the screen to get a preview of your new font. If you have a large screen, the Font Metrics window can stay open in its full size.

If possible, always outline characters in one direction and make them one unit. If the cross on the “F” is a separate box, *Fontographer* leaves a white area where the cross overlaps the ascender. Checking the “smear and whiteout” method in Font Attributes will not always fill in the white area.

Tangent points are good for making smooth curves between corner

and curve points. There is a slight curve in the penstroke of the “r” that I want to follow. If I add a curve point, the line will bow out more than the stroke. A tangent point is good here to pull the straight line out.

## CHOOSING A PATH

If your name has a letter with a closed loop in it, like an “o” or an “e”, as mine does, it may be filled when you look in the Set Metrics window. If it is, select GET INFO from the File menu and click in either the “CW” or the “CCW” radio button—depending on which



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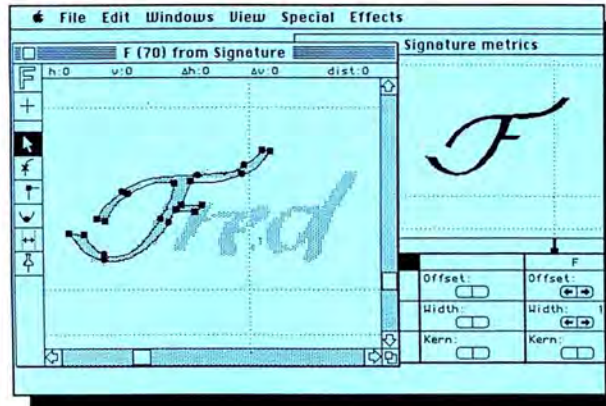
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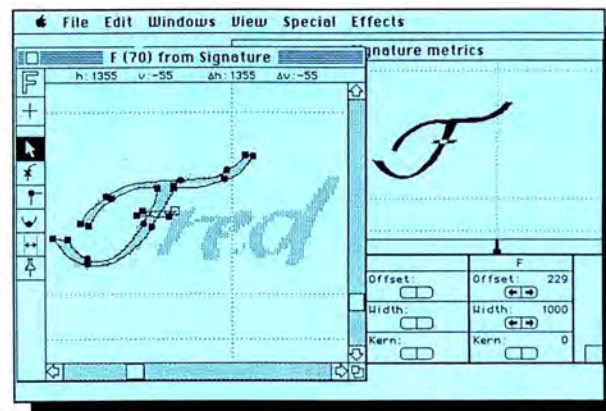
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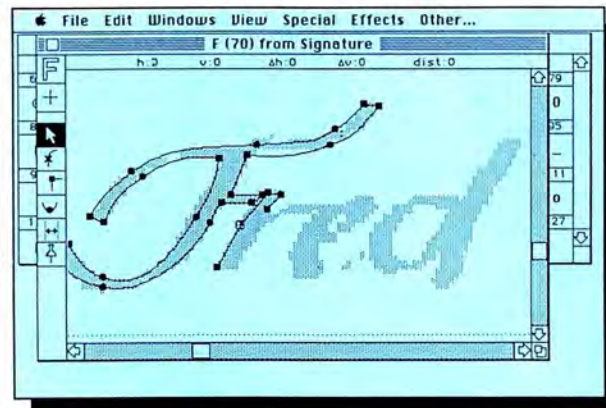
## The Electronic Signature



The outlined "F" and its filled equivalent in the Font Metrics window.



Overlapping boxes can cause white space in the filled character.



A tangent point is added by clicking between the two corner points.

radio button is selected. This sets the direction of the fill path—either clockwise or counter-clockwise—and tells *Fontographer* to fill the character in the opposite direction. If the enclosed loop in your letter is filled, then you will need to reverse the direction of the fill in *Fontographer*.

Perfect circles are the most difficult shape to draw. I don't have to worry about perfect circles in my signature, but I do have to worry about relatively clean curves. *Fonto-*

*grapher* lets you use the Bezier curves available in PostScript, which allow for the generation of non-uniform curves. You can change the shape of a curve by dragging the Bezier Control Points (the little plus signs) that appear whenever you click on a curve point. The best thing about the curves and control points is that you can adjust the curvature of a line to achieve smoothness with a minimum number of points. My finished signature probably has more points

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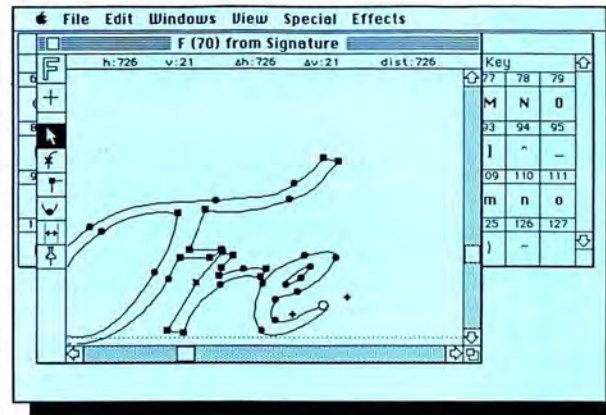
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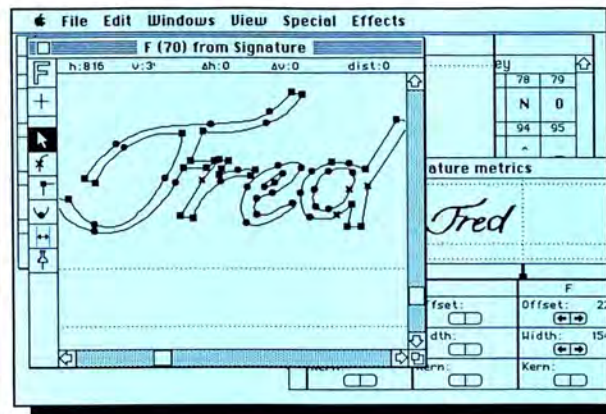
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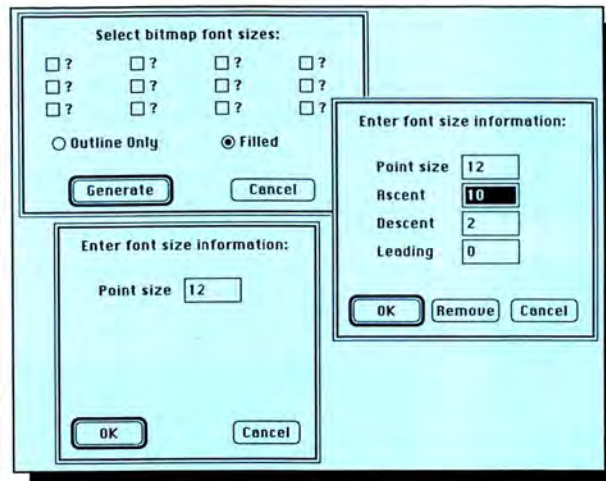
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The two "plus" signs are the Bezier Control Points for the highlighted curve point.



The complete and ill-shaped signature.



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than necessary, but for what I am trying to achieve, I can quickly reach a point of diminishing returns.

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# Stop the red menace.

*Check usage here*

A. Summary of Significant Accounting Policies

The consolidated financial statements include the accounts of the Company and its subsidiaries. There are material intercompany accounts and transactioning that have been eliminated. *sp?*

*Wordy. Use the word "All".*

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*What word can you substitute here?*

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*Is this a word?*

*to*

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## The Electronic Signature

erating only a few characters. This is helpful if you have cleaned up two or three characters and don't need to generate the whole font again. The Select bit-map Font Sizes dialog box appears and you enter the different sizes that you want to generate. Clicking in one of the check boxes brings up a window where you enter the size information which opens a window that shows you the calculated values for ascent, descent and leading. After specifying all of the bit-map sizes, click on GENERATE.

Once the bit-mapped version is generated, use *FONTastic*, which is included with *Fontographer*, or *FONTastic Plus* to clean it up so it will not look so ragged. The larger bit-mapped sizes will need little modification, but the smaller ones will need quite a bit of editing. While you are editing the bit-mapped font, do not change the character width. This modifies the FOND resource created by *Fontographer* and can ruin character spacing. We are not particularly concerned about the spacing, but the FOND also links the bit-mapped version of the font to the PostScript version. A final word of warning: do not try to install your bit-map font with *FONTastic*. It does not "understand" FONDS and cannot copy them into your *System* file.

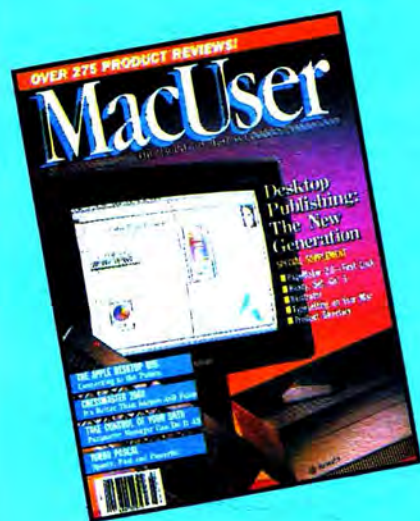
## GETTING POSTSCRIPT INTO YOUR SYSTEM

Installing the fonts in your *System* is perhaps the easiest part of creating them. Install the bit-map font in the usual fashion with *Font/DA Mover* 3.2 (version 3.5 is current at press time) or later (earlier versions of the *Font/DA Mover* do not handle FONDS properly). To install the PostScript font version, you just drag it into the *System* folder on your startup disk. Now you are ready to sign your name in PostScript. The PostScript fonts that *Fontographer* creates are automatic fonts: whenever you print a document with the PostScript font in it, the font is automatically downloaded to the LaserWriter.

Some argue that for speedy printing you should manually download the font. However, manual downloading offers no significant gain in

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## The Electronic Signature

time over automatically downloadable fonts: you either wait for the font to download before you load the application or wait for the font to download while you are printing.

The real benefit of manually downloading a font is that it is not purged from memory as soon as the document is printed. If you need to use the same font across multiple print jobs, manually downloading a font will save time. Altsys includes a utility with *Fontographer*. You can also use the *Laser Status* desk accessory or the *Widgets* utility from CE Software. *Laser Status* is your best choice because it lets you download a font file while you're in an application.

Naturally, this is a very superficial encounter with *Fontographer*; I have discussed only a few of its many features and I have completely avoided design concerns. *Fontographer* is a professional tool Altsys has a history of making their products better and *Fontographer* follows that tradition. The only flaw in *Fontographer* is its copy protection. However, if the user returns the warranty card that comes with the latest update (which is being shipped as I write this), Altsys will send an unprotected version. Now that's a reason to lick a 14-cent stamp. 

FRED TERRY IS A MARKETING ASSOCIATE AND STAFF WRITER AT BEHAVIORTECH AND A KANSAS-BASED CBT DEVELOPER FOR IBMS AND CLONES.

### MACUSER RATING

#### Fontographer



Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ ■ ■ □
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ □

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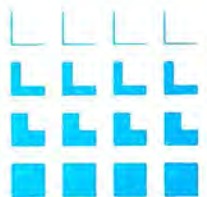
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# A Second Coat of Paint

You want graphics?

Here's the works.

GraphicWorks 1.1,

that is.

DO YOU REMEMBER *COMIC-Works*? Maybe Mindscape is hoping that we've all forgotten about that somewhat unusual graphics program by MacroMind and Mike Saenz. Users of *GraphicWorks* 1.0 were told that it was the exact same thing. Now Mindscape is marketing version 1.1 as suitable for "Professional Documents," and, hence, as a sort of desktop publishing application.

Opportunistic? Maybe. But this long-awaited new release has some thoughtful improvements that accommodate the quickly growing need for higher-resolution output. In particular, high-resolution bit-maps can be created in a flexible way, and graphic primitives are now a separate tool. Both improvements can make the most of both LaserWriter and Linotronic output.

*GraphicWorks* is an unusual program, and even in its first version had sophisticated bit-mapped graphics features like the Ink options for merging bit-maps in nine different

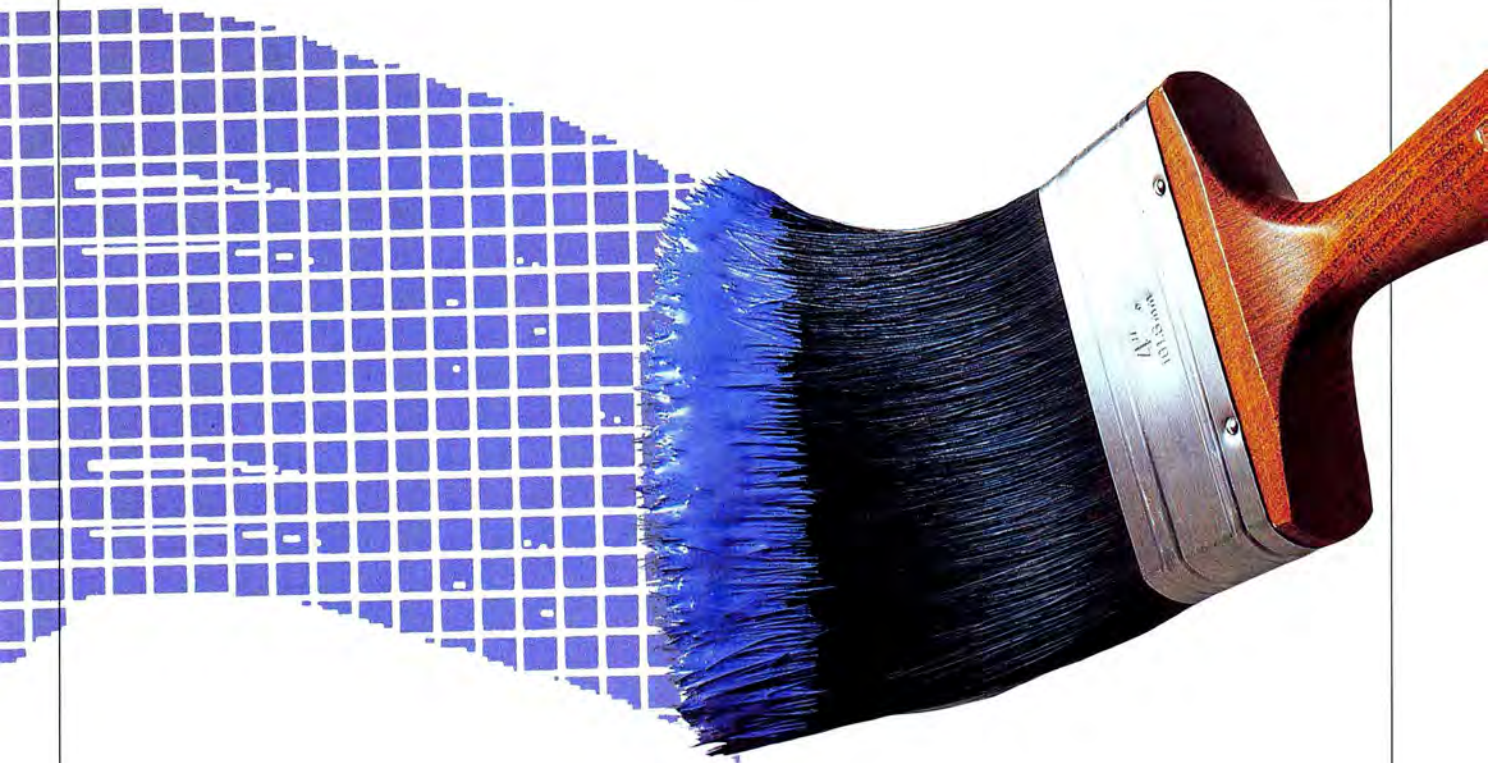
modes. It also works with panels and easels—a metaphor that some may find constricting, but one that is practical and flexible. In the heated DTP atmosphere of frames (or blocks) versus no frames, *GraphicWorks* is taking sides with *XPress* and *Ready, Set, Go!* against the open-page contenders *PageMaker* and *SuperPaint*.

This amounts to more than a battle of words, because there is more than apparent ease of use at stake. Though it's true that *SuperPaint* allows you to just start drawing without defining a drawing area first, the use of panels and easels in *GraphicWorks* allows sophisticated layering (such as with various Inks) and built-in cropping, grouping and portability of both painted and drawn objects and text.

#### TEXTURAL DIFFERENCES

*GraphicWorks* has some things in common with *XPress* and *Ready, Set, Go!*, (probably more so than *Super-*

BY PHIL INGE CHANG



*Paint* and *PageMaker*), but as its name suggests, its specialty is graphics. The use of panels may be convenient when creating comic strips and storyboards, but their use in general forces you to consider the overall format of a page. So the verdict is, don't use *GraphicWorks* for complicated text processing. For sophisticated graphics and some kinds of page layout, it is a capable and handy tool.

Mac users often assume that a variety of programs will handle complementary tasks. Unfortunately, many Mac developers seem bent on producing that one do-it-all, alone-in-its-class, SuperDuper (Fill in the blank, and don't forget to stick words together and capitalize everything). Some other examples include *LaserPaint*, a new "integrated graphics workshop" which can also handle high-resolution bit-maps, primitives and text. *Cricket Draw* is a new breed of *MacDraw*, and *FullPaint* is an offshoot of *MacPaint*. And, of

course, *Adobe Illustrator* is sitting pretty with a lot of drawing functionality, but it disregards bit-maps. So, *GraphicWorks* and *SuperPaint* are certainly not the only kids on the corner of Macintosh and Graphics Avenues. But, lest we forget, they are among the oldest programs and perhaps conform the most to the Mac environment. And no one can deny that integrating drawing, painting and text is desirable. So how different are *GraphicWorks* and *SuperPaint*? And should you buy one if you already have the other?

#### FAIRLY DIFFERENT, SO THERE

Simply put, *SuperPaint* has separate Paint and Draw layers with two toolboxes, and an alternating Draw/Paint menu. *GraphicWorks* is an all-in-one product—Draw and Paint are together. *SuperPaint* builds conceptually on the Draw and Paint models, providing a lot of Paint and some more Draw features. *GraphicWorks* has some interesting and

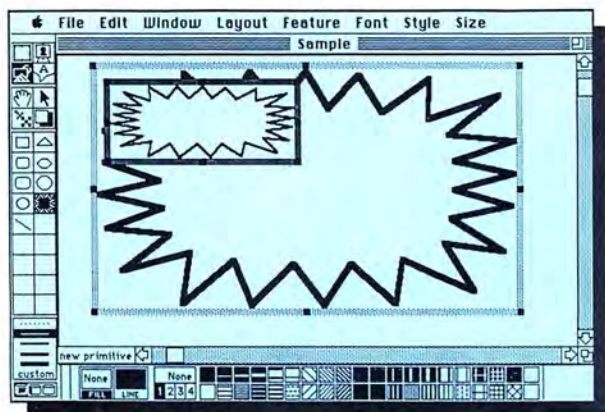
unique Paint and Draw tools. Let's take a look at the drawing features first.

#### LET'S GET PRIMITIVE

In the old version (aka *ComicWorks*), MacroMind provided primitives as the borders of panels and text balloons. A panel has to be drawn before anything else, and it comes with a changeable border.

A major reason for having primitives is to reduce the jaggies on the edges of supposedly smooth lines and shapes when printing on a LaserWriter. But users claimed to have problems printing panels as smooth objects on the LaserWriter. One reason that occurred was that the default option for printing to the LaserWriter was in quick, bit-mapped mode. Mark Canter of MacroMind has openly admitted, however, that there were problems in bypassing QuickDraw (the graphic routines of the Mac's operating system) at print time.

## A Second Coat of Paint



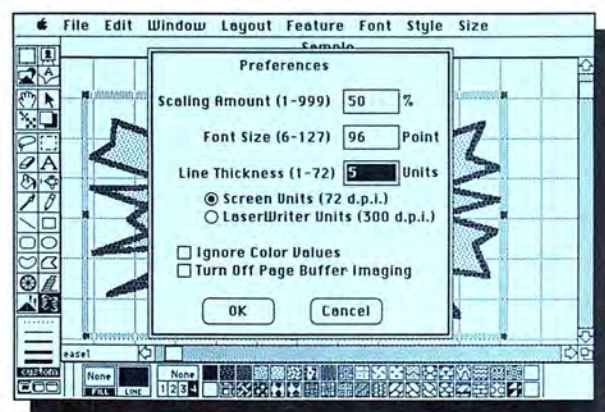
If you want primitives, *GraphicWorks* has them all—or nearly all. Don't look for any flexible or Bezier curves.



The New Balloon tool can use interesting primitives to frame text.



The star-shaped primitive is characteristic of the program, but its size, shape and fill pattern can be modified.



The Preferences dialog can be accessed under the Window menu or by double-clicking on the Custom line-weight icon.

Obviously, the old concept that no one would use primitives for something other than a border was getting dated. So now there's a full array of primitives under a separate tool—well, everything short of a freehand polygon (the kind in which every click is a corner) and an arc. Connectable Bezier curves (à la *Illustrator*) and other truly sophisticated drawing functions are also missing, for that matter.

A static screen dump can't show it, but another new feature of 1.1 is the way the bottom part of the toolbox changes depending on which tool has been chosen. That's called a "context-sensitive tool window," and it's like a separate toolbox for each of the top four tools. The Primitives tool is, as already mentioned, new among the four tools, which include New Panel, New Easel and New Balloon. Interestingly, the same primitives (except for the line) and more, are available for the New Panel tool. Almost the same can be said for the New Balloon tool, which definitely makes some unusual primitives available for the framing of text.

Although panels, balloons and primitives will shrink or enlarge to fit their enclosed selection boxes, they are also editable (except for the cloud-shaped balloons). Select RE-SHAPE PANEL/PRIMITIVE/BALLOON in the Layout menu, and all corners of the shape become selectable and independently movable. Although star shapes are definitely a trademark of this program, these primitives, like all primitives, can be selected and modified after they are initially created. The border weight and pattern, fill pattern, size and shape can all be changed. (Balloons cannot be filled, except in a way mentioned later.) No wonder users demanded them as separate tools.

I had no problems in printing panels, balloons and regular primitives as smooth shapes. A word of warning, though: some of the supposedly rounded balloon shapes with tails and many selection points will print as a series of short straight lines, and their smoothness is therefore compromised.

Primitives affect borders and lines

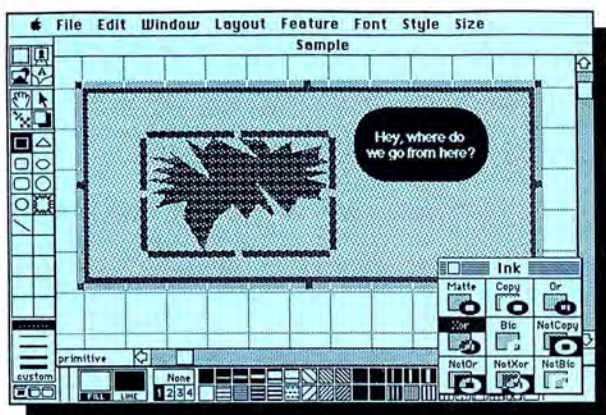
in a particularly flexible way when using the Preferences dialog box, which is selected under the Window menu or by double-clicking on the Custom line weight. You can assign a border or line a thickness in 1/72 or 1/300 of an inch. Also, the second Fill Patterns menu contains a full set of PostScript gray screens. A panel or primitive filled with one of these prints with that percentage gray at the screen resolution of any PostScript printer, such as the LaserWriter or Linotronic 100 and 300.

Finally, panels, primitives and balloons each vary in their sensitivity to the Ink options. These options are actually for bit-maps, not primitives. Nevertheless, they can be tried out. For the three kinds of primitives we'll get the following results: panels, no effect; primitives, they'll look dandy, but they only print in the way they were originally created; and for balloons, choosing OR lets anything behind the balloon (like the fill pattern of a panel) show through, and NOT OR inverts the balloon to white text on black. The

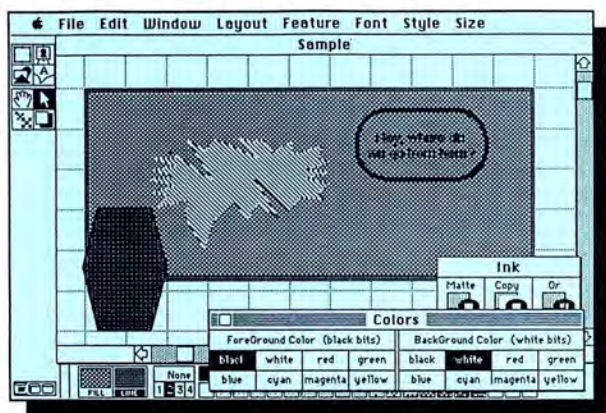
same balloon effects can be gotten by selecting None and black in the fill patterns bar.

### A WORD ON COLOR

The standard kind of ink for all three kinds of primitives is Matte, which erases everything underneath the shape to white. This means not only that primitives consistently stay on top of each other and on top of bit-maps, but also that they have a background color, normally white (unless balloons are made transparent or inverted). The Colors options under Window allow you to select a foreground and background color for viewing on the Mac II or printing on an ImageWriter II, just as in *SuperPaint*. A bit-map is normally Or when created, so there is effectively no background color for that particular easel. Of course, it can be changed to Matte or any of the other eight options. Ink options are very flexible for bit-maps, and various ink modes produce all sorts of interesting effects in combination with various colors. The color of pasted-in



One major distinction between *GraphicWorks* and other paint programs is that a full set of Ink options allows flexible layering of text.



The Colors options operate similarly to the way *SuperPaint* handles it—both background and foreground colors can be chosen.

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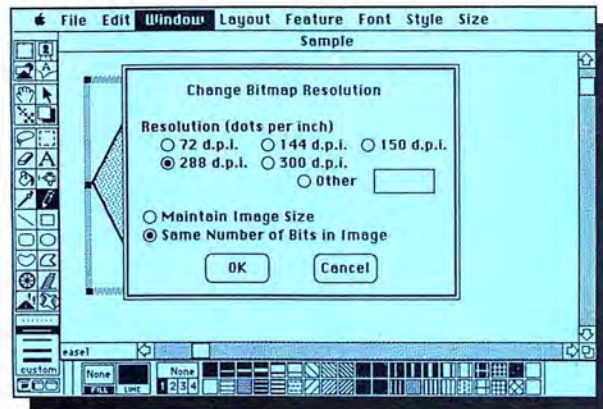
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## A Second Coat of Paint



Another option under the Window menu is to adjust the resolution of your bit-mapped graphics—a change which may result in long printing times.



With high-res easels, you can paint at full size.

PICT objects cannot be changed.

### AND ONE WORD ON TEXT

Zip. Seriously, I was last seen hopping a plane to Hawaii when this segment was written, which is what MacroMind must've done when they wrote the text handling part of *GraphicWorks*. One typeface, size and style per balloon, sort of like in *MacDraw*, and the attributes are awfully hard to change after creation. At least I haven't found a way yet.

### GETTING BIT-FACED

The moment we've all been dreading is upon us. What about those Inks? And the high-res stuff? Start from the beginning. Draw a panel, then an easel, then another easel. Note the full complement of painting tools in the bottom of the toolbox. Choose a distinctive pattern, select the paint can, and fill the first easel. Then select the second easel, get the airbrush, find a light mottled pattern and start spraying inside that easel.

Selecting BIT-MAP RESOLUTION

under the Window menu or double-clicking on the LaserBits tool, brings up a dialog box that allows you to change the resolution in dots per inch (dpi). (LaserBits, LaserBits, sounds familiar.) Though the options here are potentially quite flexible, don't abuse them, or you'll waste processing time.

There are two ways of creating high-res bit-maps, indicated at the bottom of the dialog box. If we maintain the size of the image and indicate 288 dpi (a nice, even, easy-to-compute multiple of 72 dpi, the pixel resolution of bit-maps), the image prints at the size created. However, clicking on the LaserBits tool with the high-res easel selected will blow it up to 4 times the size for editing ( $288 \div 72 = 4$ ).

Note that even though the bits already there seem large, all painting in the blown-up mode occurs with much smaller (or regular size) bits. The existing large bits can be painted over. This is like the FatBits options in reverse, since only the easel is magnified, not editing. This is the





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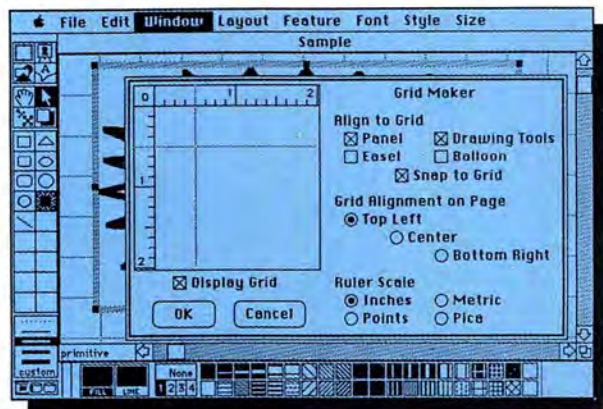
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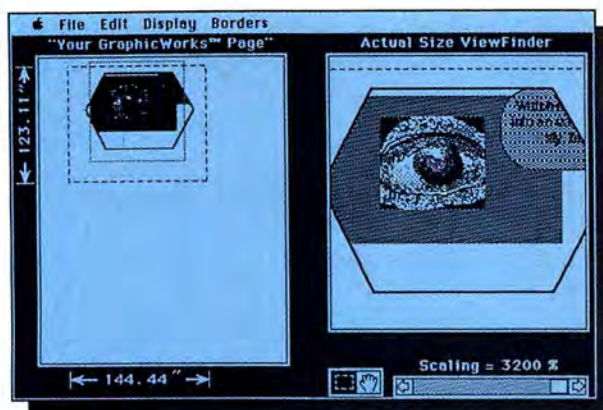
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## A Second Coat of Paint



Grids can be printed either on top of or underneath your artwork.



PosterMaker can scale an image up to 3200 percent of its original size.

recommended method for creating high-res bit-maps, since it's possible to paint in a normal fashion and create an easel at exactly the desired size. If you decide the image looks better at the larger size, go back to the dialog box and select 72 dpi, the same number of bits in the image.

What about the other way? If we maintain the same number of bits in the image and select 288 dpi, the easel we created shrinks to one-quarter the size. What about editing? Generally speaking, you should perform this option only when you're finished with the easel. If you go back and select 72 dpi, maintaining the image size won't always work smoothly.

There are other problems. Creating a page-sized panel and comparably large easel, filling it with a pattern and then selecting 288 dpi (the same number of bits in an image) actually caused a LaserWriter with version 23 of PostScript to crash. (This was one of the first LaserWriters released, and that version of PostScript has some known

bugs.) The LaserWriter didn't recover, quite to my surprise and that of everyone I consulted.

Even though resolutions of 150 and 300 dpi are listed options, they take longer to process and produce round-off errors. Of course, much larger resolutions are possible, but the images take a while to create. The image quality at 288 dpi is fine, but some unexpected streaking can occur in the printed result. This is probably because fill patterns produce unexpected patterns when condensed. If the print quality of the LaserWriter engine is the culprit, a high-res bit-map might fare better on a Linotronic. Or is the recommended Ink for high-res bit-maps, since it saves on processing time.

## INK BLOTS

Now that you have filled the first of your two easels with a pattern, turn back to normal resolution and perform all the Ink options on the second panel. Matte and Copy seem pretty similar. Or creates a transparent image by turning all white pixels

## A Second Coat of Paint



A final high-resolution bit-mapped graphic, such as this, takes over an hour to output on a LaserWriter.

to nothing. Xor is similar except that black on black turns white. Bic—well, you have to see it. Not means inverted. After clicking on the particular Ink, click on the drawing area to preserve the change. No big mystery.


### ON THE DOWNSIDE

A few of *GraphicWorks*' features are not up to par. Panels that are not rectangular seem to clip all easels, balloons and primitives inside, on the screen, but easels have a way of sneaking outside the border when printed. Also, I would prefer various sizes for the Airbrush, which otherwise performs admirably.

All in all, *GraphicWorks* is a well integrated drawing and painting tool. It works on the assumption that detail and *Paint*-like capabilities are the most important form of Mac graphics. It uses graphic primitives in useful ways—as panels, borders and text frames. The easels are actually primitives of a sort that contain bit-maps in a convenient way—a way that allows easy layering and merging. Separate primitives are obviously handy, although the concept was already there. Align Objects, a typical *Draw*-like feature, can be found in the form of Center, which centers an easel, primitive or balloon in the panel. And once all the elements are in place, the panel is the window that allows you to move the whole, multilayered creation at once. If there was better text handling, *GraphicWorks* could be used for presentation graphics and other sorts of documents.


We still haven't mentioned a lot of other neat features, like *Grid Maker*,

a flexible tool for creating grid lines that can be snap-to, and that can be printed on top of or behind the artwork. *PosterMaker* still comes standard with the program, and allows you to blow up a page to 3200%.

One notable item of contrast between *GraphicWorks* 1.1 and *SuperPaint* is that *GraphicWorks* can import TIFF files or high-res files from desktop scanners. The important message here is that MacroMind and Mindscape made good on their promise of supporting the LaserWriter, and they've provided not only primitives, high-res bit-maps and a streamlined interface, but also flexibility and consistency. 

PHIL INJE CHANG IS A PUBLISHER AND WRITER WHO EDITS *SHOWPAGE* MAGAZINE, A JOURNAL ABOUT COMPUTERS FOR THE CREATIVE. HE WAS LAST SEEN ON MAUI MAUI.

### MACUSER RATING

<b>GraphicWorks</b>	
Follows Mac Interface	<input checked="" type="checkbox"/> <input type="checkbox"/>
Printed Documentation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
On-Screen Help	None
Performance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Support	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Consumer Value	<input checked="" type="checkbox"/> <input type="checkbox"/>

**Comments:** A combination drawing and painting program that creates high-resolution bit-maps. **Best Features:** The easel allows great flexibility with bit-maps, and graphic primitives are now a separate tool. **Worst Features:** Text handling is poor, and output mysteriously and permanently crashed a LaserWriter. **List Price:** \$99.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. (312) 480-7667. Not copy protected.

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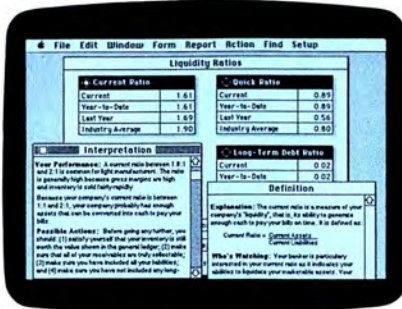
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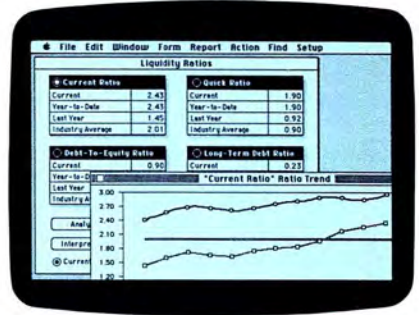
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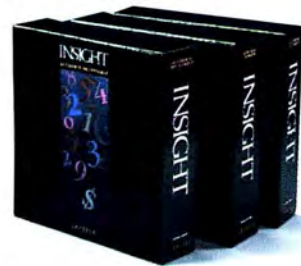
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# An Educational Cookbook

**Course Builder has just the recipe for building your own custom standalone educational applications.**

WHEN I FIRST SAW SILICON Beach's *World Builder*, an application that lets you write adventure games, I was impressed with the creative possibilities it offered to the non-programmers in the Macintosh world. I also lamented that you were limited to the creation of *Dungeons and Dragons*-type games; the program's potential was much greater.

Well, now there's *Course Builder*, from TeleRobotics International. It's no surprise to find that Bill Appleton, who wrote *World Builder*, wrote this one, too. The adventure game angle is gone. With *Course Builder*, you can create a standalone application that others can use on the Macintosh. Your program can use graphics, animation, digitized sound and *MacInTalk* speech to get your point across. The user can interact with the program by typing, selecting from a menu, choosing radio buttons, clicking and dragging objects around on the screen.

*Course Builder* is not, for all its flexibility, a general-purpose "language;" it's specifically designed to let you use the Macintosh to teach, train and test students, employees or clients.

*Course Builder* is simple enough to use, once you understand how to do it, but it's not so simple to get the hang of it. Besides the inherent complexity of a program so rich in features, you have to deal with a poorly organized and written manual. But it's all worth the struggle.

## MAIN INGREDIENTS

You create a *Course Builder* course by putting different types of "blocks" into the Course window. Blocks come in two general types: output (text, graphics, sound and animation) and input (mouse, keyboard, menu and buttons). You control the "flow" of the course—what comes after what—by stretching arrows from one block to another. Each block has only one entrance for arrows, but can have up to five exit paths; the path taken depends on the input of the user during that block. In addition, multiple arrows can come from a single exit. Multiple-arrow exits can result in a random selection of the direction the course takes, or you can build conditions into the arrows. Conditional arrows control the flow of the course based on such variables as: the user's previous answers, the number of attempts on a question, the time taken to respond, the user's score so far in the course and the user's score in any particular part of the course.

It doesn't take long for all your arrows to start looking like spaghetti when you're designing an involved course. When things get messy, you can "nest" a group of blocks into a single block in the Course window. Not only does this make life easier in the Course window, but it also opens up a world of possibilities for the course flow. Blocks in a nest are generally executed from left to right, top to bottom; arrows are not neces-

sary unless you want to circumvent this default flow based on some user input. In addition, you can define the flow in a nest in different ways. The course can use any number of blocks within the nest, selected in random order; it can randomly select one block from each row in the nest; or, it can present a scrolling list of block titles from which the user can select the destination.

## APPETIZER

*Course Builder* is difficult to explain without falling into the trap of just enumerating its features, and it's hard to get across the flavor of a program just by listing its ingredients. So, instead, let's start with this scenario of how you'd go about creating a simple course.

Your objective is to teach someone about the Mac interface. Begin by putting the Start block in the Course window, followed by an output block that consists of a design and a text window. Stretch an arrow from the start block to the outblock block.

Open the output block by double-clicking on it, and size the two windows the way you want them. Type some welcoming and instructive sentences in the text window and set it up for speech so *MacInTalk* will read it out loud. Now paste five pictures from a scrapbook into the Design window: a menu, a row of buttons, a mouse, a scroll bar and a Document window.

Click another course block onto the screen: a mouse input block. Stretch an arrow from the output block to this block. By double-clicking on the information bar of the block, you open a window that lets you define the block as having five exit paths. Then, open the "presentation field" of the block, and link it to the Design window of the last block

BY SHARON ZARDETTO AKER

## An Educational Cookbook

(the one that shows the interface items). By dragging a rectangle around each of the items in the Design window, you define five "mouse areas" that will register a user's click. Each mouse area has a number that corresponds to one of the five exit paths from the input block. If a user clicks in the first mouse area, the first exit path will be taken, and so on.

Next come five output blocks that present information about each of the interface items; stretch an arrow from each exit path to the appropriate block. These output blocks may contain graphics, text, sound or even animation.

Finally, put a menu input block in the course so after the user has viewed the item clicked on, he can choose to go back to the main window or quit the course. Arrows from each of the five previous blocks enter this input block. This block has two exits: one to a stop block, and one back to the main block. The path the course takes will depend on what menu item the user selects.

After you give the course a test

run right within *Course Builder*, you can save it as a standalone application.

### A MOVEABLE FEAST

*Course Builder* has two types of output windows, Design and Text, which can be used singly or together in any block. The Text window is for just that: text, which can be scrolled by the user if necessary, and can be spoken by *MacInTalk*.

But, the Design window is the crux of *Course Builder's* output. You can use its multilevel abilities for everything from static graphics displays to animation. On the main level of the Design window, you have *MacDraw*-like tools with which you can create simple graphics, editing them with the Font, Style, Pen and Fill menus. (You can also, of course, paste in graphics that were created elsewhere.) The next level, accessed by using the bit-map tool in the Design window, allows you to create a bit-mapped graphic item using basic *MacPaint* tools.

The next level of graphic design is available by selecting the animation

command from the Design menu. A Sprite window opens, providing the same drawing tools as in the main Design window. (A sprite is basically an object that can be easily manipulated for animation purposes.) When the Sprite window is opened, the Design window changes a little: controls at the bottom let you create and move between separate animation frames.

You design the sprite in the Sprite window, then add it to the Design window. While you can't just drag a sprite around in the Design window and have its motion recorded, you don't have to step through a frame at a time, either. You can place a sprite in one frame, and again in another frame, and have *Course Builder* fill in all the intervening frames. If you change the position or size of the sprite at either of the end points, *Course Builder* interpolates all the intervening positions and/or sizes. Instant animation! You can animate more than one sprite at a time, and you can even use different versions of the same sprite for more sophisticated animation effects.

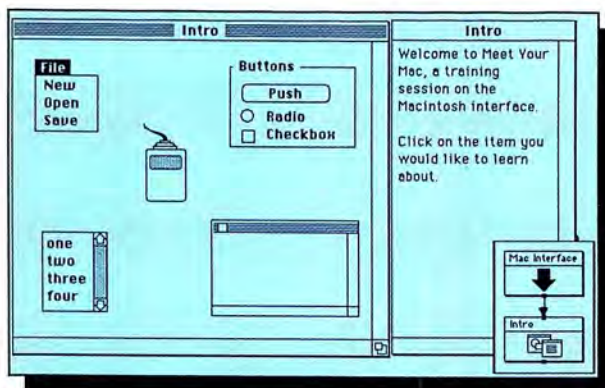
Sprites can also be defined as "draggable," which means that while the course is running the user can drag them around on the screen. Like many other things in *Course Builder*, sprite use and animation falls a little short of being an intuitive process, and the manual isn't much help. Perseverance, however, pays off in the end.

The Design window is also where you add sound to your course: *MacInTalk* speech, digitized sound (*MacNifty* format), or imported *MusicWorks* files.

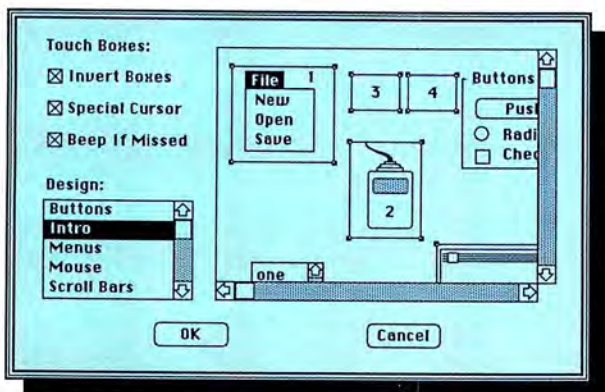
### SPECIALTY OF THE HOUSE

*Course Builder* lets you solicit input from a user in many different ways. The input can be for controlling the flow of the program, or responses to questions that can be recorded on disk for later review.

The main options are text and numeric input from the keyboard. These appear in the course as dialog boxes with edit fields. When the user input has to be evaluated within the course because it's going to control the flow of the program, there's a



A single output block can contain both a Design and a Text window. The inset shows the start block and the output block as they appear in the Course window.



It's easy to define "mouse areas" that the user can click in. All you have to do is drag a numbered rectangle around the area.



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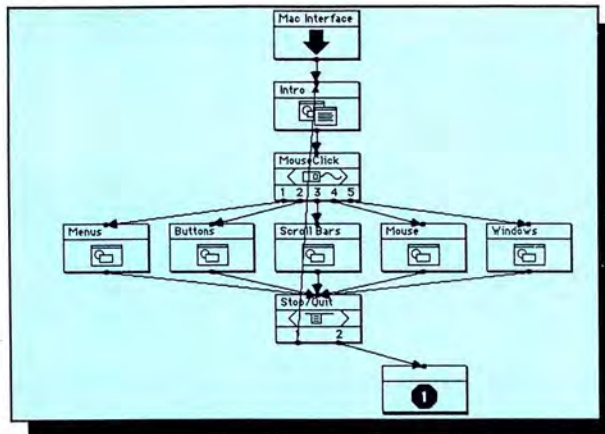
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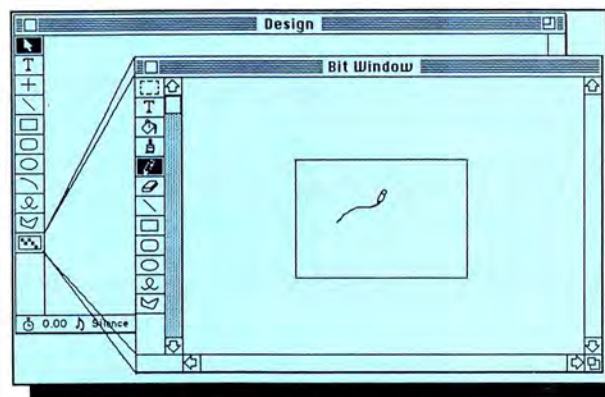
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The simple course described in the article would look like this in the Course window. The mouse click block is an input block with five possible exits. Each of the five output blocks flow back to a single menu input block, which has only two exits: the end of the course, or back to the beginning.



The Design window has *MacDraw*-like tools, and icons you use to add sound. You can also open a Bit window with the bit-map tool to access *MacPaint*-like tools for more intricate designs. The scroll bar next to the Bit tools provides eight levels of magnification.

variety of tests to apply: does the input contain a certain word, does it match exactly a specific word or phrase, is the number less than, or more than the input, and so on.

You can also create a menu for the user to use (although this has severe limitations, as noted below), a list of

radio buttons or a scrollable list of words/titles from which she can select. But the most versatile user input options are mouse areas and sprite bays. You define a mouse area for any Design window by dragging a numbered rectangle around it. When the user clicks in the area

## Course Builder 2.0

A major upgrade to *Course Builder* (the 2.0 version, \$395 plus \$10 shipping and handling).

*Video Builder*, (\$695 plus shipping and handling) is coming fast on the heels of the original release.

The main addition to the original is the availability of numeric variables. This "simple" improvement includes:

- Course variables that can be used as counters or for statistics and can be saved in a disk report for later review.
- Calculation blocks that can be used to combine variables resulting in such things as randomly-generated math problems.
- Sprite animation based on variable values, which includes the capability to create items like gauges.

Another new item is a File menu that's always available (unlike the menu created in a menu input block). The File menu lets the user open an old session, save the current one and start a new one, as well as quit at any point in the course.

And if you think the current *Course Builder* can make spaghetti with all its flow arrows, this one allows 10 exit paths from every block instead of five.

# "Buying the wrong image scanner split up our partnership."



switching back and forth between the scanner program and paint program, trying to edit a portion at a time.

Finally, in a fit of frustration he roared that the picture wasn't big enough for the two of us and one would have to go.

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By the time I got back to the office, I found Elliot's final attempt in the trash, along with the scanner. The flyer was a fiasco, but our partnership was saved. Elliot was ready to try the AST TurboScan.

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## An Educational Cookbook

### Video Builder

I attended Apple's Macademia conference in Boston last spring. The first night was "third-party vendor" night, and a dozen or more booths were set up to show off products. There were a few people at each booth—sometimes even as many as a half-dozen—with one exception: the TeleRobotics booth, where they should have been giving out tickets so everyone could get a turn in the front row.

The attraction was not just *Course Builder*, it was "*Course Builder Plus*": *Video Builder*. *Video Builder* is *Course Builder* with a special output block that you can add to the course. This output block lets you control a videodisc player, a videotape recorder, or a slide projector. Just imagine the possibilities from the educational standpoint: a student working at the Macintosh, interacting with a video disc, retrieving information or controlling a self-paced learning session.

*Video Builder* currently has drivers for Sony and Panasonic laser machines, the Sony 8 mm videotape recorder, and a Mast slide projector. More drivers are being developed, and the compatible Sony equipment is available directly from TeleRobotics for \$695 plus shipping and handling.

during a course, *Course Builder* detects the click and branches out of the input block along the appropriate arrow. Mouse areas can be overlapped or nested, in which case the lower-numbered areas take precedence.

Sprite bays combine draggable sprites with mouse areas. The program detects when the user has dragged a sprite into a mouse area: when a sprite is in its "bay," the input is considered correct and the program can branch accordingly.

User input is for more than just controlling the direction of course: inputs can be recorded in a disk file for later evaluation. Each input block has a special window that lets you identify the correct answer, and assign a number of points for the correct input; you can even set a time limit for answering.

Reports can record all sorts of statistics: times, scores, percent correct and exit paths for the whole course, a section of the course or a single block. A special report-reading utility is included with *Course*

*Builder* so you can review a user's performance.

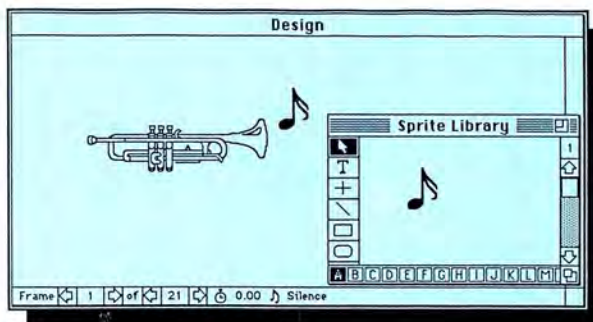
### NOT ON THE MENU

*Course Builder* is an amazing piece of work. Its potential is so great, I'm willing to overlook some of its rough edges—and I don't do that for just anyone. There are, however, areas that need improvement, both in the capabilities of the finished product, and in the *Course Builder* environment itself.

The most obvious flaw has to do with menu inputs. You can have only one menu at a time, and when the course is waiting for a menu selection, that's all it can do. This "modal menu" is a contradiction in Macintosh terms.

Next is the fact that only radio buttons are available, and they can act like push buttons: click on one and something happens immediately. You can prevent this, but it shouldn't be possible at all; that's another Mac interface transgression.

The third large flaw is the way windows change as the course moves



When you work on animation, the Design window provides frame control. You can design sprites in the Sprite window, or paste them in from the Clipboard.

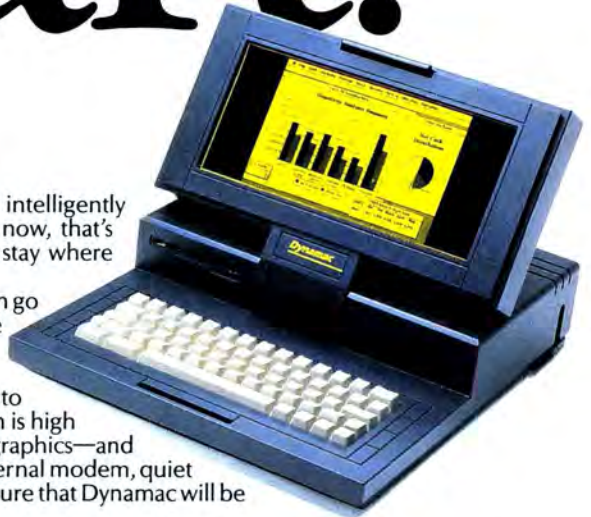
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from block to block. First the window is resized, then the contents change. This results in an awkward visual presentation.

There are lots of minor things that may belong on a wish list for the next version, but would have been easy to include right at the start, such as definable cursors, the option to hide the cursor and a choice of window types (including a full-screen option).

The *Course Builder* environment itself could use some polishing. You find yourself in modal dialogs too often, restricting just what you can do next in the way of block design. There should be a way to define some standard window sizes; unless you use the default set-up, it's impossible to keep windows the same from one block to the next.

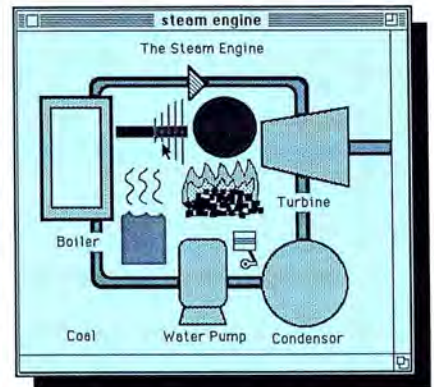
*Course Builder's* biggest problem of all is probably the most easily remedied: the documentation. It guarantees TeleRobotics a lot of support calls. It fails on all counts: organization, content and index. Even the page layout is so poor as to be distracting.

Each of the manual's many sections covers a *Course Builder* capability in an entirely too-brief manner. There is no attempt made to show how the program's different options work together (and if they're not working together, they're not working at all). There's no mention of how to tweak *MacInTalk's* pronunciations, or how report passwords are utilized, or how to use the report reader utility.

The documentation is so segmented that even the page numbering is fragmented into an impossible to follow series of letters and numbers. The writers often slip into the assumption that the reader has some programming background, but even a competent programmer will find this manual less than helpful.

### AFTER DINNER MINTS

It's worth repeating that you create standalone applications with *Course Builder*. If you sell your application, TeleRobotics standards are generous: no payment to them for the first \$20,000, and only a 5% royalty on sales over that figure.



Dragable sprites are objects that the user can drag around on the screen. Sprite bays are defined areas where the objects belong. In this sample screen, the user is expected to drag the objects in the center into their proper positions.

Some of *Course Builder's* shortcomings have already been addressed in an update which should be out by the time you read this; the manual is also undergoing revision (though nothing short of a total rewrite would help). But, even as it stands, *Course Builder* is a valuable tool for many people. ☞

SHARON ZARDETTO AKER IS A MACUSER CONTRIBUTING EDITOR AND AUTHOR OF MANY GREAT COMPUTER BOOKS.

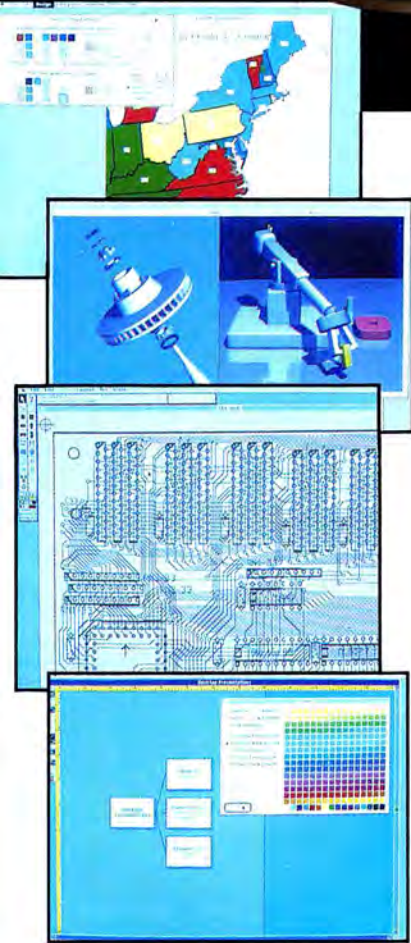
### MACUSER RATING

## Course Builder

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ □ □ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ □

**Comments:** Easy to master on a superficial level, more difficult at more sophisticated levels. Although there's little help in the manual, telephone calls are answered quickly, courteously and competently (on your nickel). Don't be put off by the fact that this is really a programming language, because it doesn't feel like one. **Best Features:** You can create double-clickable applications which in turn can create report files so you can check the user/student input during the course. **Worst Features:** The documentation; severely limited menus in the finished product; you can only use radio buttons. *Course Builder*, \$300 plus \$10 shipping and handling. TeleRobotics International, 8410 Oak Ridge Highway, Knoxville, Tennessee 37931. (615) 690-5600. Not copy protected.

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Much of the more advanced music software deals with MIDI, the Musical Instrument Digital Interface that is now a common language among not only just synthesizers, but also audio processors, mixers, sound-effects generators and all sorts of other studio tools. MIDI programs generally fall into two categories: sequencers, which record musical events

such as notes played on a keyboard, and let you edit them and play them back; and patch editors, which allow easy access to the digital parameters that make up a synthesizer's sound, or "patch."

*M* and *Jam Factory* are MIDI programs, but they are very different from the norm. They're concerned with composition as a continuous process. You might think of them as musical "idea generators" or, as their creators call them, "intelligent instruments." They produce fully orchestrated music in real time, and let you control the patterns and parameters that determine *the way* the music is being produced, while leaving the mundane task of actually *playing* the notes to the computer.

In some ways they bear a superficial resemblance to Laurie Spiegel's *Music Mouse* (reviewed in *MacUser*, May, 1987). But while *Music Mouse* is easy both to describe and to use, trying to do justice to *M* and *Jam Factory* in print is about as rewarding a task as describing a hologram to a blind person. They are the most complex music applications—and possibly the most complex applications of any kind—in Mac history. I have been playing with them for over a month, and it seems like I've barely scratched their surfaces.

Like a sequencer, they will record what you play on a MIDI keyboard, but their purpose is not just to play back that input; it's to use it as raw material for musical permutations and improvisations generated by the computer. The differences between the programs are subtle, but put very broadly, *M* is oriented towards working with pre-existing musical material, while *Jam Factory* is better suited for dealing with music being played in while it is running.

## WHAT M DOES

The best way to describe these programs is simply to tour their screens. Since they contain very similar elements (albeit laid out differently), let's look closely at just one: *M*.

In the upper right corner of the *M* screen is the Pattern window. The user has control over 24 musical patterns, with four active at any one time. These patterns can be entered by playing them on a MIDI keyboard and recording the pitches and durations; or recording just the pitches and storing them in a "pitch distribution pattern;" or importing them from a MIDI File created by another program (see the sidebar); or in various other ways. When you click on START, the four active patterns play, repeating over and over. While they play, the tempo and length of each individual pattern can be adjusted, new notes can be added, or a pattern can be turned off or even erased without disturbing the others.

You can also fiddle with the order

BY PAUL D. LEHERMAN





of the notes within the patterns, using the six Note Order boxes. These determine whether the pattern will play exactly as it was recorded, or whether it will "scramble" itself and then play over and over in the

new order, or whether it will constantly re-order itself. Each box gives a different set of note-order parameters for the four patterns, and clicking on a box instantly invokes the parameters associated with it.

The note-order choices are not absolute: Double-clicking on one of the Note Order boxes opens it up to reveal that you can specify *probabilities* for each type of operation, so that, for example, Pattern 3 will play

# Music Between the Keys

in its original form for 19 percent of the time, will play in a re-ordered form 58 percent of the time and will play totally randomly the other 23 percent of the time.

Next to the Pattern window is the Input window, where the fate of incoming MIDI data is decided. Notes from a MIDI keyboard can be recorded into a pattern, echoed out to a MIDI synthesizer "live," used to transpose existing patterns or sent to the Input Control System (about which more later).

Filling the lower half of the screen is the Variables window. At the top of the window are the 16 Sound Choice boxes. Clicking on a box sends a MIDI program (or patch) change on each of the 16 MIDI channels, thereby changing the sound of whatever synthesizer is receiving data on each MIDI channel. You can edit the boxes so that any program change number (MIDI allows 128 of them) can be sent on any MIDI channel.

Next are the six Transposition

boxes, which when clicked transpose each of the patterns at its own specified interval. Again, these boxes are programmable.

Then come the six Orchestration boxes, in which you determine which MIDI channel (or channels, for you are allowed more than one) will get each pattern. Below that are the six Intensity Range boxes, in which you can specify a range of MIDI velocities that each pattern generates. (Velocity usually controls volume—that is, the faster a key moves, the louder the note sounds—but depending on how a particular synthesizer patch is set up, it can also determine other factors.) This range can be as small as a single value, or it can cover the entire MIDI range.

Next are the Note Density boxes which let you specify how many of the notes in each pattern will actually be played. If the note density is set to 100 percent, all the notes in the pattern will sound, while if it is set to 25 percent, only one-fourth of the notes will play. Which notes are left

out is decided randomly with each cycle of the pattern.

Now we get to the Cyclic Editor boxes, of which there are three sets of six. One set of cyclic editors sets up patterns for dealing with note durations, another handles articulations (whether the notes fill completely the spaces left for them or leave gaps) and the third controls velocity accents, which act within the intensity range. These patterns, which contain up to 16 events each, are *completely separate* from the note patterns. Each event in these patterns is assigned a value of 0 to 4, with higher values meaning longer or louder notes. If you like, you can assign to an event a *range* of values, in which case an element of chance will be introduced into the cycles.

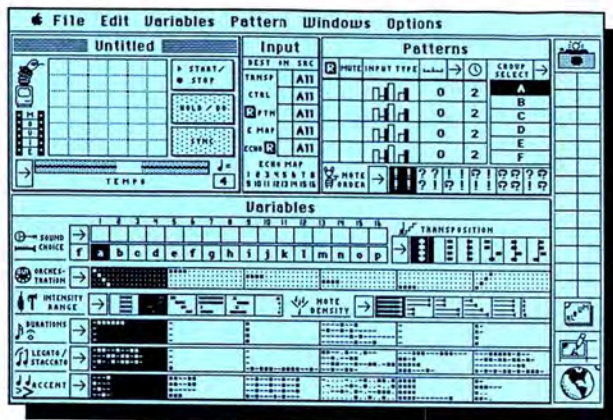
These patterns add to the variety of the music: if you have a note pattern that's 11 events long, and a duration pattern that's 15 events long, then the two will merrily cycle away independently with no repetition of the same music until 165 (11 X 15) notes have been played!

Keep in mind that all of these adjustments can be made while the music is playing, so you get instant feedback on your parameters.

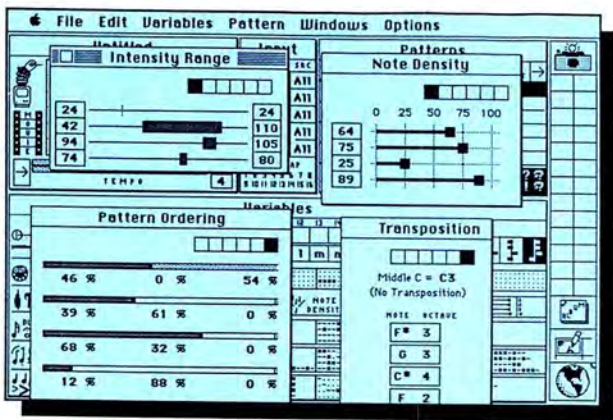
## SAVING AND PERFORMING

When you have the screen to the point where all the boxes are edited and selected to your liking, you can take a "snapshot" of it. Up to 26 snapshots can be stored in one file. Since a snapshot recalls the settings of all the boxes, changing snapshots (which can be done either from the Mac keyboard or with the mouse) can effect a radical change in the music—far more than can be done by switching a single box. If you consider a snapshot as a musical "scene," the program gives you the option of performances in which any scene can be made to follow any other.

The upper left corner of the screen contains the Global Control window. Here you'll find the start-stop control, a Hold/Do button that lets you choose several parameters and then change them all at once (like a snapshot, only without storing the selection), and a Sync button that



This is the main screen of *M*. No one said it would be easy.



*M*, with Intensity Range, Note Density, Pattern Ordering and Transposition windows open. All of these windows can be edited.

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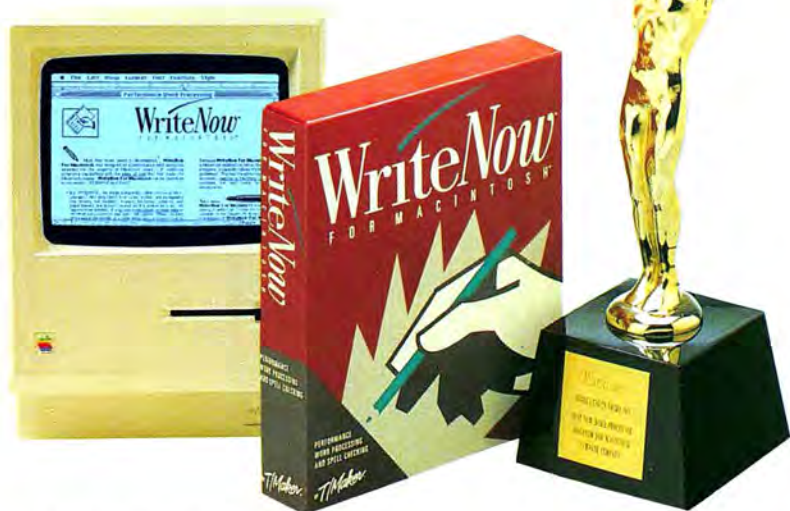
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# Music Between the Keys

## MIDI Files

MIDI Files have been proposed as a standard by Opcode Systems, one of the first producers of MIDI software for the Macintosh, for exchanging MIDI sequence information between different manufacturers' software. This proposed standard even goes so far as to allow exchange between different types of computers. Since one music program, no matter how good, cannot be all things to all users, this idea, which will allow users to take advantage of different programs' various strengths, is highly laudable. (There are other good reasons for it, too, such as allowing studios that have different sequencers to exchange files over the phone.)

Unfortunately, only two manufacturers have implemented MIDI Files: Opcode, in their relatively primitive *Sequencer* 2.1 and 2.5, and Intelligent Music, in *M* and *Jam Factory*. Some other manufacturers have said that they intend to make their products MIDI File-compatible, but no such products have appeared on the market yet. Still other companies—most notably Mark of the Unicorn, makers of the high-end *Performer* sequencer and *Professional Composer* notation generator—have made it quite clear they have no intention of making their products compatible.

resets all the patterns to start together. There is also a tempo control with a Range Bar that, like the intensity controls, defines either a single value for the tempo or a range of values over which the tempo can be varied.

Also in this box is one of *M*'s most powerful features, the "conducting" grid. *M* lets you assign any of the program's variables—pattern length, note order, pattern group, tempo, sound choice, transposition, orchestration, intensity, density, duration, articulation and/or accent—to the X or Y axis of this grid, in either a positive or negative direction. Holding the mouse button and moving the mouse around the grid changes whichever variables you have selected, by jumping from one variable box to the next or, in the case of tempo, moving smoothly over the range selected in the Global Control window. As many variables as you like can be assigned to each axis, so mouse movements can have very dramatic effects.

Here's an example of how the conducting grid might be used. Suppose you set it up so that intensities increase as you move to the right, the tempo increases as you move to the left, density increases as you move upward and transposition and articulation increase as you move down. Now if you put the mouse at the upper right corner of the grid and click, the patterns will play slowly, with maximum intensity, few silences, and short articulations, in a low key. Hold the mouse button and

move it downward, and the music becomes more legato, with more rests, in a higher key; while moving it to the left speeds the music up and makes it softer.

The Global Control window also has an icon marked "Movie." Clicking on this icon causes all the MIDI information being generated by the program to be stored on disk as a MIDI File, where it can be used in

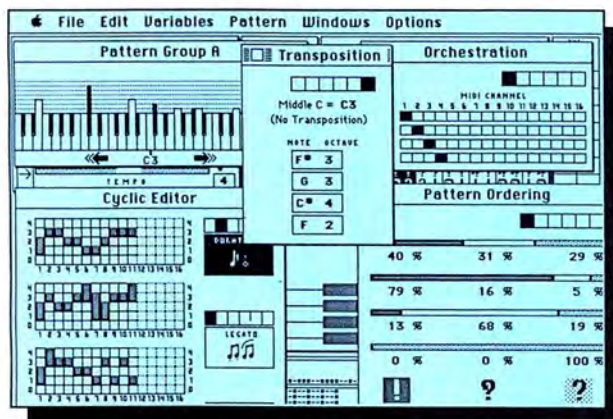
other programs, such as *Jam Factory* and Opcode Systems' *Sequencer* (see sidebar).

Last, but certainly not least, is the Input Control System. This turns the MIDI keyboard into a controller for the entire program, by assigning specific functions to specific keys or combinations; for example, hitting middle C starts the music playing. Other keys turn individual patterns on and off, access snapshots, or change any variable. You can even adjust the tempo in real time by "tapping" a low F in rhythm.

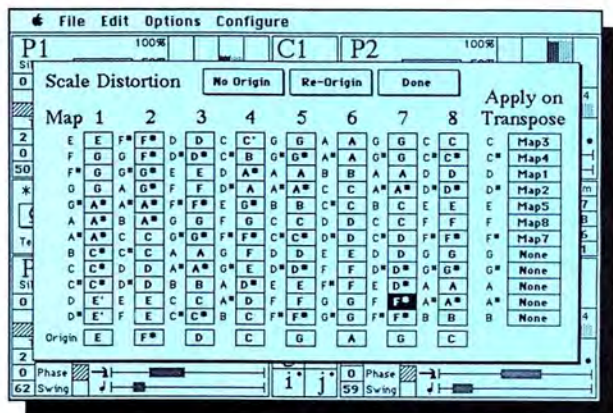
That, with a lot left out, is *M*. Now to thoroughly confuse you, we'll take a look at *Jam Factory*.

## WHAT JAM FACTORY DOES

*Jam Factory* contains many of the features just described, but, generally speaking, works more with MIDI data coming into the program in real time. There are four Players (roughly equivalent to *M*'s Patterns), each of which can handle incoming data and instantly and continuously generate variations on it. That means up to



*M*, with various editing windows open. All windows can be worked in at the same time, while the music is running.



*Jam Factory* showing the Scale Distortion window.

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*MACazine*)

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## Music Between the Keys

four different musicians can be feeding information to the program at the same time.

The variations are produced by the program using a statistical process known as a Markov chain. The computer analyzes the musical lines to determine a table of probabilities (called a "transition table") of any given note being followed by another given note. For example, if you feed the program an ascending C-major scale, the computer will consider the probability of an F following an E to be 100 percent, while the probability of an E following an F would be zero. On the other hand, if you play an ascending *and descending* C-major scale, both of those probabilities become 50 percent.

It can get more complicated than that: the program also generates transition tables of order 2—in which the table reads *two* events and determines the probability of an event to follow—and even orders 3 and 4 (the higher the order, the tougher the calculations become, and the closer the variation will adhere to the original); and you can instruct the Players as to how to weight the various tables when they are computing their variations; for example, 30 percent of the time follow the order 1 table, 60 percent, the order 2 table and 10 percent, the order 3 table. Since the program treats pitches and durations as completely separate information, you can set up different weightings for each. You can also edit the data you've entered into a Player, and change or remove individual notes and/or durations, and even put in or delete MIDI program changes.

There is a "swing" parameter for each Player, which shortens or lengthens alternate notes. A MIDI keyboard can be used to transpose the music or to perform various control functions, similar to *M*, but in *Jam Factory* these functions can be switched on and off for each Player. In addition, the transposition function can employ a feature called Scale Distortion, which lets you not only specify a key to transpose into, but also a mode. The definition of the mode can be anything you want: diatonic, whole-tone, chromatic

clusters or something completely off the wall.

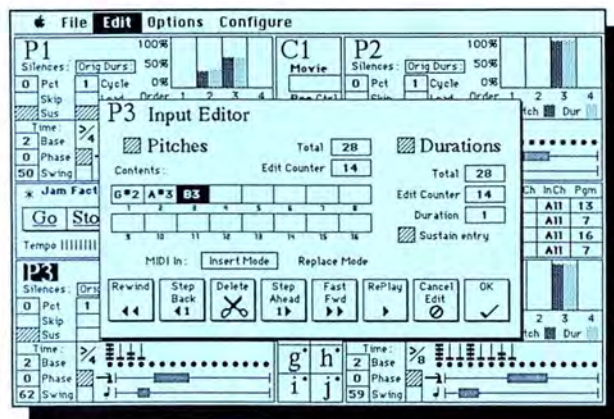
The MIDI output of the running program can be stored as a Movie, which can be saved as a MIDI File, and MIDI File data can be input to the Players as well.

### POWERFUL YES, EASY NO

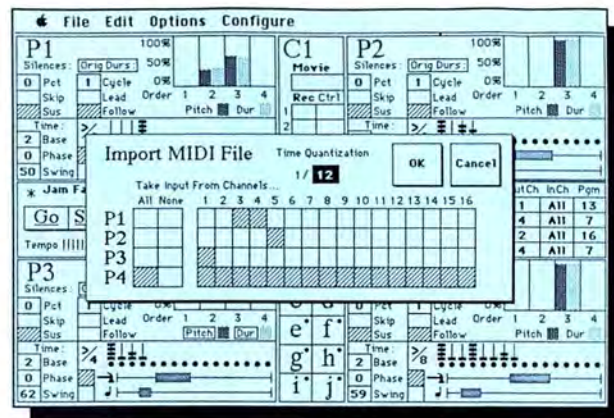
*M* and *Jam Factory* may be the only Macintosh applications you ever encounter that you ever open for the first time and have absolutely no idea how to proceed, unless

you've read the manual. This does not mean the Mac interface has not been adhered to (it has been, and quite well under the circumstances)—it means that there is simply far too much information on the screen and too many options available to absorb immediately.

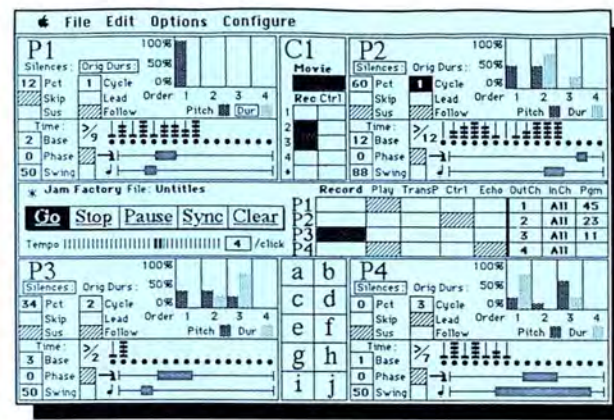
The power of these programs makes itself evident as soon as you start, but along with that power comes a certain, for lack of a better term, responsibility. If you're just interested in having fun, then you



*Jam Factory* showing the pattern-editing window.



*Jam Factory* with the window for importing and configuring a MIDI File.



The main screen of *Jam Factory*. If anything, less obvious than *M*'s main screen.



can click and point and play with various sections of either of the programs until you get bored—which depending on your tolerance for pattern-oriented music, may not take very long. On the other hand, if you want to do something serious with one of them, something that you'll want to be able to re-create the same way at another time, you really have to know the programs quite well.

In part, this is because you can't just disable those parts of the program that you don't want to deal with or don't understand—all of them are always running, and they are very often interacting with each other in ways that might not be obvious. For example, *M*'s Cyclic Editors are always doing something to the patterns, whether you've told them to or not. You can turn them off by setting their lengths to 1, but you have to understand the concept behind them fairly well before that solution becomes apparent.

The manuals, which each run about 60 pages, describe all of the functions of the programs, but don't do much more than that, and hence are rather inadequate to the task of explaining what these programs are really about, or even where you should begin. Somewhat more helpful are the demonstration files provided for each program (complete with a set of patches for a Yamaha TX 816—or four DX7s—which you can use if you have Opcode's DX/TX librarian program), but even these give only the barest hints as to the programs' potential.

Both programs are heavily copy-protected, but there is provision for installing them on a hard disk. [*Editor's Note: As usual, this "feature" has cost them each a mouse in the ratings.*] There is a bug in that procedure, however: if you install either program inside an HFS folder, then the next time you try to boot it, you will get a System crash. You must instead install the program directly on the desktop and then, if you like, you can move it into a folder. A few other minor bugs were found, but presumably they will be cleaned up shortly. (The review copy of *M* was numbered rev 0.94, and *Jam Factory* was 0.91). The product was released

and readily available in stores throughout the country in these versions. [*Editor's Note: By the time you read this, M and Jam Factory should both be available in version 1.0. The prices will change, too: to \$200 and \$150 respectively.*]

Although they are probably the most versatile music-composition programs ever devised for any computer, *M* and *Jam Factory* lend themselves best to creating a specific kind of music: that which uses repeating patterns to create textures, and in which the elements of the patterns are changed, either gradually or suddenly, to create movement and tension. A lot of modern music fits this description: The estimable Wendy Carlos was quoted recently as saying, only partly in jest, that these programs "make me sound like everybody else."

You could write all of Philip Glass' "Einstein On the Beach" pretty easily with either one of these programs, but you could never compose a Chopin prelude, or even a Bach fugue. What many people still consider the primary criteria for calling something a piece of music—a recognizable melody, formal harmony and movement from point A to point B—are actually quite difficult to accomplish with this software.

A more subtle limitation, which makes itself felt only after you've used the programs a while, is their lack of timbral control, so that gradual changes in timbre within a pattern are almost impossible. Synthesizers can respond to MIDI controller information to adjust brightness, vibrato, attack time or other individual elements of the sound, but *M* and *Jam Factory* will not handle these commands; instead, the only way to change timbre is with brute-force MIDI program changes.

The ability to take performances from these programs and use them as raw material in a more conventional sequencer is a big plus, but unfortunately the one sequencer that currently accepts MIDI Files does not have exceptional editing capabilities, which is exactly what is needed to deal meaningfully with the files created by these programs.

How you feel about *M* and *Jam Factory* will probably be closely related to your reaction to the music of composers like Glass and Steve Reich: If you like it, you will love these programs. If, on the other hand, your reaction to it is more along the lines of "mindless drivel," then *M* and *Jam Factory* are probably not for you. ☞

PAUL D. LEHRMAN IS A MUSICIAN, WRITER AND MAC FREAK WHOSE REVIEW OF *MIDIBASIC* APPEARED IN THE AUGUST 87 ISSUE. HE IS NOT ASHAMED TO SAY HE DISLIKES PHILIP GLASS'S MUSIC.

#### MACUSER RATING

### Jam Factory ☺☺☺

Follows Mac Interface	■ ■ ■ ■ □
On-Screen Help	None
Printed Documentation	■ ■ ■ □ □
Performance	■ ■ ■ □ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ □ □

**Comments:** Fascinating and complex program for manipulating MIDI data in real time. **Best Feature:** If you like the kind of music it makes, it can keep you entertained for hours, nay, months. **Worst Feature:** Absolutely impossible to figure out without a thorough reading of the manual and lots of practice. **List Price:** \$150. Requires 512K+, MIDI interface and MIDI synthesizer; four synthesizers or one poly-timbral synthesizer recommended. Published by Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. Copy protected.

#### MACUSER RATING

### M ☺☺☺

Follows Mac Interface	■ ■ ■ ■ □
On-Screen Help	None
Printed Documentation	■ ■ ■ □ □
Performance	■ ■ ■ □ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ □ □

**Comments:** Fascinating and complex program for creating music and manipulating MIDI data. **Best Feature:** If you like the kind of music it makes, it can keep you entertained for hours, nay, months. **Worst Feature:** Absolutely impossible to figure out without a thorough reading of the manual and lots of practice. **List Price:** \$150. Requires 512K+, MIDI interface and MIDI synthesizer; four synthesizers or one poly-timbral synthesizer recommended. Published by Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. Copy protected.

# Coming of Age

**JustText matures into a strong typesetting program with a little help from its friends.**

THE FIRST (AND LAST) *MACUSER* review of *JustText* appeared in the December 1985 issue—soon after *JustText* first saw the light of day. Since then *JustText* has matured and changed considerably. (If you've just tuned in, *JustText* is a program much like professional typesetting software, with the added benefit of supporting PostScript—a page description language that works equally well on a LaserWriter and a high-quality Linotronic.) *JustText* is now a very sophisticated tool for desktop publishers who want to exploit the power of PostScript.

## POSTSCRIPT STRATEGY

PostScript is hot, especially since Adobe and IBM cozied up. Several Macintosh programs are now creating or allowing users to import Encapsulated PostScript (EPS) files, including *Word 3.0* and *PageMaker 2.0*. (EPS combines the power of PostScript code with an on-screen image of what the code will produce on paper.) On the surface, it seems that *JustText* comes out a poor man's caviar when compared to *Word* and *PageMaker*. Doug Clapp, in the March 1987 issue of *MacUser*, commenting on *Word 3.0*'s ability to

include embedded PostScript, boldly stated: "So much for *JustText*." It isn't quite so simple.

## JUST ABOUT THERE

*JustText*, though far from perfect, has adopted a unique approach to the interface between the Macintosh and PostScript. Initially, the user types in text and marks it up with typesetting codes (for example, {f4} specifies that the type be Times Roman; {p12} creates 12-point type). This document is converted by *JustText* into PostScript then you download it to the printer. The PostScript version can be viewed and saved as a separate file. More importantly, *JustText* generates "pure" PostScript. This is in sharp contrast to the approach of other programs that rely on interpretive files such as *Laser Prep* or *PageMaker's Aldus Prep* which establish elaborate private routines that convert the Mac's QuickDraw routines into PostScript. These routines are themselves in PostScript, but they so distort and redefine the PostScript environment that the coded versions of your original files become nearly impossible to read. If you have ever used Command F to create a PostScript file of

your *PageMaker* or *MacWrite* document, you have seen examples of this. *JustText*, on the other hand, translates text marked up with typesetting codes into a PostScript program that conforms exactly to Adobe's file structuring conventions. With some knowledge of PostScript

**BY GREGORY WASSON**



## Coming of Age

### Program 1

```
{ps} 0.5 setgrayQQ  
{f7}{p58}MacUser{ql}
```

Gray text can be substituted for black using this program.



Figure 1: You can set the gray scale of your type with only a few simple commands.

added section on PostScript. Here's how to use the power of these features.

#### {PS} I LOVE YOU

Incorporating PostScript passthroughs, that is, placing bits of PostScript into a *JustText* document, is a relatively easy task. The {ps} command tells the program that what follows is already in PostScript and not to be interpreted. A simple example, suggested in the manual, prints text in gray rather than black. To do it, choose NEW from the File menu and type in Program 1.

The first line tells *JustText* not to interpret what follows when it sends the job to the LaserWriter (or any other PostScript printer). Setgray is a PostScript operator that sets the gray scale—in this case to 0.5, which is a level halfway between 0 (black) and 1 (white). The QQ indicates that this is the end of the PostScript

passthrough and that anything that follows should be interpreted by *JustText* into PostScript. Line two is *JustText*-coded text that prints the word "MacUser" 58-point {p58} Times Bold Italic {f7}. (See Figure 1.) Simple, but not much fun.

#### LOGGING ON

Let's say you want to create a masthead/logo for your newsletter. This example illustrates the rotation of text and the creation of outline type—a very useful technique since the usual Macintosh special-effect styles (such as outline and shadow) are not directly accessible in *JustText*. Figure 2 shows the final output.

If you are still in *JustText*, close your file and choose NEW again from the File menu. Type in Program 2. Line 1 is the first PostScript passthrough. It tells the printer to move to the coordinates 72 500 on the page and to translate them to the origin (0 0). gsave saves this page set-up or orientation through the rest of the job. 90 rotate rotates the page 90 degrees clockwise. The QQ ends the passthrough. Line 2 is *JustText* coding that establishes the column width and depth. In this case the column is 17 points high and 39 points wide. The {cj1} causes a jump into the column just defined. Without it, the default column, which covers most of the page, remains in effect. Line 3 tells *JustText* to set the text (THE) in 27-point Avant Garde Demi. The command {f} forces the

justification of the text string across the column. Line 4 begins the second PostScript passthrough. grestore restores the page set-up as saved by the gsave in the first line (that is, it cancels the rotation). The font is then selected and set to 54-point. Although we set Avant Garde Demi as the font in line 3 with {f21}, this setting does not carry over into the passthrough. Without this second explicit font setting, our text would come out in Times Roman. Line 5 moves us to 0 0, takes the text string ELNA, creates outlines of the letters (true charpath) and then draws the outlines in black (stroke). Line 6 moves back to 0 0, then moves 138 points (the approximate length of the text string ELNA) to the right along the X axis. The text string NEWSLETTER is printed at this point.

The greatest advantage of mixing *JustText* and PostScript in this example appears in lines 2 and 3. First, it's easier to type in {f21} (or select it with the mouse via the Font menu) and {p27} than to type in /Avant-Garde-Demi findfont 27 scalefont setfont. Second, and more important, *JustText* calculates the letter spacing required to justify the text string THE within a defined space. You don't have to figure out that the PostScript should read: -1.580 0 (THE) ashow. *JustText* is great for those of us who aren't all that hot at math. As the manual says, most users quickly discover that *JustText* can write better PostScript than they can—and do it faster.

This last point reveals a very useful aspect of *JustText*: its role in the development of PostScript programs and as a way to learn PostScript. If you just can't figure out how to write the PostScript for some text manipulation, chances are that *JustText* will be able to write it for you. Do you need to know the kerning value to tighten up the "W" and the "a" in a text string that appears in your PostScript program? There is a way to see the PostScript generated by *JustText*. With this ability you can learn the complex ins and outs of programming such manipulations. And if you're not interested, *JustText* will do the hard stuff for you.



Figure 2: Special effects, such as outline and rotation of text, help in the creation of logos and mastheads.

### Program 2

```
{ps} 72 500 translate gsave 90 rotateQQ  
{c1,17,0,0,39}{cj1}  
{f21}{p27}THE{fj}  
{ps} grestore AvantGarde-Demi findfont 54 scalefont setfont  
0 0 moveto (ELNA) true charpath stroke  
0 0 moveto 138 rmoveto (NEWSLETTER) showQQ
```

This example shows how text can be rotated.

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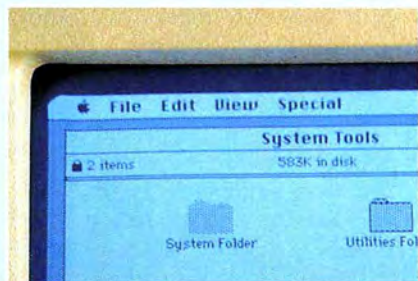


Image deteriorates near the edge of another company's FPD screen.

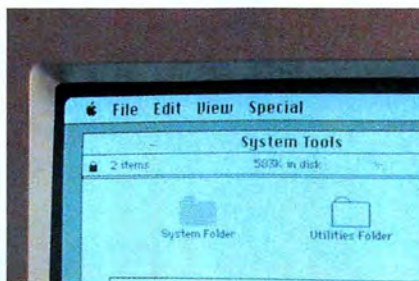


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# Coming of Age

## THE JUSTTEXT PROLOG

As useful as the {ps} command is, the ability to write and set “prologs” (a series of procedures downloaded to the printer at the start of the *JustText*-generated PostScript file)

opens the door even wider. These prologs handle various aspects of page composition, such as rotation, underlining, page numbers—any procedure you want that will affect every page.

If you are in *JustText* close the current job and select NEW. An empty window appears. Access to the prologs is gained through the PostScript menu. Figure 3 shows this menu pulled down atop the empty window. Select the menu item called MAKE POSTSCRIPT WINDOW. A dialog box will appear. Click OK. After a few seconds you'll see a new window with a prolog at the top (see Figure 4). This is the Default Prolog for a standard 8½ by 11 inch page, portrait orientation. Unless it is replaced or modified as described later, it will be sent to the printer when you download your *JustText* file. The lines beginning with %% are comments and don't concern us here. You can delete them if you want. What remains is seen in Program 3.

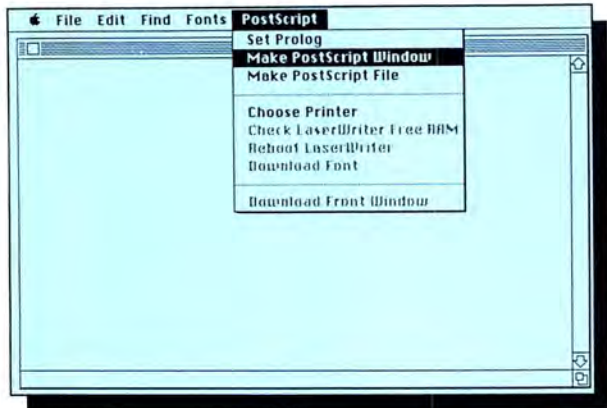


Figure 3: To access PostScript's default prolog, you must close a current job, select NEW then select MAKE POSTSCRIPT WINDOW from the PostScript menu.

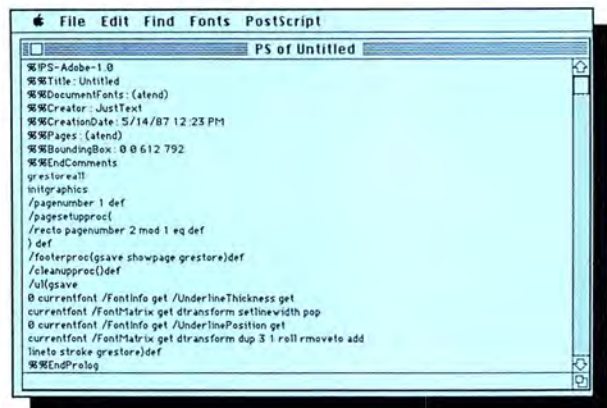


Figure 4: This Default Prolog for a standard 8½ by 11 inch page, portrait orientation, can be used as a starting point in customizing typesetting jobs.

## Program 3

```
%%!PS-Adobe-1.0
grestoreall
initgraphics
/pagenumber 1 def
/pagesetupproc{
/recto pagenumber 2 mod 1 eq def
} def
/footerproc{gsave showpage grestore}def
/cleanupproc{}def
/ul{gsave
0 currentfont /FontInfo get /UnderlineThickness get
currentfont /FontMatrix get dtransform setlinewidth pop
0 currentfont /FontInfo get /UnderlinePosition get
currentfont /FontMatrix get dtransform dup 3 1 roll rmoveto add
lineto stroke grestore}def
%%!EndProlog
```

This is the Default Prolog for a standard 8 ½ by 11 inch page in portrait orientation.

%%! signals the printer that it is receiving a valid PostScript program. All PostScript files must begin with this convention. *grestoreall* repeatedly “pops” the graphics state until it reaches the bottommost one. It has the effect of “cleansing” or “purging” the graphics state of any rubbish left by a program that downloaded the QuickDraw-to-PostScript conversion routines that are stored in the *Laser Prep* file. *initgraphics* restores all of the default values of the current graphic state. The combination of these two operators prevents “mirror writing.” But to free the memory taken up by any previously downloaded prep files (which can amount to 70K of the 171K available to the LaserWriter at startup) you must reset the LaserWriter by turning it off and on or by resetting it with the appropriate command from *JustText*'s PostScript menu.

*/pagenumber 1 def* indicates the page number of the following PostScript section of your document. It can be reset within *JustText* with the {pn} command, if, for instance, your document began on page 8. The default is 1.

The next section, */pagesetupproc*, generally establishes nonprinting values for each page such as scale or orientation. It is generated at the beginning of every page. In the above Default Prolog it is defined as

- General Ledger
- Accounts Receivable
- Accounts Payable
- Inventory Management
- Order Entry
- Financial Analysis
- and more . . .
- Complete!

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## Comma Comment

Hint: There is a common error I've noticed with the {ps} command when shuttling back and forth between *JustText* and PostScript. Remember that while *JustText* does place a comma between page coordinates (such as 0,0), PostScript does not! If you write 72,0 moveto in the passthrough you'll receive an error message.

/recto pagenumber 2 mod 1 eq def. This line is simply defining a recto page as having an odd page number. If the current page has an even page number then it is not a recto. This weighty issue is determined by dividing the page number (which is automatically supplied to the pagesetupproc by *JustText*) by 2; if the remainder is 1, the page is a recto. That's all the line—and therefore the pagesetupproc—is doing in the Default Prolog. You could delete the line without harm. But if you ever need to let the printer's PostScript interpreter know that you're dealing with a recto (for instance, you want page numbers to be printed on the lower right of recto pages), leave it in.

The next procedure, the footerproc, is defined as gsave showpage grestore. *JustText* automatically places footerproc at the end of every page. You don't have to worry about it. As defined here, it saves the current graphics state (gsave), it tells the printer to print the page (showpage), and then restores the saved graphics state (grestore). Its main function in the Default Prolog is to print the page. Its ultimate purpose, though, is to set up the constant printing elements of each page, such as crop marks or page numbers.

/cleanupproc does nothing in the Default Prolog (it's undefined {}), but can be put to good use, as we'll see later. Unlike the footerproc, it is generated only at the end of the document.

The procedure /ul determines the proper line thickness and position of underlining with respect to the current font and point size, so that any time you use the *JustText* codes {su} and {ux}, the resulting underlines will be the most appropriate.

### CUSTOMIZING A PROLOG

This is all great fun, you say, but what good is it?

Fortunately, *JustText* includes a

way to modify the Default Prolog, and in fact the program comes with several customized prologs already saved for you on disk. There is also, in fact, a default prolog for pages in landscape orientation. But a serious programming error renders it useless. Examining the problem and fixing it will introduce you to the basics of writing your own prologs.

If you have ever tried to print in landscape mode with *JustText* by using the Page Set Up menu item in the File menu, you'll understand the problem. Although the first page may come out fine, subsequent pages come out with the text continuing to rotate. The final output, if you were to pile the pages on top of one another, would resemble a crazy spiral galaxy of letters. To fix this, first open a new document and select LANDSCAPE or WIDE in the Page Set Up dialog box. Pull down the PostScript menu and select MAKE POSTSCRIPT WINDOW. A new window with the landscape prolog will soon appear. The important parts to notice for the purposes of printing in landscape orientation are the pageset-upproc and the footerproc. Buggy sections of the default landscape prolog are shown in Program 4.

The pagesetupproc first defines a recto as already described. It then tells the PostScript interpreter in the printer to go to the bottom right corner of a standard letter-size page and make that point the origin (0 0)

## Program 4

```
/pagesetupproc{
/recto pagenumber 2 mod 1 eq def
612 0 translate
90 rotate
} def
/footerproc {gsave showpage grestore}def
```

The default landscape prolog has some bugs.

of the coordinate system. The page is then rotated 90 degrees clockwise, thereby placing it in landscape orientation with the origin of the coordinate grid back in the lower left corner of the page. But look what happens at the end of the page when footerproc is called up. The procedure performs a gsave (that is, it preserves the current graphics state which, remember, contains a 90 degree rotation). The page is printed (showpage), and the graphics state preserved by gsave is returned by the grestore. The pagesetupproc is called up again for the next page and performs another 90 degree rotation, but it is 90 degrees from the last rotation that was saved by gsave in the footerproc. The end result is that our page has now rotated 180 degrees! And the point of origin is being constantly recalculated each time pagesetupproc does the line 612 0 translate. And round and round we would go, except that there is a simple fix. In the pagesetupproc insert a gsave just before the line 612 0 translate. Now go down a few lines to the footerproc and delete its gsave. I'll let you reason it out, but it does work.

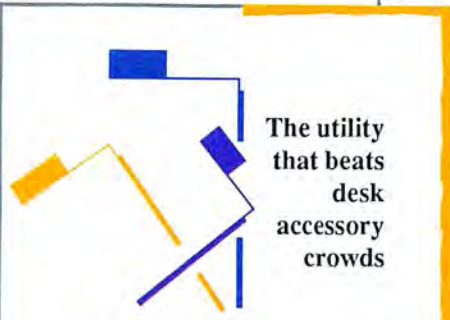
### THUMBNAIL SKETCHES

One of the neatest "canned" or customized prologs supplied on the *JustText* disk (at least if you bought version 1.0i) is called the Thumbnail Prolog 4. It prints four document pages as "thumbnail sketches" on each page, with facing pages opposite each other. It shows just how powerful the Prolog feature can be with only a little fiddling in the pagesetupproc and cleanupproc. See Program 5 for the code and Figure 5 for the output.

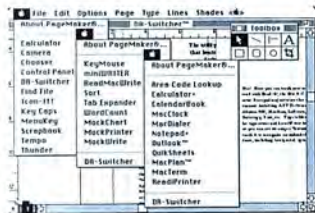
Without going into complete detail, the Thumbnail Prolog works like this: When the pagesetupproc encounters a discreet page in your document (remember that *JustText* always supplies this procedure with the current page number), it assigns it a relative page number (/relativepn pagenumber 4 mod def). If the current page is 4 or a multiple of 4, then the relative page number would be 0, and the third line of the prolog proper will perform a showpage. If



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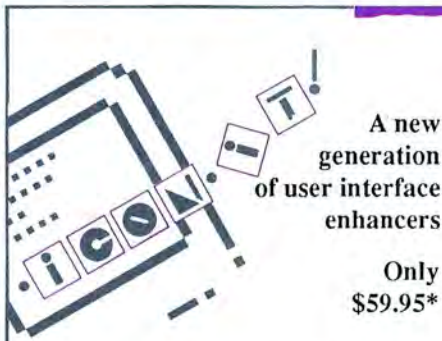
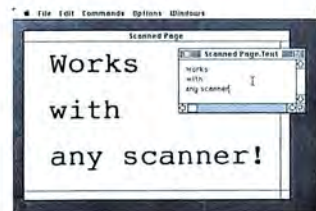
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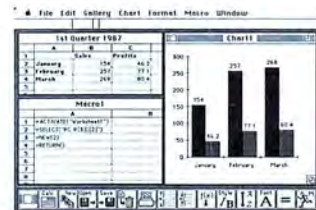


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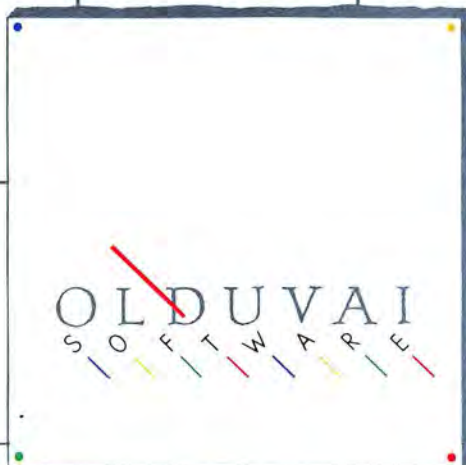


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# Coming of Age

the page number is less than 4 or not a multiple of 4, then the Prolog scales the pages by half (0.5 0.5 scale), determines new coordinates for each thumbnail page, strokes a box about each reduced page and eventually prints four up when a multiple of 4 is reached. Should your document be only three pages long, it still prints, because cleanupproc has been defined to execute a showpage when it appears at the end of the document.

## ICONOGRAPHY

Many people are experimenting with the design of prologs. Computer Literacy Press, a small computer publishing house in Berkeley, CA, does outstanding work with *JustText*. Arthur Luehrmann, a co-owner of the business, created the following prolog, which allows the placing of marginal icons next to paragraphs in a document (see Program 6 for the code and Figure 6 for an example). This Icon Prolog is particularly interesting, because it

does not actually modify any of the standard procedures in the Default Prolog.

The prolog begins by defining a variable showicon as false. The variable icon redefines showicon as true when called from within *JustText* in a PostScript passthrough (`{ps}` iconQQ). A procedure called `/mto` is created. It is simply the usual PostScript system `moveto` command. The `moveto` command, on the other hand, has been redefined as a procedure: first to perform a `moveto` and then to draw an icon (the drawicon procedure defined at the end of the prolog).

How does it work? It's quite simple. *JustText* always executes a `moveto` command when advancing to a new paragraph. But we have redefined `moveto` to do a `moveto` and to check to see if the icon passthrough has been made. If it has, then the prolog moves to the beginning of the paragraph and performs the procedure `drawicon` which draws an icon (in this case a shadowed check

mark) in the left margin. The details of drawicon are unimportant; any specially designed graphic of your choice could be substituted. It is important, however, to retain the `gsave...grestore` couplet in order to return to your place at the beginning of the paragraph. And the line `/showicon false def` at the end of drawicon must also remain or you'll end up with more icons than a Greek Orthodox church.

## MAKING IT WORK

Creating prologs or having some canned ones available doesn't mean they execute automatically. But how do you use them? In the PostScript menu there is an option called Set Prolog. When you have a prolog finished and saved to disk or are ready to use one provided for you, choose this option. A dialog box appears asking you to open a file, choose the prolog you want to use and click OPEN. From that moment on, until you quit *JustText*, the selected prolog will be inserted at the

## Program 5

```
%% Thumbnail prolog
%% Written by Bill Bates

/pagesetupproc{
/relativep n page number 4 mod def
relativep n eq {showpage}if
/column relativep 2 mod def
/row relativep 2 idiv def
grestoreall
initgraphics
0.5 0.5 scale
612 column mul 792 792 row mul sub translate
gsave 0.1 setlinewidth 0 0 moveto 612 0 lineto
612 792 lineto 0 792 lineto closepath stroke grestore
}def

/footerproc{def

/cleanupproc{showpage}def
```

This little program, called Thumbnail Prolog 4, comes with *JustText*. It prints four document pages as small sketches on each page.

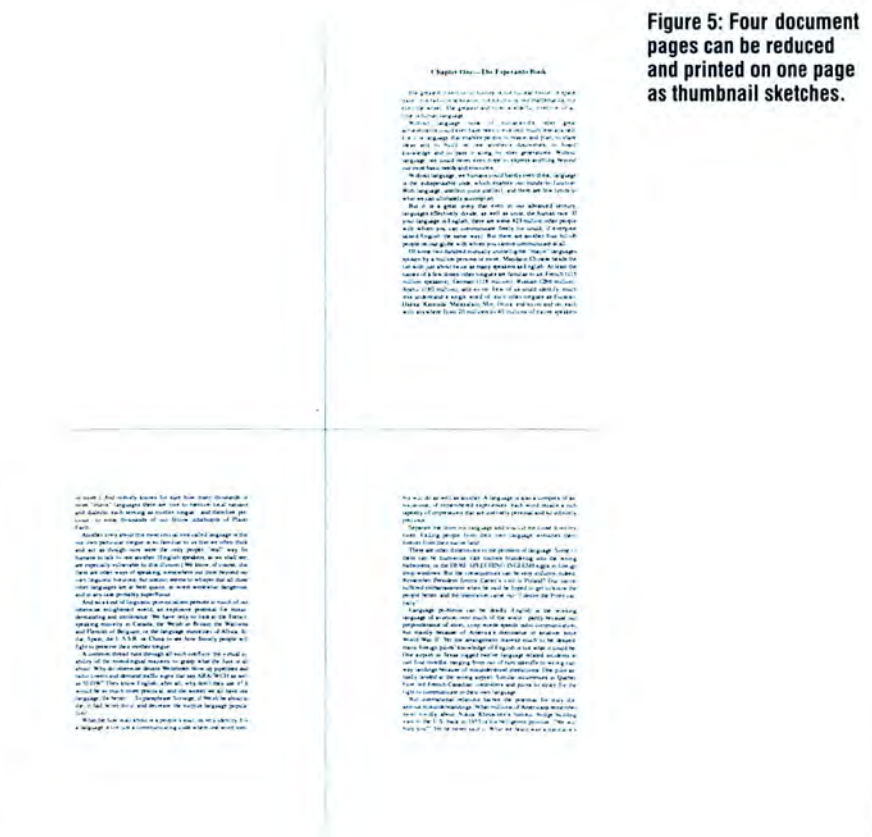


Figure 5: Four document pages can be reduced and printed on one page as thumbnail sketches.

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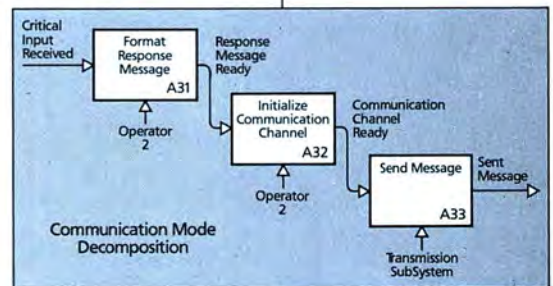
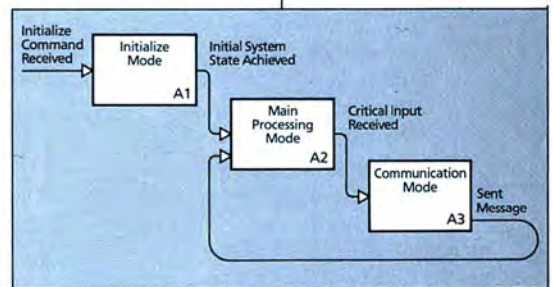
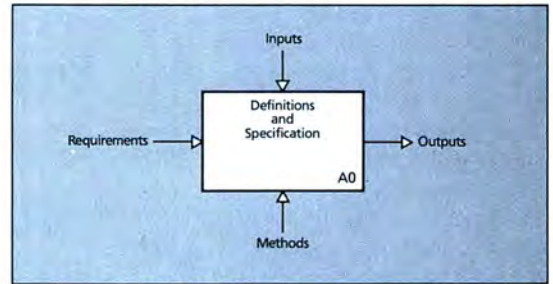
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## Coming of Age

top of your file (or you can cancel the selected prolog by choosing SET PROLOG and clicking on CANCEL). To check this out, Make a PostScript window. Don't panic if you don't see your customized prolog. *JustText* always generates the Default Prolog. You'll need to scroll down a few lines to spot yours.

### AND NOW THE BAD NEWS

Although this isn't a review, there are several developments *JustText* users might be interested in. The current version is 1.0i. Version 1.1 has been prematurely announced by various Mac magazines since 1985! There is no such creature now. Whenever it finally appears, it will not run on an unenhanced 512K. The most probable new big feature will be the ability to use any downloadable font. Page preview might be in the works. Some minor changes will have to be made on prologs written for version 1.0i.

In the meantime, version 1.0i is all there is. The list cost is \$195. Make very sure you have the manual dated June 12, 1986. It is vastly superior to the original manual and contains invaluable character code charts for the Symbol font, Zapf Dingbats and all of the characters available in any LaserWriter typeface. The various PostScript-related features are also better documented.

The original review in *MacUser* granted *JustText* a 4-mouse rating for support. Knowledge Engineering, unfortunately, hasn't always lived up to this standard. No early *JustText* owner that I know has ever received a notice of upgrades or of the newer manual. That's a shame, because the program itself has evolved during the last 2 years into an excellent product. I learned of the new manual and version 1.0i only months after their release by spotting them in a computer store. I suspect that I am not alone in this experience. To be charitable, Knowledge Engineering is virtually a two-person company. I once worked in a small office and know the hassles involved. But the support problem does mar an otherwise valuable tool.

So much for *JustText*? I don't think so. *JustText*'s sane approach to

PostScript makes it faster, more precise and more versatile than products like *Word* or *PageMaker*. *JustText* might be thought of as a textual equivalent to *Cricket Draw*. The latter provides a PostScript window that enables you to follow and study the PostScript of your graphics. *JustText* does the same for text—a dimension lacking in *Word*. People looking for a unique alternative in the expanding field of desktop pub-

lishing software and those desiring to learn PostScript or improve their programming skills will find this software a welcome helpmate. ☒

---

GREGORY WASSON IS A FREELANCE DESKTOP TYPESETTER WHO LIVES ON A MOUNTAINTOP IN THE MIDDLE OF A REDWOOD FOREST NEAR SANTA CRUZ, CA. HE'S A FORMER GRADUATE STUDENT IN GREEK AND LATIN.

## Program 6

```
%!                                     )def
%%Title: ICON PROLOG                  /drawicon{
%%Creator: Arthur Luehrmann           gsave
%%CreationDate : May 3, 1987           currentpoint translate
                                        -84 -75 translate
                                        3 51 19 31 66 77 66 57 19 0 5 0 31 path fill
                                        11 59 27 39 74 85 74 65 27 8 5 8 39 path
                                        gsave
                                        .8 setgray fill
                                        grestore
                                        2 setlinewidth stroke
                                        grestore
                                        /showicon false def
/moveto{                                }def
  mto                                    /path{mto{lineto}repeat closepath}def
  showicon {drawicon} if
}def
/mto{
  systemdict begin
  moveto
end
```

**This prolog, written by Arthur Luehrmann of Berkeley's Computer Literacy Press, allows the printing of marginal icons next to paragraphs in a document.**

This is an example of using a specially created PostScript prolog to make certain things easy to do in *JustText*. In our recent computer books, we use many marginal icons to call the reader's attention to the task at hand: doing something on the computer, reading, answering questions, etc. We wanted a simple way to call for an icon within the *JustText* file without having to enter all the drawing instructions each time.

The solution? Put the drawing instructions in a PostScript procedure in the prolog. Then call the procedure when needed. Here is a sample of its use: A simple check-mark icon will appear just left of the beginning of the next paragraph.

The PostScript instruction *icon* (inserted into the *JustText* file as *(ps)icon()*) did the trick. Here's how it works: The call to *icon* merely sets the boolean value of */showicon* to be true. (It's normally false.) No icon is drawn at this point. But look at the *moveto* procedure in the prolog. It first calls *mto* and then tests the value of */showicon*: if the value is true, then *drawicon* is called and the icon appears. (After drawing the icon, the procedure resets */showicon* to false.)

In seeing how this all works, you need to know two important facts. First, *JustText* always issues a *moveto* command just before starting a new paragraph; the result is to move the current point to the left margin at the baseline of the first line of the new paragraph. Second, the *moveto* procedure defined in the prolog takes the place of the system *moveto*. The new procedure, in effect, captures any call to *moveto* coming from *JustText* (or anywhere else!).

Normally, you want the system *moveto* to be carried out. That's the purpose of the *mto* procedure defined in the prolog. It reestablishes the context of the system commands, then calls *moveto*, and finally restores the previous context.

The details of the icon are unimportant. You could substitute different drawing instructions and create whatever icon you want. You might have to translate the origin differently and possibly change the scale—especially if the PostScript for the icon comes from a drawing program, such as *Cricket Draw*. And you must definitely change all *moveto*'s to *mto*'s. But that should be all.



**Figure 6: An icon, in this case a checkmark, can be placed in the margin of a document to accentuate the text.**

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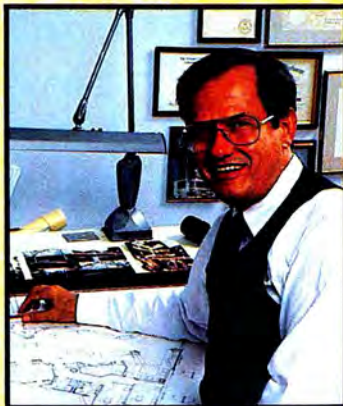
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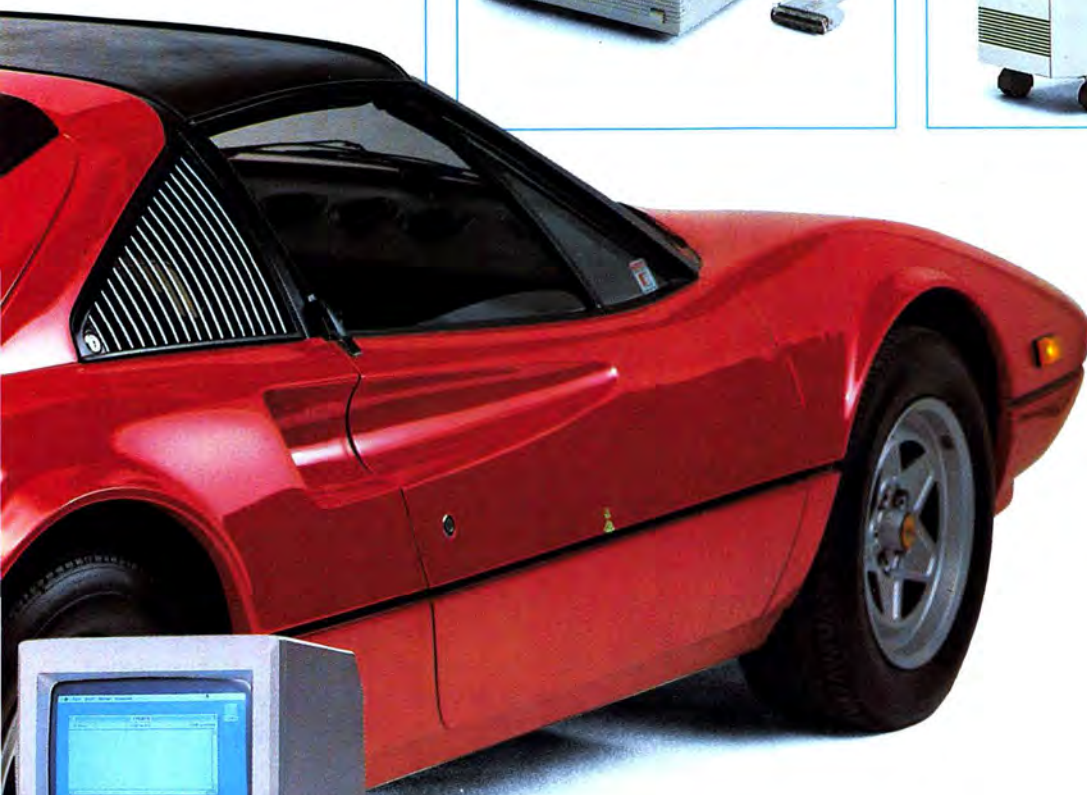
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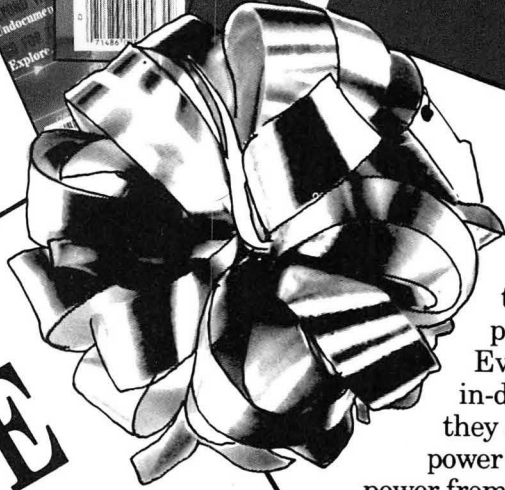


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by Dan Cochran

# Answers From the Mac Team

*Got a Mac problem? Something that you'd like explained? Something you can't find the answer for anywhere else? Apple's Dan Cochran will answer your questions every month in this space. When the questions are too tough for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!*

*Send your questions to Dan care of MacUser, 25 West 39th Street, New York, NY 10018. Dan will read all of your questions, but, unfortunately, he may not be able to answer individual queries.*

## COMPATIBILITY

**Q.** I am a new Mac Plus owner. The SE is in and the Mac II is on the way. What will happen to the Mac Plus? What is your honest professional opinion on this subject? The Mac Plus is a great machine and was Apple's flagship. Your answer may have a vital impact on my business, so tell me: What will become of the Mac Plus?

T & T TURTLE GRAPHICS  
CARMEL, NY

**Q.** I have a 512K Macintosh and an 800K external drive. I have been considering enhancing my Macintosh but I'm wondering, what are the advantages? If I don't upgrade will I be left behind as new software becomes available? I have also heard that the new 128K ROMs have been responsible for power supply failures. Is this true?

BILL FANNUCCI  
ARENA, WI

**A.** While these two questions aren't exactly identical they are representative of a very common genre of concern: "Will my current machine serve my needs and requirements in the future?" While there isn't one right answer for everyone, here are a few useful facts. You should be able to decide for yourself.

1. The Macintosh Plus has a very substantial installed base. Unless a software developer has a specialized application that requires huge amounts of memory (more

than 4 megabytes) or that requires color or expansion cards, they'd be foolish (in fact, they'd have to go out of their way) to ship an application that wasn't Macintosh Plus compatible. The Macintosh Plus owner is protected here by the simple yet compelling laws of economics.

2. The Macintosh SE offers improved performance, expandability and the convenience of an internal hard disk. But it's still a Macintosh. Properly behaved applications developed for the SE will run on the Macintosh Plus and vice-versa.

3. Some highly specialized applications developed for the Macintosh II won't run on either the SE or the Plus. If you are anxiously awaiting the latest and greatest computer-aided circuit design program for your Plus you might be out of luck. If I were a developer for this high-end market I probably wouldn't compromise and would design my program specifically for the Macintosh II. If I could get it to run on a Plus or SE, all the better. But I wouldn't lose any sleep over it.

4. Any piece of equipment you own is useful as long as you perceive it to be. My old AT&T push-button telephone pales technically when you look at the new cordless and cellular technology products today. But it gets the job done. Don't be misled or awed by new technology. If you've got a working solution to your problem you're better off than most people.

5. Yes—things will change. This is inevitable and desirable. Apple is committed to remaining the technology leader in the industry. We will occasionally have to sacrifice compatibility for new functionality and power. If we didn't you'd still be staring at a "A>" prompt on some funky monitor.

6. I've heard power supply problems blamed on a lot of things but never the new ROMs. Go ahead and upgrade to a Plus. While I wouldn't recommend that anyone go out and scrap their Plus because of SE technology, owners of older 64K ROM 128Ks and 512Ks will soon be left in the dust with respect to newer software. And most of the new, exciting Macintosh applications will only shine when they are used with 1-megabyte machines.

## DAMAGED DESKTOP

**Q.** I have recently come across a problem that is new to me and that I don't know how to correct. I have many documents on a System disk with MacWrite. Just a short while ago the disk suddenly became inaccessible through the desktop. If I boot the disk it will just keep cycling, but not open or display on the Finder. If I boot from another disk first it will cycle between the two. It will not open to the desktop

so that I cannot change the System or any other component. If I insert another disk and open it to a document, then insert the damaged disk, close the first and open the damaged one I can get to the documents, but if I quit the damaged document it will not return to the desktop but will start the cycling noises again and give me only a blank desktop.

L. JELF  
INGRAM, TX

**A.** Disks can occasionally become defective to the point where the best solution is to throw them away. But once in awhile, the Finder can get confused because of a bad desktop file. This is a special file that contains Finder-specific information which is required to display the disk and its contents on the desktop. A bad desktop file doesn't necessarily mean that the other documents on your disk are damaged. If you can still open your documents on your damaged disk as you describe, the first thing I'd do is to open them one at a time and do a "Save As" to another disk that's known to be good. This will at least protect your data if the second step happens to fail. You can now attempt to rebuild the desktop file. Boot your damaged disk while you simultaneously hold down the COMMAND and OPTION keys. Your Macintosh will attempt to reconstruct the desktop file. If this solution works your disk will appear on the desktop although your folders will probably have lost their names. But you'll be back in business.

## LINE COUNTS?

**Q.** In contrast to word processors on CP/M and MS/DOS machines, none of the programs for the Mac, as far as I know, counts the lines of a document. This is quite an inconvenience once the top of the document is off the screen, and whenever I want to know how many more lines can be accommodated on the page I am working on. Also, the Page Setup menu does not allow me to specify the number of lines per page. Why has the line count been so neglected on the Mac, and are there any known tricks to remedy the problem?

GEORGE KROTKOFF  
BALTIMORE, MD

**A.** If I stretch back far enough I can remember WordStarling away on my Zentec ZMS-80 micro. And I can vaguely remember the WordStar lines per page status field that constantly changed as I entered text. I also recall it as being an extremely useful indicator of how much more I had to type for a college assignment (especially if the end result of my efforts was tied to quantity, not quality).



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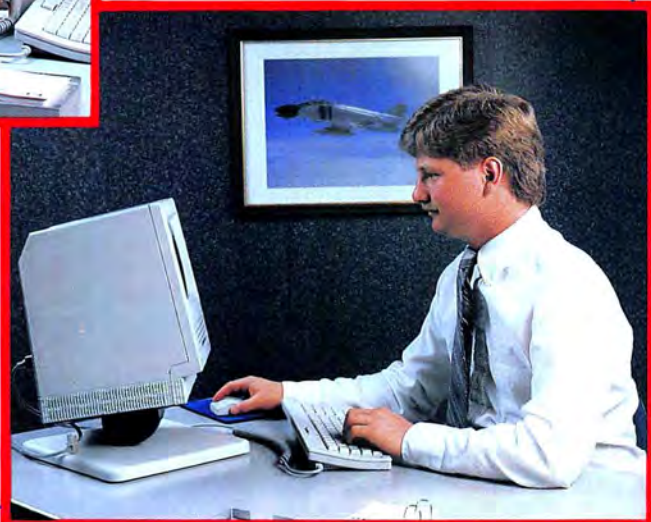
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In business environments where operators spend long hours in front of their computer, the Mac's small screen size and the low physical profile can cause physical discomfort and reduced productivity. A common solution to the low profile problem was to place the computer on top of a hard drive. This is no longer a solution for the Mac SE with its internal hard disk or the Mac Plus when used with a vertical hard drive or a file server.

Phone books, shoe boxes, and other creative ideas have been tried to bring the Mac up to eye level, but with little success.

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With most CP/M and MS/DOS word processing applications, the number of lines per page is simply a function of the size of the paper and the point size of the type. As I recall you had to tell WordStar's Configuration program both of these parameters or you could simply specify how many lines per page you desired.

The Macintosh doesn't restrict you to a single type size in each document. The headline could be in 48-point Helvetica. The subheadings might be in 18-point Zapf Chancery. The main body of the text could be in 12-point Times. Because of this flexibility in type size a lines per page count would be quite meaningless. What would a "line-count" of 20 really mean? Twenty lines of 12-point type? Ten lines of 24-point type? Or ten lines of 20-point type and five lines of 24-point? You get the idea. I suppose that a word processing program could tell you how many lines are left in a document assuming your existing Page Setup parameters and the type style you are currently using. But I don't know of any that do. In a single page document the white box in the vertical scroll bar can be used as a visual indicator of the remaining space available on a single page.

## MS BASIC PRINTING

**Q.** I enjoy your column very much and find your "plain English" explanations always enlightening even if they don't cover a problem of my own. I have been programming for some time with Microsoft BASIC 2.1 but have just run across this problem. I have made use of the ROM routines CALL TEXTFONT, CALL TEXTFACE, etc. in order to output a particular style of text to

the screen, but when I try to use the same commands in a printout (with LPRINT), the program seems to ignore these calls and only prints in what I call "typewriter type." Is there any way to print in, say, 14-point Venice, other than with a word processor? If BASIC can't access these routines for printout, what other language does? Will I have to learn C, Pascal, or assembly language? I figure if MacWrite can do it, it can be done.  
ROBERT TELLEFSEN  
NAPA, CA



**A.** The Microsoft BASIC LPRINT command simply sends ASCII character codes to the ImageWriter. As a result all you'll get is the ImageWriter resident font and font style that is currently defined. You can manipulate ImageWriter resident fonts and print using different ImageWriter type styles (bold, underlined, etc.).

These control codes are described in the ImageWriter Technical Reference Manual available from Addison-Wesley. If, however, you want to print Macintosh screen fonts you'll have to take another approach.

The following example code segment will output the string, "Hello," on your Image-

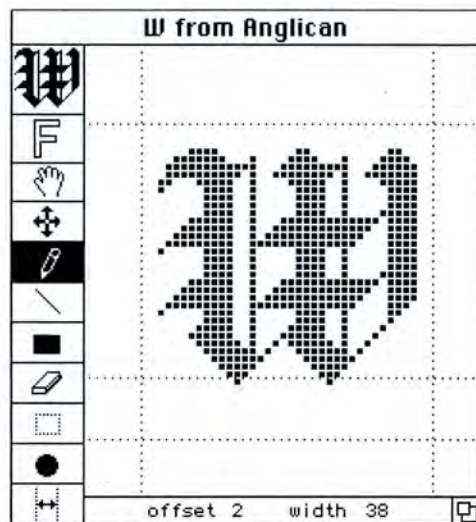
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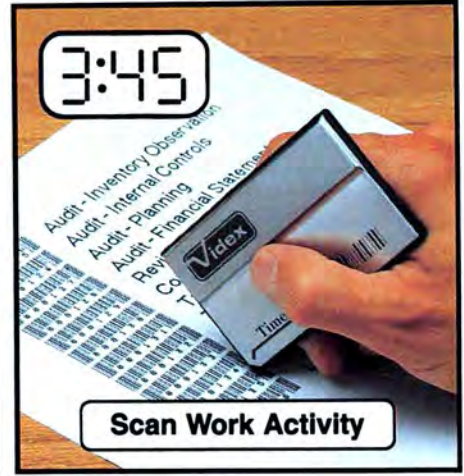
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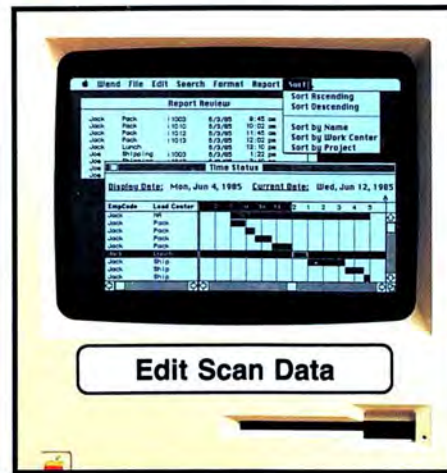
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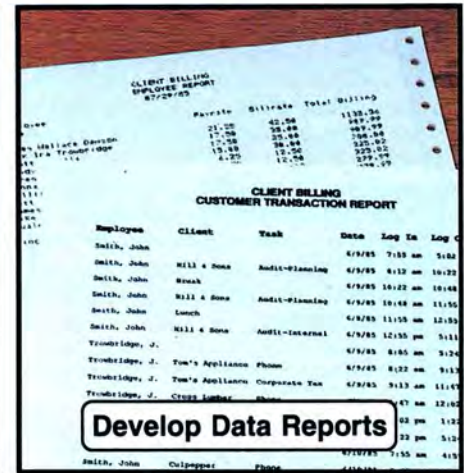
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Writer in 14-point Venice bold. Of course, the 14-point Venice font must be in your current System file. (This will only work with MS BASIC versions 2.0 and higher.)

OPEN "LPT1:" FOR OUTPUT AS #1

\*\* Open the ImageWriter for Output \*\* WINDOW OUTPUT #1

\*\* Make ImageWriter the output "Window"\*\*\*

CALL TEXTFONT (5)

\*\* Set Font to Venice \*\*

CALL TEXTSIZE (14)

\*\* Set Font Size to 14 point \*\*

CALL TEXTFACE (1)

\*\* Set Font style to bold \*\*

PRINT "Hello"

\*\* Buffer "Hello" to output file \*\*

CLOSE #1

\*\* Close output file and print \*\*

Thanks to the helpful folks in Microsoft's Technical Support Group for providing this solution.

TDDs

**Q** I just found your magazine and enjoy it very much. I work with the deaf, and after I bought my 512E I

wanted to use my Macintosh as a Telecommunication Device for the Deaf or TDD. So I bought Apple's 1200-baud modem and the MacTerminal program. But I could not get the system to work with the TDDs.

I believe the problem is because the line is not direct to the TDD, but the user at the receiving end (usually) must connect the telephone to the machine. Because this is the only application for which I need the modem, I had to return it and the program. My dealer does not know what to do to make it compatible with TDDs. Any ideas? I know there has to be a way.

BOB LIEDER  
FRESNO, CA

**A** As I understand it, a TDD is a piece of equipment that allows the deaf or hearing impaired to communicate with text over standard phone lines. A typical TDD consists of a keyboard, an inexpensive LED display and a built-in special modem. The user connects the TDD either to a telephone or directly to a phone jack, dials the telephone number of another TDD, and both parties can type to each other.

That sounds like a reasonable application for a Macintosh, a modem and a telecommunication program. The problem is most TDDs don't communicate using the same codes that most microcomputers and modems do. Microcomputer communication software and modems communicate using 7- or 8-bit ASCII codes to represent the letters of the alphabet. This is certainly the case if you are using MacTerminal and an Apple or Hayes type 1200-baud modem. Most TDDs communicate using 5-bit Baudot codes to represent characters. Ergo, Macs and TDDs will have a difficult, if not impossible time, communicating properly.

Some TDDs (such as those available from Crown Research in California) have a switch which puts them in ASCII mode. You could then use MacTerminal and an Apple modem to communicate with any TDD that has ASCII capability. You'd still have to configure MacTerminal to the expected baud rate, parity and bits per character expected by the TDD. Another solution is to find a special Baudot modem for your Macintosh and a piece of software that knows how to communicate with it. Perhaps our readers have some suggestions or have already solved this problem?

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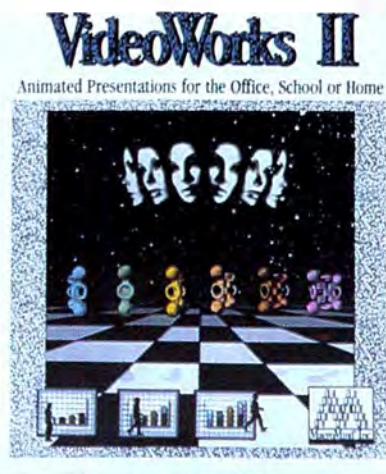
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**SCREEN BURN IN**

**Q.** I have two questions concerning Macs. First, concerning screen "burn-in." I typically keep my Mac Plus powered up for 7 or more hours on a working day. I have seen ads for programs that blank the screen at a key-stroke. I just turn down the brightness control for periods of low activity. Is this an effective precaution? What kind of use will cause burn-in anyway? Second, I've read reviews of a multi-language development system called MPW. It sounded like the *ne plus ultra* of Mac development systems, so for several months I've been perusing ads, looking for it to no avail. What is MPW, who makes it, where can I get it, how much is it, etc?

JONATHAN GORDON  
NEW YORK, NY

**A.** You can't completely avoid screen burn-in, just as you can't avoid getting old. The images you see on your Macintosh screen are the result of millions of electrons being systematically fired at a phosphor coating on the back of your display. The phosphor lights up, you see the results on


your display, and eventually the phosphor will deteriorate or "burn-in." The best way to avoid screen burn-in is to never to use your Macintosh. This is hardly an optimal solution. You can reduce the effects of screen burn-in by attempting to ensure that you aren't constantly displaying the same image on your screen for a long period of time. That's why some of the "screen-sleep" or "black-out" utilities and INITs are very useful in reducing this phenomenon. Random white patterns created against a primarily black background will minimize the effects of screen burn-in.

A particularly useful screen-sleep utility is the Pyro! INIT which is included with PowerStation from Software Supply. This INIT automatically blacks your screen after a pre-defined period of non-usage and amuses you with a random fireworks display. Turning down your brightness control is helpful but not as effective as a utility which completely blanks the screen.

In any case I wouldn't worry about it. Cars get old, televisions get old, screens get old. Don't get too obsessed by it.

MPW is an acronym for the Macintosh Programmer's Workshop. MPW is an extremely powerful assembly-language de-



velopment system for the Macintosh. MPW was developed by Apple Computer and is available from the Apple Programmer's and Developer's Association (APDA). MPW Pascal and MPW C are also available from APDA and must be used in conjunction with MPW. MPW isn't for the faint of heart, but then it doesn't have to be. There are many better language solutions for the beginning or intermediate programmer. 

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# TIP SHEET

COMPILED BY DAVID SCHARGEL

Found a trick, shortcut or a smarter way to get something done with a program? Share your hints by sending them to The Tip Sheet, c/o MacUser, 11 Davis Dr., Belmont, CA 94002. We pay at least \$25 for every hint we publish, plus we'll print your name and hometown.

Whoops! We goofed. In the July 1987 Tip Sheet, the *Ready, Set, Go!* 3 tip and its related screen shot were incorrect. The actual procedure is much simpler than was shown, and you don't need to use another application. Thanks to all of you who wrote and pointed out our discrepancy.

We incorrectly said that with *Ready, Set, Go!* 3 "It is not possible to wrap text around other text." We couldn't have been more inaccurate. Simply choose SPECIFICATIONS from the Special menu and pick "run around." You can have text wrap around the text block just as it is done for a picture block.

## MACWRITE

The main window in *MacWrite*, version 4.5, can't be resized beyond the standard 9-inch Mac screen when working with a large monitor or a software screen expander, like *Stepping Out*. Using *ResEdit*, however, you can patch *MacWrite* 4.5 so that the window expands to just under a full page. The patch consists of two parts: the first patches *MacWrite's* program code to allow for a larger window, while the second part changes the default size of the window.

Using *ResEdit*, open a copy of *MacWrite* by double-clicking on the *MacWrite* line. Then, open the CODE re-

source with an ID of 9. To do this, first double-click on the CODE line in the *MacWrite* window, then by double-clicking the line "CODE ID=9." The hexadecimal window will open. Choose FIND HEX from the Search menu. Have *ResEdit* search and replace the only hexadecimal occurrence of "0136" with "0300." Finish the first part of the patch by closing all the windows and saving the changes to *MacWrite*. The *MacWrite* window can now be resized. It is not necessary to proceed with the second step, unless you want *MacWrite* to automatically default to the larger window.

Use *ResEdit* to open the copy of *MacWrite*. Double-click on the WIND resource line and locate and open, by double-clicking, the line "WIND ID = 301." Change the value of 337, found in the third edit box (for bounds-Rect), to 768. Close all windows, and save the changes to *MacWrite*. When you now use *MacWrite* on a large screen, the default window will now open to just under a full page size.

KEVIN HARRISON  
ALBUQUERQUE, NM

## DISKTOP DA

While viewing a list of files you can make multiple selections to perform commands on many files at once. Just SHIFT-CLICK to select individual items or SHIFT-DRAG to select a continuous list of files.

*DiskTop* has a few features designed for multiple selections. When a number of files are selected, the Sizes button tells you the total of all the files. Clicking on the Delete button, when you have multiple files selected, provides you

with an option to delete every file in the selection without confirming each file.

PAUL CAHLSTADT  
MANITOBA, CANADA

## DARK CASTLE

Wouldn't it be neat to walk on air? In *Dark Castle* it's possible! If you press the duck key with either the up or down key as you ascend or descend a staircase or ladder, you will walk on air when you reach the top or bottom. Once you are in the air, experiment with different commands. Some commands allow you to walk on air, while others let you jump higher than you thought possible.

BRYN WILLIAMS  
STATE COLLEGE, PA

## FULLPAINT

To easily create dashed boxes and dashed horizontal or vertical lines, create a checkerboard pattern of two

diagonally opposed 4 X 4 solid boxes. With this pattern selected, hold down the Option key while drawing a square, or Shift-Option while drawing a line. A dashed box or line is drawn.

GARY D. MCGATH  
HOLLIS, NH

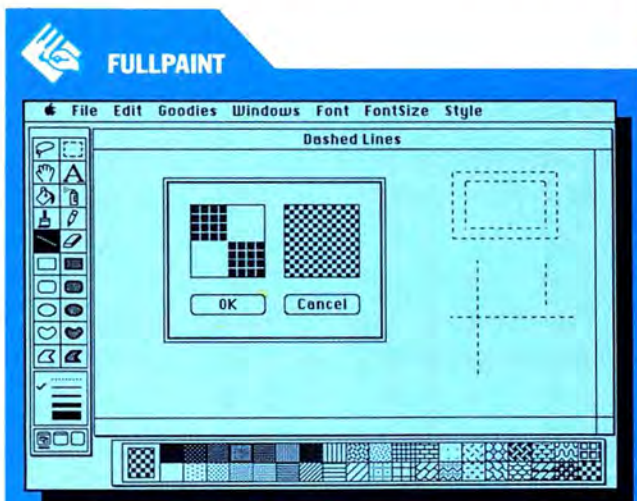
## SUPERPAINT

While in the Paint layer you can have the marquee tool selected and still be able to use the lasso tool. Just hold down the OPTION key and the cursor becomes a lasso, ready to select any odd-shaped bitmap.

DAVID CONDIT  
WARRENTON, VA

## PROFESSIONAL COMPOSER

A useful feature in *Professional Composer* is that it "consolidates" rests in parts when PRINT PARTS is chosen from the File menu. However, in all parts other than the first,



You can use the Option-Draw capabilities of *FullPaint* to easily create dashed boxes and dashed horizontal or vertical lines. Create a checkerboard pattern as shown and hold down the Option key while drawing a rectangle or SHIFT-OPTION while drawing a line.

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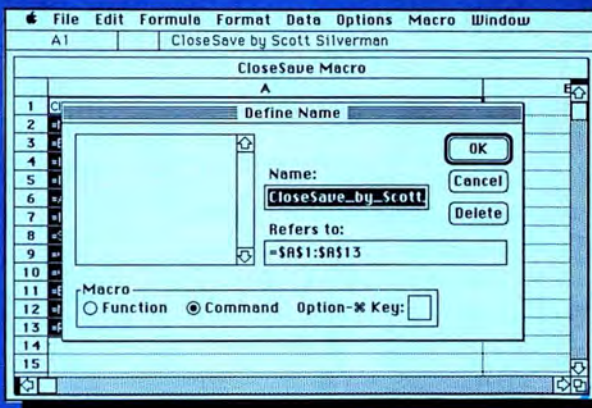
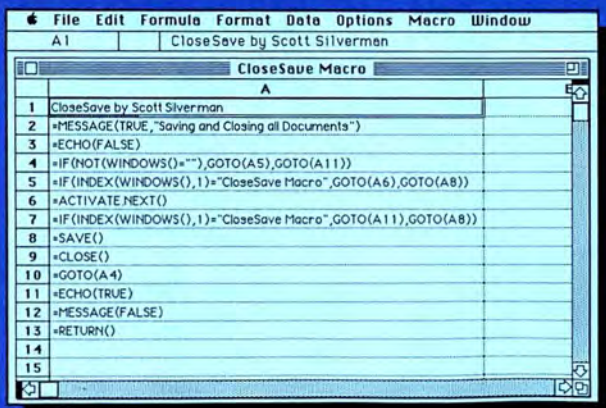
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**1** Setting up the macro takes two steps. Start by entering this macro in a blank macro sheet and make sure you save the macro as "CloseSave Macro" (or it will not function properly).

**2** Begin installing the macro by selecting the entire macro (A1:A13) and selecting DEFINE NAME from the Formula menu. Then click in the COMMAND radio button and click OK. Later, whenever you are ready to save all of your open documents, simply choose RUN from the Macro menu and double-click on the line "CloseSave by..."

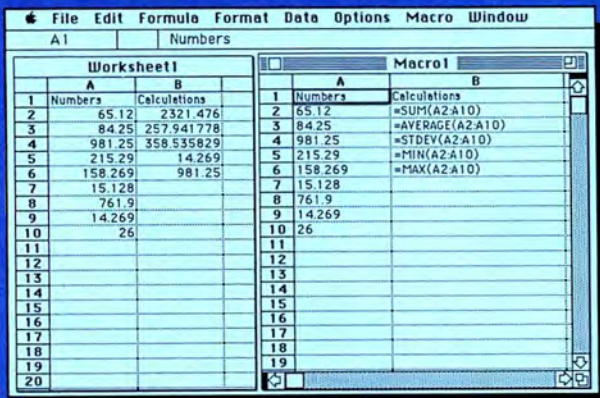
rehearsal marks are ignored if rests both precede and follow the rehearsal mark. This problem can be fixed if you insert a thick barline from the Bar-

lines palette at the left side of any measure in which you insert a rehearsal mark. In fact, any barline at rehearsal marks other than the standard

one will force *Professional Composer* to break consolidated rests around rehearsal marks in parts where rests both precede and follow the rehearsal mark.

JAMES GREESON  
FAYETTEVILLE, AR

MAND-A. This is the equivalent of clicking in the upper left corner of the worksheet.  
CARL PARKER  
MADISON, WI



*Excel* normally doesn't allow for the printing of formulas. If you create a worksheet and want to show or print the formulas, copy the cells to a macro sheet. Now all formulas will be shown with their correct reference.

**EXCEL**

The *Excel* macro shown in the box is designed to save time when closing a set of open *Excel* documents. Normally, when you specify CLOSE ALL, you are asked if you want to save each and every document. Running this macro automatically saves each open document, except for the macro sheet that this macro is in.

SCOTT SILVERMAN  
EAST BRUNSWICK, NJ

If you need to show or print all the formulas in a worksheet (rather than the data), just open a new macro sheet, copy the required cells from the worksheet and paste them into the macro sheet.

If you don't include all related cells, the cell references within the macro sheet may be incorrect or missing.

CARL J. MADSON  
MENLO PARK, CA

**TOPS**

It's possible to connect your Macs to a Novell network using *TOPS*. Simply take one of the PCs in your Novell network and connect it to your *TOPS* network, too. This PC becomes the "gateway" ma-

In *Excel*, you can select an entire worksheet without using the mouse by typing COM-

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chine. Using the Novell software, assign the gateway's drive E to the Novell server. Then, using the *TOPS* menu, publish drive E. Doing this allows all the Macs and PC on the *TOPS* network to see the Novell server.  
DIM HUANG  
NEW YORK, NY


### WORD 3.0

 *Word 3.0* provides a fast way to return the insertion point to its most recent location. For example, if you are typing and notice an error several words back, correct the error,


then type COMMAND-OPTION-Z. The cursor will return to where you were typing. This command actually works for the three most recent insertion point locations.  
DAVE FARABEE  
DAVIS, CA

 *Word 3.0* won't allow the ImageWriter to print in bidirectional mode with the standard Caps Lock, Shift and Option keypress combination while clicking OK. However, it can still be done; it just takes a few easy steps. Begin by holding down the

Shift and Option keys before pulling down the File menu to choose PRINT. Then, hold down the Caps Lock, Shift and Option keys and click OK. Nothing will print. However, the next time you choose PRINT, without holding down any keys, you can click OK and your document will print bidirectionally.  
JAIME GOMEZ  
REQUENA, SPAIN


 When working in *Word 3.0*, there are times when you might want to quickly extend the current selection. An extension is just a few keystrokes away with the little known "Extend To" command. Just type COMMAND-OPTION-H and you will see "Extend To" in the page number box. To advance to a specific character, simply type the character and the selection will extend to the next occurrence of that character. The command will differentiate between capital and lower case letters. To extend the selection to the end of a paragraph, press RETURN. This technique also works for tabs and new line marks (Shift-Return).

You can continue to extend any selection as long as "Extend To" shows in the page number box, which will be until you type COMMAND-(period), choose another command or scroll with the mouse.  
DAVE FARABEE  
DAVIS, CA

 Have you ever put out a draft copy of a document, only to have it interpreted as the real thing because someone "forgot" it was just a draft copy? Using *Word 3.0* and a LaserWriter, you can ensure that

this will never happen again. By including the PostScript code shown in the box, you can have the word "DRAFT" appear in large, outlined letters across every page.  
KIM HANSEN  
SEATTLE, WA

### CRICKET DRAW

 There is a little known trick, not present in *MacDraw* or *SuperPaint*, that allows you to gain total control of object placement with the ALIGN OBJECTS command in *Cricket Draw*. The ordering of objects drawn with *Cricket Draw* does not depend on their creation order or positioning, but rather in their layering. With this in mind, selecting an object and choosing BRING TO FRONT from the Arrange menu will later make that object the "point of reference" for future Align commands.

For example, when you have an object that you would like to align other objects with, select the item and choose BRING TO FRONT from the Arrange menu. Then, SHIFT-CLICK the other objects you want aligned and choose ALIGN OBJECTS from the Arrange menu. Regardless of the type of alignment done, the object on the "top" layer will remain in its original position.

BARTON J. BRADBURY  
UNIVERSITY, MS

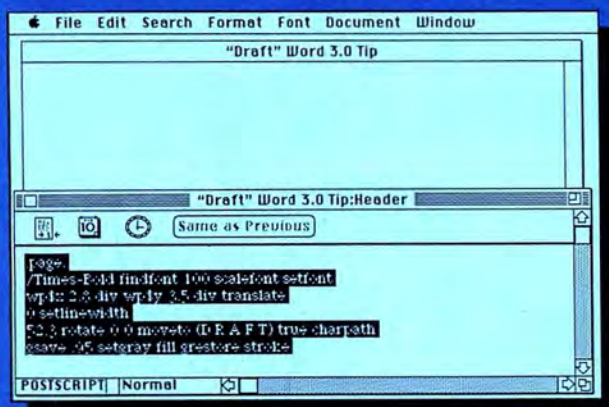
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### WORD 3.0

```
.page.¶
/Times-Bold findfont 100 scalefont setfont¶
wp$х 2.8 div wp$у 3.5 div translate¶
0 setlinewidth¶
52.3 rotate 0 0 moveto ( D R A F T ) true charpath¶
gsave .95 setgray fill grestore stroke¶
```

- 1 Choose OPEN HEADER from the Document menu and type in this text, exactly as it appears.



- 2 Select the text you just typed in and press COMMAND-SHIFT-S to get into the style definition mode. Now type "POSTSCRIPT" (it will appear in the lower left corner) and press Return. Everything should work fine after you close and save your header.

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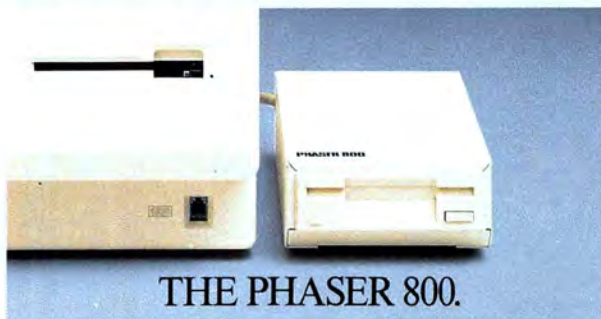
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# MINIFINDERS



but not too well organized. \$49.95. Haba Systems, 6711 Valjean Ave., Van Nuys, CA 91406. CP (Jul 86)

Have you often wished for a personal assistant to help in picking software? These MiniFinders may not breathe and move, but they do tell you what products are hot and, better, what these products do. Each of these items has been carefully reviewed and selected by the MacUser editorial staff. Each has been rated in increments of half mice, from 1 to 5. Ratings are relative within categories, and they can change as categories expand and new products advance the state of the art. You won't see many low ratings or bombs, since we're telling you about the cream of the crop, but we will warn you about the really bad products so that you don't spend your money on them. Red names indicate this month's additions. The letters at the end of the entries indicate whether a product is copy protected (CP) or not (NCP). CP? indicates that we don't know. If a product has been reviewed or QuickClicked in MacUser, the date of the review is shown. Next time you have to find products you can count on, count on MacUser!

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## INTEGRATED SOFTWARE

**Crunch** is an icon-driven relational spreadsheet that features **||||** versatile charting and data base capabilities. Strong financial logic, date and mathematical functions. Spreadsheets can be linked. The manual is clear and concisely written. Macros are not supported. \$195. Paladin, 2895 Zanker Rd., San Jose, CA 95134. CP (Jan 86)

**Excel** is THE power spreadsheet. Of the Mac, of the world. Has **|||||** 256-column by 16,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K+ Mac and external drive required. \$395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Prem)

**Jazz** provides well integrated modules for word processing, graphs, **||||** worksheets, data bases and communications. HotView is best feature. Requires 512K+ and external drive. Version 1A requires 400K drive. \$395. Lotus, 55 Cambridge Parkway, Cambridge, MA 02142. CP (Prem)

**Microsoft Works** is an integrated application that includes word **|||||** processing, data base, spreadsheet and telecommunications functions. The telecommunications module includes background up- and downloading. \$295. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Oct 86)

**Quartet** is an integrated program that works on a 128K Mac, built **||||** around a powerful spreadsheet with a full range of functions. It can also be used as a data base and provides good quality charts from spreadsheet data. Documentation is adequate,

## BUSINESS ACCOUNTING

**Accountant, Inc.** V2.0 integrates accounts payable, accounts **||||** receivable, general ledger and inventory modules in one application. Prints checks, purchase orders, invoices, customized reports. Bare bones accounting system limited in size and scope, but ease of use and integration make it suitable for small businesses. Requires 512K+. \$299. SoftSync, 162 Madison Ave., New York, NY 10016. NCP (Oct 87)

**Back to Basics Accounting** is a powerful double-entry accounting **||||** software package for the small business user with GL, AR and AP modules. Exhaustive manual with numerous examples. Report capabilities are excellent. \$199. Peachtree, 4355 Shackelford Rd., Norcross, GA 30093. NCP (May 87)

**BPI General Accounting** is an easy to use system. Six journals, **||||** AR, AP, Payroll and GL on one disk. Offset amounts automatically post to ledgers. Up to 8000 accounts. Detailed records, wide range of reports. *Switcher* and HFS compatible. \$249. Requires 512K+. BPI Systems, 3001 Bee Cave Rd., Austin, TX 78746. NCP (Aug 86)

**CheckMark** is a Ledger with five preset journals: Cash Disbursements, Receipts, General, Sales and Purchases. Menus and **||||** data entry are very straightforward. Flexible summary reports are built-in, but customer and vendor information is very minimal. \$295. CheckMark Software, PO Box 860, Fort Collins, CO 80522. CP (Dec 85)

**Insight** is a high-powered accounting program for the small to **|||||** medium size business. At present, three modules are available: Accounts Receivable, Payables and General Ledger; others are in the works. Requires 512K and hard disk. \$595. Layered, 85 Merrimac St., Boston, MA 02114. NCP (Dec 86)

**Rags to Riches** integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. Version 3.0 now provides detailed, flexible report options. Very easy to use, but it can be confusing with several windows on-screen. Requires 512K+ and printer. \$199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Dec 85)

**Rags to Riches Professional Billing** tracks and bills professional **||||** services. Batches activities for individual timekeepers. Use as standalone, or integrate with R to R modules. Requires 512K+, printer. \$399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb 87)

**Strictly Business** General Ledger features clear, well-outlined **||||** set-up procedures and operations. Very flexible, up to 99 profit centers with up to 100 departments each; and customized reports. Program print spools. Requires 512K+, printer and external drive. \$395. Future Design, 13681 Williamette Dr., Westminster, CA 92683. NCP (Dec 85)

## PERSONAL FINANCE

**Dollars & Sense** is a bookkeeping program. Easy to use, with a **||||** good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. \$149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Mar 87)

**MacInTax** is an excellent tool for preparing tax forms. Intuitive, **|||||** easy to use. Accepts data from leading personal finance programs. Good built-in help. Liberal upgrade policy for current owners. California forms set also available. \$99 federal; \$45 California. SoftView, 4820 Adohr Lane, Suite F, Camarillo, CA 93010. NCP (Mar 87)

**MacMoney** is a complete and easy to use personal financial **|||||** system. Intuitive data entry. Integrates with *MacInTax*.





Requires 512K+. \$74.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (May 87)

**Market Pro** is a comprehensive portfolio management program for the generation of fundamental data as well as technical charts and graphs. Requires 512K+, external drive and Hayes-compatible modem. \$395. Pro Plus Software, 2830 E. Brown Rd., Mesa, AZ 85203. NCP (Nov 86)

Krawski Dr., South Windsor, CT 06074 NCP (Apr 86)

**Reflex For The Mac** is a flexible relational data base. Excellent report generator gives full control over appearance, style of output. Requires 512K+, second drive or hard disk. \$99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 86)

**Writer's Workshop** maintains orderly records for writers. It can track manuscripts, income and publisher. Based on and includes *Runtime Helix*. \$99.95. Futuresoft System Designs, PO Box 132, New York, NY 10012. NCP (Apr 87)

## DATA BASES

**Business Filevision** is a masterpiece of Macintosh programming, the only true graphic data base on any micro. Much more powerful than the original, accepts *MacPaint* graphics. \$395. Telos Software, 3420 Ocean Park Blvd, Santa Monica, CA 90405. NCP (Feb 86)

**Double Helix** is an environment to generate custom applications built around a data base-type framework. Contains enhancements to *Helix 2.0*. Includes custom menus, sub form windows, password protection and a universal dump and load parser. Ability to store pictures as data fields. \$495. Odesta, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Oct 86)

**File** is a flexible data manager. Creates files for a variety of data, including simple graphics. Files are created in simple row/column format, but reports and forms are easily customized. \$195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

**FileMaker Plus** retains features of *FileMaker* and reads *FileMaker* data, also displays up to 8 files, uses "lookup" to retrieve data from other files. Enhanced calculation with many additional functions. Scripts automate a sequence of actions. \$295. Requires 512K+. Forethought, 250 Sobrante Way, Sunnyvale, CA 94086. NCP (Nov 86)

**Helix** is a relational data base that makes extensive use of icons. Setup is easy due to adherence to the Mac interface. The manual is clear, thorough and well-indexed. Complicated for simple data base applications, excellent where a relational power is needed. Requires 512K+ and external drive. \$395. Odesta, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Mar 86)

**MacDewey!** (version 2.5) is a cataloging program featuring the Dewey Decimal Classification system. Uses predefined fill-in-the-blank fields to create catalog cards. Suffers from bugs in search routines and the inability to distinguish first names. Not for professionals; home libraries might benefit. \$79.95. Mousetrapp Software, 336 Coleman Dr., Monroeville, PA 15146. NCP

**MacRelax** is a relational list manager that stores data in a column format. Files can be related by sharing a common field. Flexible design for reports. Screen display is sometimes strange. Easy to use but not obvious to learn. \$59.95. 512K required. Arrays, 6711 Valjean Ave., Van Nuys, CA 91406. NCP (Jan 87)

**Omni 3** is a power data base, featuring concurrent multiple file management. Can handle 24 files, 12 at a time, and is fully relational. Create custom environments including user-defined menus, commands and dialogs. \$495. Blyth, 2929 Campus Dr., San Mateo, CA 94403. NCP (Mar 86)

**OverVUE** is a power-packed relational data base that has extensive sorting, summarizing and report generation capacity. Has macros and a charting function. Good manual. It can exchange files with a very wide variety of other programs (including IBM software). \$295. ProVUE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov 85)

**Professional Bibliographic System** is a specialized data base storing and retrieving bibliographies. Redesigned templates (20) simplify creation. Version 2.6 offers improved speed, flexible formatting. \$295. Personal Bibliographic Software, Box 4250, Ann Arbor, MI 48106. CP (Feb 87)

**Record Holder** is a flexible, easy-to-use form-oriented data manager. Setup is particularly simple and the search features are powerful. \$69.95. Software Discoveries, 137

## NUMBER CRUNCHING

**DesignScope** is a construction kit for digital and analog circuits. Up to 254 components can be utilized in a single circuit, and the equivalent of a dual trace oscilloscope plots output in real-time. Good for testing circuitry without touching a breadboard. \$249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP Nov 86)

**MacCalc** is a fast, competent, full-featured spreadsheet with impressive built-in functions, font control, on-line help, ability to expand columns and rows and read/write SYLK or WKS files. The worksheet is 125 columns by 999 rows. Cell names, printing power make *MacCalc* a very flexible pure spreadsheet. \$139. Bravo Technologies, c/o DPAS, PO Box T, Gilroy, CA 95021. NCP (Sep 86)

**MacSpin** is a unique and powerful graphic data analysis program. Handles multivariate data in a highly visual manner. Nothing else like it for any micro. \$199.95. D<sup>2</sup> Software, PO Box 9546, Austin, TX 78766-9546. CP (Jun 86)

**Mindsight** is a professional level decision support and business planning package. Can work with IFPS on mainframes, and is able to transmit models in both directions. Powerful and easy to use. Requires 512K+. \$249. Execucom Systems, PO Box 9758, Austin, TX 78766. CP (Dec 86)

**Multiplan**, the first Mac product from someone other than Apple, is beginning to show age. Still a very capable basic spreadsheet with simple sorting, 63 columns by 255 rows, many built-in functions, other standard spreadsheet features. \$195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Mar 86)

**Parameter Manager** is a data manager, incorporating integrated scheduling, statistics and graphics. It has solid spreadsheet, calendar and data base functions, and reports can be customized using other software. *Parameter Manager* can also import data from *Excel* or *Lotus 1-2-3*. \$495. SMS, 651 River Oaks Parkway, San Jose, CA 95134. NCP (Jul 87)

**StatView 512+** is a very intuitive statistical analysis program with tools needed to understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast and accurate. Extremely wide range of analyses possible. Requires a minimum of 512K of RAM & 800K of disk space to operate. \$349.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Dec 86)

**StatWorks** is a general-purpose statistics package that is both powerful and easy to use. Handles all standard tests and procedures. Single variable and multivariate statistics are supported. \$125. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (May 86)

**Trapeze** is a powerful spreadsheet program that functions through use of blocks. Blocks can contain the usual spreadsheet-type cells, rows or columns, text, pictures and any type of special graphics. Includes financial, conversion and transcendental functions. \$295. Data Tailor, 1300 S. University Dr., Fort Worth, TX 76107. NCP (Jun 87)

## GRAPHICS & DESIGN

**CalendarMaker** creates monthly calendars in a variety of formats. Users can incorporate their art and daily notes. Note files can be imported from a variety of DA calendars and outliners. Shareware and prelicensed versions available.

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<b>Softstyle</b>	
MacEnhancer	189.95
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13" Color Multiscan Monitor for the Mac II	785.00
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## Languages

<b>Mainstay</b>	
VIP (Vis'l Interactive Prgm)	85.75

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C Aztec C68K Comm	425.00
C Aztec C68K Developer	250.00
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Data Base Tool Kit	62.50
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<b>Zedcor Inc</b>	
Z Basic	70.00

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<b>Mark of the Unicorn</b>	
Professional Composer	395.00
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<b>Alsoft</b>	
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Mac Express	CALL

ProLink	28.25
<b>Borland</b>	
Sidekick 2.0	62.00
<b>Central Point Software</b>	
Copy II Mac	23.00
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# MINIFINDERS



\$30. CE Software, 801 73rd St., Des Moines, IA 50312. NCP (Dec 86)

**Chart** can easily create area, bar, column, line, pie, scatter and combination charts. A total of 42 styles are provided. Limited to 100 data items (64 in a series) on a 128K Mac, approximately twice that on a 512K Mac. \$125. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

**ClickArt Special Effects** is a *MacPaint* enhancement desk accessory. Allows the user to distort, stretch, rotate and use perspective on *MacPaint* documents. A necessary addition for all serious users of *MacPaint*. \$49.95. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Apr 86)

**ColorPrint** allows you to print *FullPaint*, *MacPaint*, *MacDraw* and *MacDraft* documents in color using the ImageWriter II or ImageWriter I. *Paint* files set up as overlays are read into *ColorPrint*, and the program controls proper positioning registration. \$29.95. I/O Design, PO Box 156, Exton, PA 19241. NCP (Mar 86)

**Cricket Draw** is an object-oriented drawing program that will produce stunning, high-quality output. Designed to print on PostScript-compatible devices, such as the LaserWriter. Making shadows and flowing fountain effects are just a point and click away. \$295. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (May 87)

**Cricket Graph** easily generates 12 graph types. Multiple windows can be displayed. *Graph* prints in up to 8 colors with up to 16 patterns. Self-generating macro formatting. *Switcher*, HFS, LaserWriter and plotter compatible. \$195. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (Jun 86)

**Easy3D** is a three-dimensional, solid modeling masterpiece. Four variable light sources, powerful sculpting tools and an exquisite user interface make this a must-have for graphics enthusiasts. Requires 512K+. \$149. Enabling Technologies, 600 S. Dearborn, Chicago, IL 60605. NCP (May 86)

**EZ Draft** is a high-level CAD application. Does things usually only found on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. \$1995. \$500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May 87)

**Fluent Fonts** is a two-disk collection of fonts. Forty-nine different items are included. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. \$49.95. CasadyWare, PO Box 223779, Carmel, CA 93922. NCP

**Fontastic** is the best font editor now available for the Mac. Features a large editing window with a grid to make positioning easy. Select letters to edit by clicking on a matrix of the font. Allows scaling of existing fonts and previewing the various styles (italic, bold, etc.). \$49.95. Altsys, PO Box 865410, Plano, TX 75086. NCP (Dec 85)

**Fontographer** is a complex, but excellent laser font creator. The fonts created have 300 bits per inch resolution. The fonts are actually downloadable PostScript files. \$395. Altsys, PO Box 865410, Plano, TX 75086. CP

**FullPaint** is an expanded version of *MacPaint*. Features include full-screen drawing, multiple documents open simultaneously, brush editing, movable tool palettes, special text effects and much more. It fills the gaps left by *MacPaint*. \$99.95. Ann Arbor Softworks, 2393 Teller Rd., Newbury Park, CA 91320. NCP (Jun 86)

**GraphicWorks 1.1** is a powerful drawing and painting program that creates high-resolution bit-maps. Easels contain graphics, balloons hold text and both reside on panels. Graphic primitives are now a separate tool. \$99.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. NCP (Oct 87)

**Graphidex** indexes *MacPaint* and *MacDraw* format graphics without removing them from their original documents. Indexed graphics are retrieved via the *Graphidex* DA. Can modify an indexed graphic without affecting the original. Best for bit-mapped (*Paint* format) images but the design is question-

able and the execution imperfect. Requires 512K. \$124.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (May 87)

**GridMaker** is a tool for artists who use perspective. The program automatically generates a series of three-dimensional plane sets that can be pasted into *MacDraw*. Sizes and viewing vantage point are easily modified. \$49. FolkStone Design, Inc., PO Box 86982, North Vancouver, BC V7L 4P6, Canada. NCP (Nov 86)

**Illustrator** is a professional-level graphics program. Unique and powerful drawing technique. Program uses templates for precise and detailed art work. Requires 512K+. \$495. Adobe Systems, 1870 Embarcadero Rd., Palo Alto, CA 94303. CP until registered. (Jul 87)

**Japanese Clip Art** is a two-disk set of extraordinary Japanese clip art. Consists of *MacPaint* documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matters. \$79.95 each volume; \$149.95 set. Enzan Hoshigumi, 310 Still River Rd., PO Box 131, Still River, MA 01467. NCP (Apr 87)

**LaserFonts** are new fonts for the LaserWriter. Users download them to their machines. Very high quality and very simple to use. *Willamette* looks like *Avant Garde*. *MicroFonts* provides tiny, expanded and condensed versions of the LaserWriter's own fonts. \$34.95 to \$44.95 each. Century Software, 2483 Hearst, #175, Berkeley, CA 94709. NCP

**The Mac Art Dept.** is a collection of over 150 graphic images ranging from foods to hands holding signs to borders. Best suited for letterheads, memos, other business use. \$39.95. Simon & Schuster, Computer Software Div., 1 Gulf & Western Plaza, New York, NY 10023. NCP (Mar 86)

**Mac-a-Mug** is an Identikit type program for creating faces from facial feature files. Uses scroll bars that are slow and jerky. Lots of creative fun. 512K+ Mac required. \$59.95. Shaherazam, PO Box 26731, Milwaukee, WI 53226. CP (Jul 86)

**MacDraft** is an object-oriented graphics program. It sports advanced features such as variable scaling, single degree rotation, complex arcs and a FatBits-like magnification mode. Best used to complement *MacDraw*, not replace it. \$239. Innovative Data Design, 2280 Bates Ave., Ste. A, Concord, CA 94520. NCP (Feb 86)

**MacDraw** is an object-oriented structured graphics program. Can be used to design forms, create presentation materials and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Text can be easily generated and integrated in the graphics. \$195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Nov 85)

**MacModel** is an economical 3D package with shading. Somewhat sketchy Mac interface, shading speed slow (but acceptable), grainy image resolution. On-line help screens are a welcome addition. Frequent updates and low price make this a reasonably good buy. \$40. A.P.P.L.E. CO-OP, 290 SW 43rd St., Renton, WA 98055. NCP (Aug 86)

**MacPaint** is the graphics program that started a whole new genre. Still the best freehand graphics tool. Version 1.5 supports 512K+ Macs and the LaserWriter. Multiple tools, patterns and features too numerous to describe. A work of art for artists. \$125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**Mac3D 2.0** is a feature-laden 3D program with a *MacDraw*-like interface. PostScript-resolution shading with six variable light sources, user-definable tools, and many more features make this a powerhouse. \$249. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430. NCP (Jan 87)

**MapMaker** produces maps and analyses of related geographical data. Additional data disks available. Documentation could be better. Requires 512K; second drive recommended. \$295. Select Micro Systems, 40 Triangle Ctr., Yorktown Heights, NY 10598. NCP (Jan 87)

**MGMS: Professional CAD for Macintosh** offers more than 200 functions. Very complete, capable program. Powerful tools like Groups, Dimension, Libraries, etc. are standard. Some-

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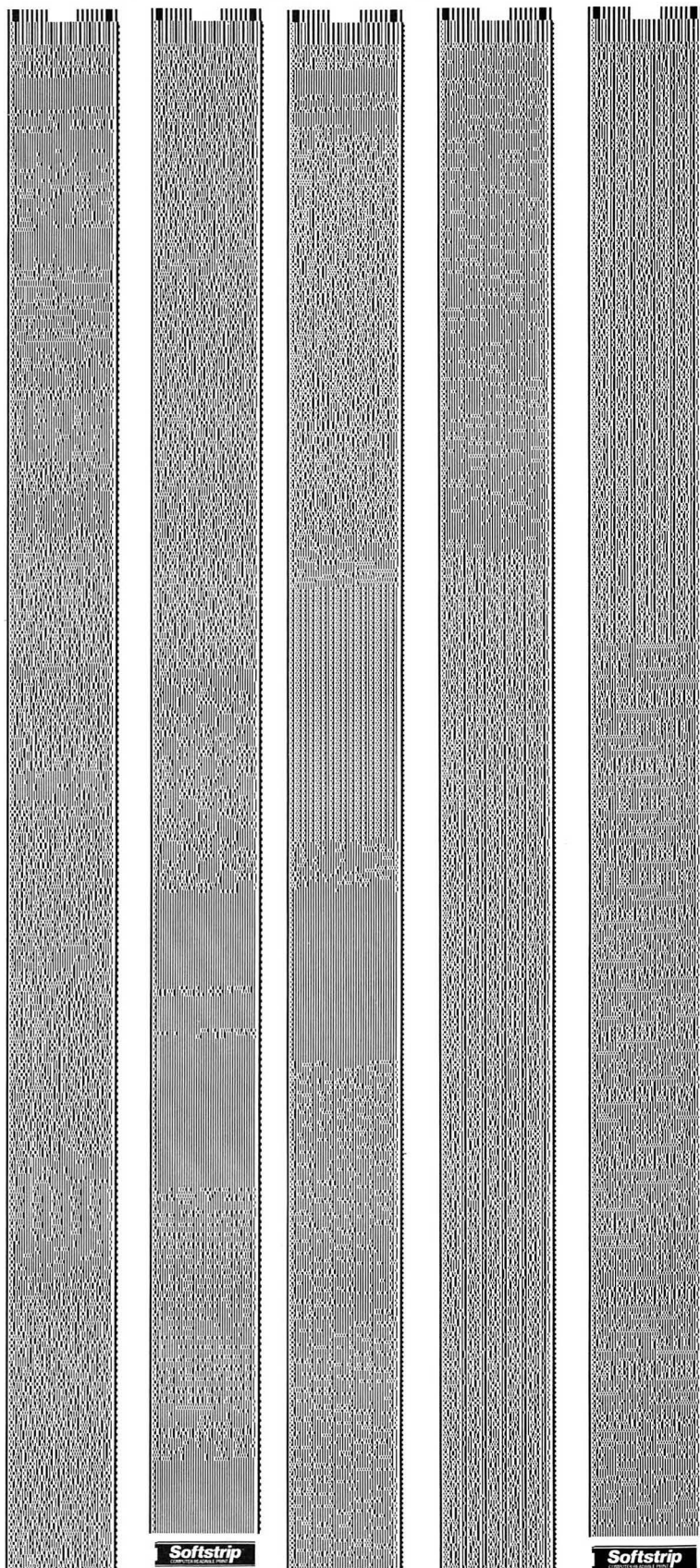


**TOGGLE MACROS**, from the Excellent Exchange, is a series of Microsoft® Excel macros that will protect your document or cells, display row and column headings, switch between the first and last cells, delete a print area, and set/remove page breaks. There are also others which will print your text in either bold or italics, and one that creates an outline border. We've included a text file which explains how these toggles work and shows you the code used to create each one.

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# MINIFINDERS



times confusing to follow—designed for experienced, professional CAD user, not the novice. Full plotter support. Good tech support. Requires 512K+. \$799. Micro CAD/CAM, 5910 Noble, Van Nuys, CA 91411. CP (Jun 87)

**MiniCad V3.0** is a pro level CAD package. Vast array of features, many accessible only through command/shift/option key combinations. Works in 2-D or 3-D with easy transition from one to the other. *MacDraw*-like interface makes it easy to learn and use. Requires 512K+. Diehl Graphsoft, Inc., 8370 Court Ave., Suite 202, Ellicott City, MD 21043. CP (Oct 87)

**MockPackage+** is a set of extremely powerful DAs. Includes a text editor, text printer (supports LaserWriter), charter, terminal and EZmenus. HFS compatible. \$35. CE Software, 801-73rd St., Des Moines, IA 50312. NCP (Mar 87)

**PageMaker** uses a graphics studio metaphor to make this layout program a natural for pasteup artists. Version 2.0 adds automatic kerning and hyphenation. Excellent documentation. Could use a global search and replace for design elements. \$495. Aldus Corp, 411 First Avenue South, Seattle, WA 98104. NCP (Oct 87)

**Phoenix 3D** is an economical 3D drawing package, with features that belong in a more expensive program. Multiple light sources, fine object placement and orientation control, and a good selection of shapes. \$49.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Oct 86)

**PictureBase 1.2** is the updated version of the powerful graphic librarian. You can store paint and PICT formatted items and attach keywords for later search and retrieval \$69.95. Symmetry Corp., 761 E. University Dr., Mesa, AZ 85203. NCP (Sep 87)

**Portfolio: Designs for Newsletters** provides over 20 templates for 2-page newsletters with pre-set columns, headlines, graphics and captions. Documentation provides excellent tutorial in page design. Includes DA called Wyzzy that optimizes screen fonts and copyfit. Requires 512K+; *PageMaker*. \$79.95. Aldus Corp., 411 First Avenue South, Suite 200, Seattle, WA 98104. NCP (May 87)

**The Print Shop** makes it easy to create greeting cards, signs, banners and letterheads. Uses its own special graphics and can import *Paint* files. Hard disk users get version 1.02 or higher. \$79.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Sep 87)

**Quark Xpress** is a high end desktop publishing application. Layout is done in block format; powerful lining tool ties blocks together. Copy protection impedes usefulness. \$695. Quark, 2525 W. Evans, Denver, CO 80219. CP (Sep 87)

**Ragtime** is an "Integrated Page Processor" with text, graphics and built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a full set of functions. Excellent, easy to use program. Requires 512K+. \$395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Apr 87)

**Ready, Set, Go! 3** is the newest of the *Ready, Set, Go!* page layout programs. New version offers power word processing and excellent control for text and graphics placement. Slow printing with complex pages. \$395. Letraset, USA, 40 Eisenhower Dr., Paramus, NJ 07652. NCP. (Jul 87)

**Slide Show Magician 1.3** is useful for creating full screen audiovisual presentations on the Mac. Frame branching, improved editing capabilities, external cassette recorder synchronization and digitized sound capabilities make this much more powerful than the original. \$59.95. Magnum, 21115 Devonshire St., Chatsworth, CA 91311. CP (Mar 86)

**Space Edit** is a 3-D CAD program. Display shows top, front, side and axonometric views of an object, all at once or one at a time. Has standard CAD features plus zoom, exploded view, animated flyover. Suppression of hidden lines is very slow. Requires 512K+. \$625. Abvent, 9903 Santa Monica Blvd., Suite 268, Beverly Hills, CA 90212. CP. (Jul 87)

**Storyboarder** produces working animated storyboards for use in film and video production. Imports graphics from *MacPaint*; allows screen masking to simulate television, 35mm or 70mm screen widths; allows limited animation and special

effects. \$495. American Intellware, PO Box 6980, Torrance, CA 90504. CP (Nov 86)

**SuperPaint** is a powerful, easy-to-use graphics program with all the best features of *MacPaint* and *MacDraw*—and then some. Among the new features, LaserBits provides 300 dpi magnification and there are 40 editable brush shapes. Requires 512K+. \$99. Silicon Beach, 9580 Black Mountain Rd., PO Box 261430, San Diego, CA 92126. NCP (Feb 87)

**WetPaint** consists of two 3-disk volumes of very high quality clip art. Also includes the *Art Roundup* DA, the best art browser/editor yet. Volume 1 or 2, \$39 each; both Volumes, \$59. Available in *PictureBase* format for \$15 extra per volume. *Dubl-Click* Software, 18201 Gresham St., Northridge, CA 91325. NCP (Sep 87)

**World-Class Fonts!** comes in two volumes of three disks each. Includes all the *Mac the Knife* fonts and a lot more, including 2 useful utilities. This is now the best collection of *ImageWriter* fonts available. Each volume: \$39; both volumes: \$59. *Dubl-Click* Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec 86)

## COMMUNICATIONS

**AppleShare** is the long awaited file sharer from Apple. Software-based, *AppleShare* requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to protect things from other users on the folder level. \$799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May 87)

**HomePak** is a package consisting of *HomeTerm*, an excellent, simple telecommunications program with strong macro features; *HomeFind*, an electronic filer as bad as *HomeTerm* is good; and *Apple's Edit*, a simple, non-HFS-compatible text-file editor. \$49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Sep 86)

**InBox** is an easy to use mail system. It's called up from a desk accessory. Has a very slick interface. Current version requires a dedicated Mac to run as storage for the mail. \$350 for starter set which includes one Administrator disk and three Connection disks. Additional Connections cost \$125 each. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (May 87)

**InTalk** comes with its own communications command language to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample set up documents and command language files provided. \$195. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Prem)

**InterMail** is an electronic mail system that runs under *AppleTalk*. Supports file transfers across the mail system. Full on-line help facility. Also includes "While you were out" messages. Desk accessory based. Prices determined by number of users licensed. One to four users, \$299.95; 5 to 10 users, \$499.95; 11 to 20 users, \$749.95; 21 or more users, \$949.95. Interactive Network Technologies, 20 Amy Circle, Waban, MA 02168. NCP (May 87)

**MacTerminal** provides basic telecommunications and terminal emulation for the Mac user. Doesn't have macros nor any sort of auto redial/auto logon capability. Best for those needing faithful VT100 or IBM 3278 emulation—it is superb at those. \$125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

**Microphone** is a high-powered terminal program that's easy enough for novices. Very powerful command language allows full automation of communications, if desired. \$149. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jul 86)

**Red Ryder** is a full-featured telecommunications program that supports MacBinary, Xmodem and Kermit. Remote service procedures, auto procedure writer and keyboard macros allow automation of many operations. It is shareware and a real bargain. \$40. The FreeSoft Corp., 10828 Lacklink, St. Louis, MO 63114. NCP (Jul 86)



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# MINIFINDERS



**Smartcom II** balances power and ease of use. Capable of **||||** unattended operation and has a very powerful command language. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived. \$149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jul 86)

**Telescope** is the power telecommunicator's terminal program. Can be configured to emulate any terminal. The documentation does not adequately explain the many features. \$125. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 86)

**TOPS** is a file server that is designed to network computers with **||||** different operating systems. The current system will support Macs, MS-DOS compatibles and UNIX. Access to files and subdirectories is transparent to the user, they appear as Mac folders. Only handles ASCII or Text files. \$149 for Mac version. \$389 for PC's (comes with add-on card). Centram Systems West, 2560 Ninth St., Berkeley, CA 94710. Serial number protected. (May 87)

**VersaTerm** features include DEC VT100 and VT52, Tektronix 4014 **||||** graphics terminal and Data General DG200 emulation. Supports Xmodem and MacTerminal Xmodem protocols and MacBinary. *VersaTerm* is easy to use and well documented. \$99. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. CP (Prem)

**VersaTerm-Pro** is a very powerful terminal program with several **||||** special features. Does one of the best VT100 emulations available and specializes in high-quality Tektronix 4014 and 4105 emulation. A pro's tool. Requires 512K+. \$295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. NCP (Apr 87)

## WORD PROCESSORS

**Document Compare** allows users to compare any two *MacWrite* **||||** 4.5, ASCII or MDS documents. Differences in spelling, punctuation, formatting and wording are detected. Documents can be printed out with differences highlighted. \$99. Legalware, 33 Young St., Toronto, Canada M5E 1S9. NCP (May 86)

**Document Modeler** can automate much of a professional office's **||||** correspondence. Comes in two parts: *Template Maker* and *Document Maker*. Initial set-up requires time and is complex. \$299.95. Legalware, 33 Young St., Toronto, Canada M5E 1S9. NCP (Mar 87)

**Doug Clapp's Word Tools** is a useful punctuation and style **||||** editing program. It won't turn you into a Proust, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 512K+. Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sep 87)

**Expressionist** is a powerful DA that allows you to create complex **||||** mathematical equations from within an application. Equation manipulation has never been easier. \$79.95. Allan Bonadio Associates, 1579 Delores St., San Francisco, CA 94110. NCP (Jul 87)

**JustText** is a professional level word processor and page makeup **||||** program that generates PostScript output. Comes with a set of LaserWriter utilities that allow total manipulation of art and text. Requires LaserWriter or other PostScript compatible output device. \$195. Knowledge Engineering, GPO Box 2139, New York, NY 10116. NCP (Dec 85)

**Kadmos Greek Font** is a full character set of ancient Greek that **||||** prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort.

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# MINIFINDERS



Allotype Typographics, 1600 Packard Rd., Ann Arbor, MI 48104 NCP (Oct 87)

**Laser Author** is a high-powered, technically oriented word processor. Good math setting capability. Has style sheets, word count and page layout capability. \$199.95. Firebird Licenses, PO Box 49, Ramsey, NJ 07446. NCP (Mar 87)

**Liberty Spell Checker** is a fast, effective interactive checker. The dictionary is smaller than average, but well chosen. Unfortunately, it has a few misspelled words. \$59.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct 86)

**MacGAS** is a DA spelling checker with both a small and extended dictionary. Its best point is the excellent thesaurus, provides antonyms & glossary. A slow checker. \$99. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. CP (Oct 86)

**MacLightning** is an interactive spelling checker in desk accessory format. Text can be checked on the fly or by selection. Works within many applications, and options include a thesaurus, medical and legal dictionary. \$99.95. Target Software, 14206 Southwest 136th St., Miami, FL 33186. NCP (Oct 86)

**MacProof** is a grammar, style and spelling checker that's like having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections, it doesn't make them for you. And the checking process can be slow if your document is long. \$195 for standalone version; \$2500 for networked version. Automated Language Processing Systems, 190 West 800 North, Provo, UT 84604. NCP (Apr 87)

**Macspell+** (version 1.10) is a spelling checker that installs as a desk accessory. Works easily with *MacWrite* 4.5 and 2.2 and *Word*, but has some drawbacks. New version just available. Requires 512K+, two drives or hard disk. \$99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

**MacWrite** is the basic Mac word processor. While it doesn't have every bell and whistle, it is more than adequate for most users. Features include global search and replace, page numbers indicated in the scroll bar and excellent LaserWriter compatibility. \$125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**MindWrite** is an outliner-based word processor of considerable power. Besides outlining, it allows multiple documents and multiple selections. Excellent if you like to outline your writing first. \$295. MindWork Software, 100 Pacific St., Monterey, CA 93940. NCP (Mar 87)

**QuickWord** is a word processing accessory that adds sophisticated glossaries to *MacWrite*. Simple to install and use, yet powerful and efficient. \$49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP

**Scriptor** is designed for producing standard format scripts. Starts with a *Word* document. As you change your *Word* document, *Scriptor* will reformat, renumber and reprint the script. Supports LaserWriter and daisywheel printers. \$295. Screenplay Systems, 348 E. Olive Ave., Suite F, Burbank, CA 91502. NCP (May 87)

**Spelling Champion** is a fast and accurate batch-type spelling checker. Backup feature allows you to undo corrections in a paragraph. Works only with *MacWrite* 4.5. \$39.95. Champion Software, 5201 South Hill Dr., Madison, WI 53705. NCP (Oct 86)

**Spellswell** is an effective and powerful standalone spelling checker. It has many advanced features such as capitalization and homonym checking and comes with a large, well-chosen dictionary. Very good dictionary, good value. \$74.95. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940. NCP (May 86)



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**Thunder!** is one of the best spelling checkers around. Features **|||||** Learned Words (a superb glossary) and statistics. A very fast DA, it works interactively and in selection mode. Requires 512K+. \$49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Dec 86)

**Word 3.0** is the most feature laden word processor now available. **|||||** Has a spelling checker, hyphenation, some page layout, style sheets and more. Also has Microsoft's somewhat unusual view of what the Mac interface is. Requires 512K+ and 1200K+ of storage. \$395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Mar 87)

**WorksPlus Spell** is a speedy spelling and hyphenation checker for **|||||** Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. \$59.95. Lundeen & Associates. PO Box 30038, Oakland, CA 94604. NCP (Oct 87)

**WriteNow for the Macintosh** has many of the features of **|||||** MacWrite and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. \$175. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Mar 87)

text information viewed in hierarchical order. Text files can be created for MacWrite editing. \$99. Innovation, PO Box 1317, Los Altos, CA 94023. NCP (Sep 86)

**DecisionMap** organizes data to facilitate decision making. Unique **|||||** weighting abilities make this a powerful tool. The decision analysis process is long and sometimes complex, but never difficult. \$145. SoftStyle, 7192 Kalaniano'le Hwy., Honolulu, HI 96825. CP

**Design** is a powerful organizational tool. It goes beyond mere **|||||** flowcharting. Complex, detailed program aimed at software pros. \$200. Meta Software, 55 Wheeler St., Cambridge, MA 02138. NCP (Apr 87)

**Guide** allows you to "cross reference" from within a document **|||||** using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics and other useful items. The word processing and formatting functions are limited. \$135. OWL, 14218 NE 21st St., Bellevue, WA 98007. NCP (Apr 87)

**MacProject** allows a user to plan and track a project from **|||||** beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. \$195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Mar 86)

**MacSpec** is a specification writing tool, a cross between word and **|||||** outline processors. Can automatically number and indent headings, and renumber everything when lines are moved. Text under headings is handled and formatted as though in a simple word processor. HFS-compatible. \$199.95. LM Software, PO Box 93, Belmont, CA 94002. NCP (Oct 86)

**Memorandum** is the Mac equivalent of Post-It Notes. You can **|||||** attach a note to a specific area, such as a cell in a

## ORGANIZATIONAL TOOLS

**Acta** is an outline processor in desk accessory format. It has **|||||** practically all the power of a standalone program, and then some. Can save files as Acta outlines, MacWrite or text files. A must-have for those who do outlining. \$59.95. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (Jul 86)

**Calliope** is a new type of outlining program. Chunks of information **|||||** are manipulated as small "light bulbs" containing text. Related elements can be graphically connected, and their

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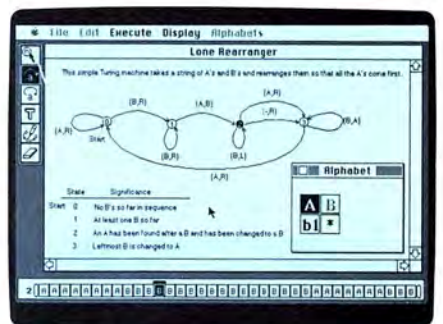
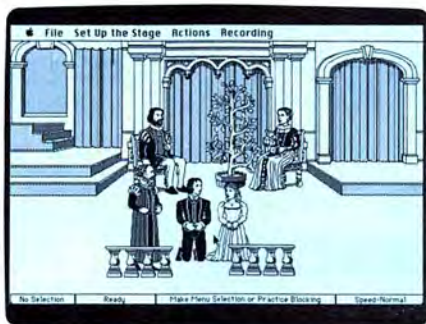
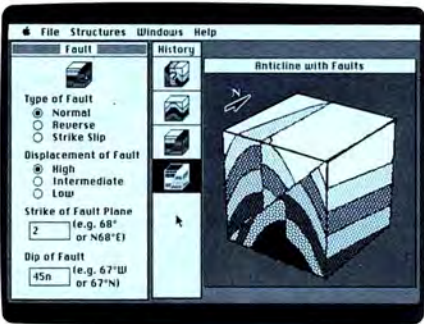
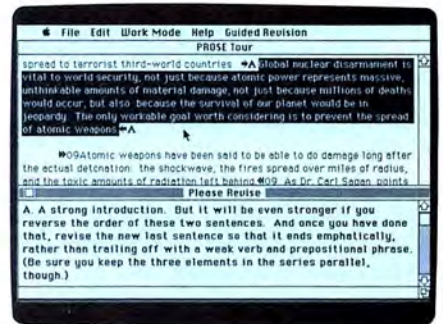
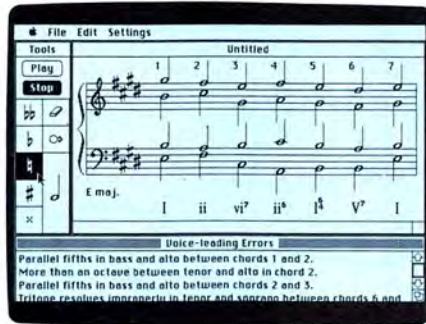
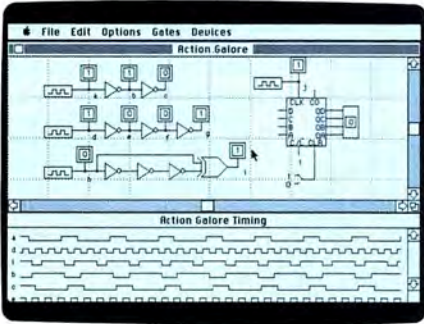
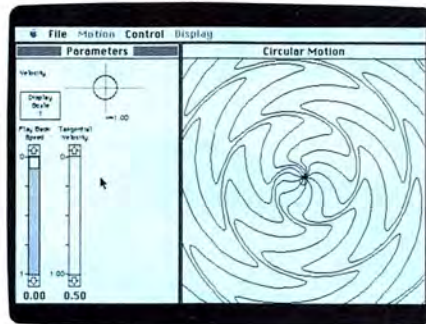
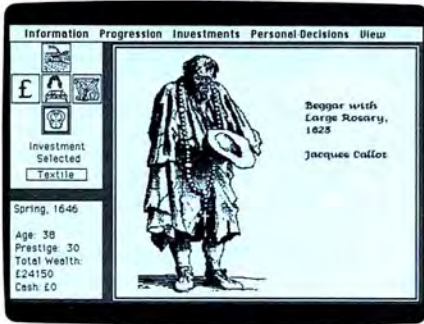


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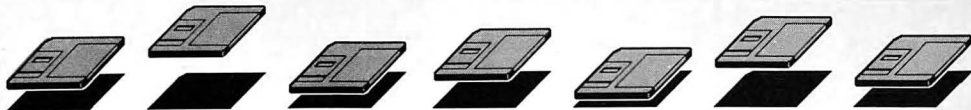
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spreadsheet or a word in a word processor. Also produces timed notes. \$99.95. Target Software, Inc., 14206 S.W. 136th St., Miami, FL 33186. NCP (Sep 87)

**Micro Planner Plus** is a great project management system. **★★★★½** Outstanding analysis capability. Memory based, making it much faster than the original. Includes a font menu. Even saves reports out in MacDraw format for further work. \$495. Micro Planning International, 235 Montgomery St., San Francisco, CA 94104. NCP (Dec 86)

**MORE** is an incredibly powerful outline processor with gobs of **★★★★** great features: instant charts, math capabilities, multiple windows, font and style control, templates and more. Prints outlines in any of several standard formats, even in color. Requires 512K+. \$295. Living Videotext, 117 Easy St., Mountain View, CA 94043. NCP (Jan 87)

**PowerPoint** is a comprehensive presentation creation tool. **★★★★** Handles 35mm slide and overhead transparency formats. Good graphics and text editing capabilities. Requires 512K+. \$395. Forethought, 250 Sobrante Way, Sunnyvale, CA 94086. NCP (Aug 87)

**ThinkTank 512** is a very fast and intuitive organizational tool. Full **★★★★½** keyboard control is possible. Can store and paste graphics into outlines. Slide show features allows high-quality presentations to be created. Good report formatting and printing capability. \$195. Living Videotext, 117 Easy St., Mountain View, CA 94043. CP (Jan 86)

**Vollal** is a full-featured outliner in desk accessory format. **★★★★** Headlines can be edited like normal text. Reads and writes text files, Word, MacWrite, ThinkTank and MORE documents. An excellent value. Requires 512K+. Mac XL not supported. \$99.95. Target Software, 14206 SW 136th St., Miami, FL 33186. NCP (Mar 87)

## DESK MANAGERS

**BatteryPak** is a set of 9 handy desk accessories including **★★★★** scientific and RPN calculators, a background text file printer and a 250-page note pad with search and phone dialing capabilities. \$49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404 NCP (Dec 85)

**Executive Office** is a jack of all trades office application. **★★★★½** Good data base, word processing, graphics and minispreadsheet. Available on 400 or 800K disks. \$249.99. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Mar 87)

**Front Desk** lets small businesses and offices easily keep track of **★★★★** personnel schedules, activities and payments. The program can keep track of up to 15 employees, functioning as a day-, week- and month-at-a-glance calendar. \$149.95. Layered, 85 Merrimac St., Boston, MA 02114. NCP (Dec 85)

**My Office** lets you handle your files and papers in much the same **★★★★** way you did before you got a computer. Excellent use of graphic symbols. \$129.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Prem)

**Quickset** is a set of desk management and organizational tools **★★★★** that can be used as desk accessories or applications. Functions include note filer, card filer, calendar, phone dialer, financial and statistical calculators and a file encryptor. \$49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP (Dec 85)

**SideKick 2.0** beefs up original SideKick DAs and adds two major **★★★★** new ones—MacPlan, (formerly Click-On Worksheet) and Outlook, a full-featured outliner. Also comes with seven applications to support the desk accessories. \$99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Jun 87)

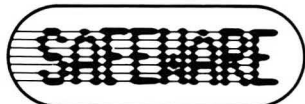
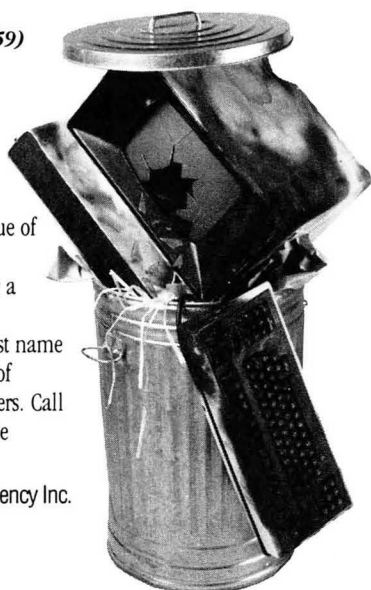
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**Top Desk** is a set of 7 self-installing (and self-removing) DAs. Menu Key adds Command key sequences to programs; Write allows looking at and moving data between up to 8 MacWrite documents; also included are BackPrint, Touch 'n' Go, Blank, Encrypt and Launch. \$59.95. Cortland Computer, PO Box 9916, Berkeley, CA 94709. NCP (May 86)

## UTILITIES

**Accessory Pak 1** is a set of useful applications and utilities. *Paint Cutter* alone is worth the price. That program allows users to browse and manipulate full page MacPaint documents. \$39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Nov 85)

**Copy II Mac** does efficient sector and bit copies and in its latest version can back-up virtually all Mac software. Features graphic displays of copy progress. Comes with *MacTools*, a multi-use utility that can recover many damaged files. \$39.95. Central Point Software, 9700 SW Capitol Highway, Portland, OR 97219. NCP (Apr 86)

**DiskExpress** unfragments disk volumes by reorganizing data into continuous sectors and arranging files to slow down further fragmentation. Works with MacServe, floppy drives and most hard drives. Requires 512K+. \$39.95. ALSoft, Box 927, Spring, TX 77383. NCP (Feb 87)

**DiskFit** is a utility for backing up and restoring hard disk files. Creates a "SmartSet" of floppy disks so incremental backups only update files modified since the last backup procedure. Backs up to floppies or another hard disk. Requires 512K+. \$74.95. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Jun 87)

**Disk Librarian** is an easy to use shareware cataloguing program. Criteria selection option for generating subcatalogs. Requires 512K+. \$20. Little Bit, 469 Edgewood Ave., New Haven, CT 06511. NCP (Apr 87)

**Disk Ranger** is a speedy cataloguing program that doubles as an efficient labelmaker. Comes with pinfeed labels. Works with regular and hard disks. Can catalog HFS systems. \$49.95. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP (Mar 86)

**DiskTop 2.0** is a desk accessory *Finder* replacement of extraordinary power and ease of use. Comes with the useful *Laser-Status* DA and *Widgets* application. The extras alone are worth the price. Requires 512K+. Upgrade from version 1.0. \$7; \$10 with new manual. \$39.95. CE Software, 801 73rd St., Des Moines, IA 50312. NCP (Aug 87)

**Dubl-Click Calculator Construction Set** lets users design personalized calculators with a variety of standard and special functions. Finished calculators can be saved as installable desk accessories or as clickable applications. \$59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Apr 86)

**Fedit Plus** is the file and disk editor for everyone, from newest Mac owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. HFS-compatible. \$49.95. MacMaster Systems, 108 E. Fremont Ave., #37, Sunnyvale, CA 94087. NCP (Sep 86)

**FlashBack** is a utility to backup HFS hard disks onto floppies. A unique graphic display of the HFS directory facilitates file selection. The program can handle files larger than 800K. \$59.95. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP (Nov 86)

**Glue** adds a print-to-disk capability to many programs. *ImageSaver* installs as printer driver, *Viewer* allows copying and printing of *Glue* files. Handy utility for desktop publishers. \$59.95.

Solutions International, Box 989, Montpelier, VT 05602. NCP (Dec 86)

**Hard Disk Util** uses patch files to allow users to mount and run specified programs on their hard disks. The list of patches is constantly expanding. \$89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

**HFS Backup** ranks as one of the preferred hard disk backup utilities. Backup by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. \$49.95. PCPC, 6204 Benjamin Rd., Tampa, FL 33614. NCP (Dec 86)

**HFS Locator Plus** is the essential HFS desk accessory. It can search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. \$39.95. PBI Software, 1163 Triton Dr., Foster City, CA 94404. NCP (Sep 86)

**LabView** automates the repetitive task of controlling laboratory instruments. Rich icon-based language allows flow chart type programming, but response is slow. Requires 512K+. \$1995. National Instruments, 12109 Technology Blvd., Austin, TX 78727. NCP (Aug 87)

**LaserServe** is a printer spooler for AppleTalk networks. After installation all operations done via a desk accessory. Works with both MacServe and TOPS. Requires 512K+ and 800K drive or hard disk. \$95 per node. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. NCP (Apr 87)

**Mac Disk Catalog II** is a utility that will quickly organize a moderate size disk library. Easy to use with powerful reporting and label-making features. \$49.95. New Canaan MicroCode, 136 Beech Rd., New Canaan, CT 06840. NCP (Dec 85)

**MacFlow** is a design tool created for programmers. Traditional flowcharting symbols are linked together, and a symbol can be connected to a separate flowchart file. Symbols can't be edited, precluding using *MacFlow* for other applications. \$125. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr 87)

**MacInUse** tracks time spent in applications and saves info as text files. Installs on any disk, works in background. MFS, HFS compatible. Extremely valuable for tax purposes, client records, etc. \$49. SoftView, 4820 Adohr Lane, Camarillo, CA 93010. NCP (Jan 87)

**MacLabeler** lets users instantly index and print labels for all the disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. \$49.95. Ideaform, PO Box 1540, Fairfield, IA 52556. NCP (Prem)

**MacNosy** is a global disassembler. A very advanced user can use this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going IF you have the skill to guide it. The documentation is sparse. For pros only. \$90. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. NCP

**Mac + II** lets you run Apple II software on the Mac. Emulation speed is only 35 to 45 percent of a real Apple II, so graphics especially suffer. Games also run slow. Good for ex-Apple II owners who have large software collections. \$149.95. Meacom, PO Box 272591, Houston, TX 77277. CP

**MacSafe** is a data file security program that allows you to place multiple files into a "safe," and then you can further protect them through two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk. \$149.95. Kent Marsh Limited, Inc., 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar 87)

**MacServe** converts a Mac and a hard disk into a disk and print server. Uses the AppleTalk network and is easily hooked up. Users can partition the hard disk into multiple volumes. Runs in the background, so users can work on all machines in the network. \$250. Requires 512+ or Mac XL. Infosphere, 4730 SW Macadam, Portland, OR 97201. CP

**MacZap** is a three-part disk and memory utility. It can be used to recover some damaged files and disks, compare disks,

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# MINIFINDERS



analyze disk structure and make back-up copies of most disks. \$60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan 86)

**Menu Fonts** displays the names of fonts in the actual font instead of standard Chicago. Won't work with programs that have a nonstandard Font menu or no Font menu. Comes with *LockOut*, a utility that gives password access to your Mac, and *FastFormatter*, a utility for formatting multiple blank disks. Requires 512K+. \$15. Beyond Software, 3865 N. Oracle Rd., Tucson, AZ 85705. NCP (Jul 87)

**myDiskLabeler** is an excellent label maker. It can read directories, and use large or small icons or anything desired. Comes with 54 precut labels. \$44.95; with color printing ability (on the ImageWriter II), \$54.95; with PostScript font capability (on the LaserWriter), \$64.95. Williams and Macias, PO Box 19206, Spokane, WA 99219. NCP (Aug 87)

**'Ncryptor** is a simple, safe program that lets users password their files. The same program is used for encoding and decoding. This is one of the best products in its category. \$39.95. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP

**Packit III** is an essential utility. Primarily used to temporarily "glue" files together, it can also compress and encrypt. Feeware. \$10, \$10 for printed manual. Harry R. Chesley, 1850 Union St., San Francisco, CA 94123. NCP (Jan 87)

**Printworks for the Mac** is a comprehensive software-based dot-matrix printer control system. Optimizes printing from different applications. Requires 512K+. \$75. SoftStyle, 7192 Kalaniana'ole Highway, Honolulu, HI 96825. NCP (Aug 87)

**Programmer's On-line Companion** puts an abridged version of *Inside Macintosh* in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. Non-Macish interface makes the program confusing, somewhat difficult to use. \$34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (Jul 87)

**Quick & Dirty Utilities, Volume One** is a disk full of handy programs. Several desk accessories include a menu bar clock and a terminal. \$39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Nov 85)

**RamSnap** is a RAMdisk and disk cache in one easy to use package. Can store multiple configurations as files. Good product but a little pricey. \$59.95. Dove Computer Corp., 1200 North 23rd St., Wilmington, NC 28405. NCP (Jun 87)

**SmartScrap and The Clipper** are two useful desk accessory utilities for graphics work. *SmartScrap* is a major enhancement to the standard Scrapbook DA. *The Clipper* provides you with a transparent Clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. \$59.95. Solutions International, PO Box 989, Montpelier, VT 05602. NCP (Jul 87)

**Stepping Out** is a software virtual screen extender. Lets you create a screen as large as memory allows. 9" screen is a "view" to larger screen. Also has reduction features. Amazing. \$95. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709. NCP (Jun 87)

**SuperLaserSpool** is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background, but doesn't print a faithful rendition of *PageMaker* documents as a result. \$149.95 single user, \$395.95 for up to five users on one network. SuperMac Software, 950 N. Rengstorff Ave., Mountain View, CA 94043. NCP (Jun 87)

**Switcher** is Andy Hertzfeld's contribution to Mac productivity. This program lets users run several programs at once (up to 8 on a 1-megabyte or larger machine). Switching between the programs is near instantaneous. Requires 512K+. \$19.95 from Apple, free from BBSs, included with some third-party applications. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Jun 86)

**Tempo** is a desk accessory that allows most Mac commands to be intelligently recorded and played back. Capabilities include pausing, conditional branching and macros that work between applications. \$99. Affinity Micro Systems, 1050 Walnut St., Boulder, CO 80302. NCP (Jul 86)

**TMON** is the debugger for the Mac. This isn't open to question. **TMON** is simply the best. Comes with the latest version of Darin Adler's Extended User Area. \$100. ICOM Simulations, 626 Wheeling Rd., Wheeling, IL 60090. NCP

**Turbo Download** is a desk accessory designed specifically to increase the speed of Xmodem data transfers from national data bases to your Mac. Speed increases range upward from 50% to over 300% at 2400 baud. \$39.95. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP

**Twelve-C Financial Desk Accessory** brings all the power and functionality of a Hewlett-Packard 12C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. \$39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP

**II in a Mac** is a graphically oriented Apple II emulator with unique features, such as text and graphics copy from Apple screen to Mac Clipboard. Suffers speed problems associated with "virtual machine" emulation. \$69. Micro-W Distributing, 1342B Route 23, Butler, NJ 07405. CP

**TypeNow** is a desk accessory that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. \$39.95. Mainstay, 5311B Derry Ave., Agoura Hills, CA 91301. NCP (Jan 86)

## LANGUAGES

**AAIS Prolog** is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. \$150. Advanced AI Systems, PO Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar 87)

**Aztec C** is a C language that will appeal to users with a UNIX background. It uses many UNIX conventions and in the more expensive versions comes with standard UNIX utilities, including the VI editor. \$75 beginners, \$199 basic system, \$299 development system, \$499 commercial system. Manx Software Systems, PO Box 55, Shrewsbury, NJ 07701. NCP (May 86)

**Basic Compiler** is the long awaited compiler for *Microsoft BASIC*. The interface is unfriendly, but it gets the job done. Compiled programs run faster, but you can still tell they are written in BASIC. \$195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (May 87)

**ExperCommon Lisp** is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and standalone applications. Requires 1M+. \$995. ExperiTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. NCP (Aug 87)

**ExperLISP** is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. \$495. Requires 512K+. ExperiTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP

**ExperLogo** is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than usual "turtles." Very speedy, smooth program. Comes with an excellent manual. \$149.95. ExperiTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP

**ExperProlog II** is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. \$495. ExperiTelligence, 559 San Ysidro Blvd., Santa Barbara, CA 33108. NCP (Mar 87)

**Lightspeed C** provides an integrated environment for developing desk accessories, applications and code resources in C. The editor works with the compiler for searches and file management. Can get awkward if you need something outside the environment. \$175. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Apr 87)

**Lightspeed Pascal** is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment.

# MINIFINDERS



Requires 512K+. \$125. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Feb 87)

**LPA MacProlog** is a flexible program that supports several Prolog syntaxes, producing a rich programming environment. However, the program's implementation and documentation are both poor. \$295. Programming Logic Systems, 31 Crescent Dr., Milford, CT 06460. NCP (Mar 87)

**MacAsm** is a software development system that allows programs to be written in assembly language. Programmers can assemble, edit and test software, and an integrated resource compiler lets independent applications run from their own icons. \$125. Mainstay, 5311B Derry Rd., Agoura Hills, CA 91301. NCP

**Mac C** is a good, highly Mac-oriented implementation of this popular development language. Assembler and linker included. \$425. Consulair, 140 Campo Dr., Portola Valley, CA 94025. NCP

**MacExpress** is a development environment or shell. Programmers use it to save time and effort when developing standalone applications for the Mac. \$195. ALSoft, PO Box 927, Spring, TX 77383. NCP (Feb 86)

**MacForth Plus** is an excellent implementation of the popular Forth programming language. New, reduced price, \$199. Creative Solutions, 4701 Randolph Rd., Rockville, MD 20852. NCP

**Mach II** is a multitasking implementation of Forth that allows local variables and text files. Can create standalone applications. Several windows can be up with different operations in each, operating concurrently. Execution is fast. \$99.95. Requires 512K. Palo Alto Shipping, PO Box 7430, Menlo Park, CA 94026. NCP (Apr 86)

**Macintosh 68000 Development System** is a fairly traditional assembly language package. The two-disk set provides an

editor (*Edit*), an assembler, a linker, an executive and a resource compiler. \$195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**Macintosh Pascal** is Apple Computer's version of this very popular programming language. Loaded as it is with innovative teaching features, this interpreter is an excellent introduction to Pascal. \$125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. CP

**MacScheme** is a LISP dialect with "artificial intelligence" capabilities. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. \$125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Jun 86)

**MacScheme+Toolsmith** is a Mac version of Scheme, a LISP dialect. Beautiful implementation, marred only by relative slowness compared to similar products. Get *Toolsmith*. Requires 1M+. \$250. Semantic Microsystems, 4470 S.W. Hall, Beaverton, OR 97005. NCP (Aug 87)

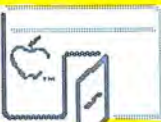
**Megamax C** is an easy to use, full version of C. Has a compiler, linker, disassembler, editor and much more. Good for beginners. Excellent documentation. \$299.95. Megamax, PO Box 851521, Richardson, TX 75085. NCP

**Microsoft BASIC** was the Mac's first programming language. This interpreter (it's not a compiler) now supports the Toolbox. For nonprogrammers there are lots of programs available to run. \$99. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP

**MIDiBasic** is a library of simple, but highly useful routines for writing MIDI software. Good stuff. Sketchy documentation. Works with both *Microsoft* and *ZBasic*. Requires 512K+ plus Basic. \$49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug 87)

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# MINIFINDERS



**Object Logo** is an object-oriented programming language with **||||** access to the Toolbox. Good product, but can't produce standalone applications. Requires 512K+. \$79.95. Coral Software, PO Box 307, Cambridge, MA 02142. NCP (Aug 87)

**Personal Prolog** is an inexpensive and well-documented program. **||||** Has no debugging or search and replace facilities, making it a more appropriate tool for learning than development. Documentation and use of Mac interface are excellent. \$64.95. Optimized Systems Software, 1221 B Kentwood Ave., San Jose, CA 95129. NCP (Mar 87)

**Prolog/m** is a solid Prolog following the Edinburgh standard. Has **||||** extensive debugging facilities, but you'll need separate *Toolbox* disk with 58 additional predicates. Drawback: no true editing or printing facilities. \$99.95. Chalcedony Software, 5580 La Jolla Blvd., La Jolla, CA 92037. NCP (Mar 87)

**QUED (Quality Editor for Developers)** is the ultimate source code editor. Loaded with useful and well thought out features, it will make any programmer's life much easier. It is not a word processor, however. \$65. Paragon Concepts, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 86)

**TML Data Base Toolkit** is an ISAM type data base that provides **||||** fast and efficient administration of large data files in applications developed with *TML* compiler. Supports multiple open index files. \$89.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)

**TML (MacLanguage Series) Pascal** is a good Pascal compiler. **||||** capable of producing standalone programs. Can use most existing Lisa Pascal programs with only slight modification. Requires 512K. \$99.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Jun 86)

**TML Source Code Library** shows how to write programs that use **||||** custom definition routines, speech, serial drivers, split bars

and other topics. Provided on three 400K diskettes. Requires *TML Pascal*. \$79.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)

**Visual Interactive Programming** is a unique visual programming **||||** system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most toolbox routines. Poor printing control. \$124.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 87)

**ZBasic** is a fast, interactive compiler capable of creating stand- **||||** alone applications that takes advantage of Mac's unique features and abilities. Includes *Edit*, *RMaker* and *MacInTalk*. Requires 512K. \$89.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec 86)

## EDUCATION

**ChipWits** is a combination game and teaching tool. Players create **||||** programs to maneuver robots through a set of 8 mazes. The programs are written in *ChipWit's* built-in icon-based programming language (IBOL). \$49.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP

**Course Builder** (version 2.0) creates standalone educational **||||** applications. An easy-to-learn dedicated programming language uses blocks and arrows. Graphics, animation and sound can be integrated. Version 2 allows mathematical calculations. Poor documentation. \$395, plus \$10 shipping. TeleRobotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931. NCP (Oct 87)

**KidsTime** is a package of five quality educational programs for **||||** children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech and one

Inside Out, the first relational database engine for Macintosh™, reaches far beyond your highest expectations. Inside Out brings the power of a 4th generation database language to conventional Pascal or C development systems. Inside Out maintains every bit of information in a database in one Macintosh file. This file can grow as large as 256 gigabytes. Each database consists of up to 128 logical files. Three different types of logical files provide support for virtually any type of data, including variable length data. Database views allow applications to efficiently process related data, while guaranteeing data independence.

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# MINIFINDERS



is a nice introduction to musical notes. Sparse documentation. \$49.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Oct 86)

**MacEdge** and **MacEdge II** each contain 8 reading or math drill programs for basic skills. Programs follow one of three formats, a bit contrived. Contrivances are design flaws. \$49.95 each. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP

**MacType** offers structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multistudent environment. \$49.95. Palantir Software, 12777 Jones Rd., Houston, TX 77070. CP

**MasterType** is proof that learning to type can be fun. In this arcade-style action game words descend from four corners towards the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons and provides comparison scores. \$49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP

similarities to previous characters. \$59.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Jun 86)

**The Ancient Art of War** gives users a chance to refight some famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, addicting game. Requires 512K+ Mac. \$44.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Apr 86)

**Archon** pits the forces of Light against Dark in a quest to gain control of five Power Points on a checkerboard grid. The shifting cycles of squares' colors keeps the balance of power ever-changing. One or two players. \$39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

**Balance of Power** is the world's first computer peacemake. This simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Extraordinary artificial intelligence routines and general play make this a classic. \$49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60022. CP (Prem)

**Battle Stations** is a deceptively simple game based on the pen and paper game of *Battleship*. Requires strategy on several levels. Makes excellent use of Mac sound and graphics. Fun, casual game, especially when the Mac is one of the players. Requires 512K+. \$30. Timeline, PO Box 60, Ypsilanti, MI 48197. NCP (Jun 87)

**Borrowed Time** casts players as detectives who have to solve their own murder—before it happens. This game requires players to think and act like a detective to solve the game. Good sentence parser, sketchy Mac interface. \$44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (May 86)

**Bridge 4.0** provides three other players and the cards for a game of rubber bridge. It's an average (Goren) bidder and a less than good card player. Good if it's the only game in town.

## ENTERTAINMENT

**A Mind Forever Voyaging** is a departure in text adventure games. It has a more extensive vocabulary and a more involved story than most of the genre. The story here is gripping, but there are only a few puzzles to solve. Requires 512K+. \$39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 86)

**Alter Ego** simulates the entire lifetime of a fictional character. The player's reaction to each multiple-choice event shapes the character's future relationships, job, health, etc. Spectacular the first time you play; after that there are too many

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Plays slowly since it's written in BASIC. \$29.95. Artworx Software, 150 N. Main St. Fairport, NY 14450. CP (Sep 86)

**Bureaucracy** is a paranoid text adventure that dares you to move **||||** to a new house and job and still maintain some degree of sanity, not to mention a low blood pressure. Written by Douglas Adams of *Hitchhiker's* fame \$39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Aug 87)

**The Chessmaster 2000** is a masterful chess program that will **||||** appeal to both novices and master. You can view the board from 2- or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha," though. \$39.95. The Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (Jul 87)

**Dark Castle** is an outstanding achievement in action games which **||||** integrates RealSound with superb animation and graphics. You'll need better-than-average hand/eye coordination, but it's well worth the effort. Requires 512K+. \$39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

**Deja Vu: A Nightmare Comes True** is a graphic adventure that **||||** breaks new ground. Innovative use of the Mac interface in truly playable and exciting game. A great introduction to graphic adventure games. \$49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Jan 86)

**Dinner at Eight** is a useful recipe filing system that includes a **||||** collection of recipes from a nationwide sampling of restaurants. Users enter number of diners and program scales recipes accordingly. \$49.95. Rubicon, 2111 Dickson Dr., Austin, TX 78704. NCP (Jan 86)

**Down Hill Racer** is an action game with three skier personalities, **||||** four courses and four skill levels. There's something here for every player, no matter how bad or good. Full digitized sound

(very nice!) requires at least 1M. Requires 512K+. Not XL compatible. \$49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. CP (Sep 87)

**Enchanted Scepters** is a surround sound graphic adventure **||||** game. It has a limited vocabulary and virtually no story. Offers extensive and varied scenes and utilizes the Mac interface to the fullest. \$39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. CP (May 86)

**Ferrari Grand Prix** is an exciting race car simulation game. **||||** Mastering it takes quite a bit of time and effort. Startup course and four other courses are built into the program. You can also design your own courses and backgrounds. Requires 512K+. \$59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Jul 87)

**Flight Simulator** puts you at the controls of a small plane (prop or **||||** jet) and lets you roam North America. As difficult as real flying. Mac version has features not found on earlier versions, including spotter aircraft. Not all features available on 128K. \$49.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Nov 86)

**Fokker Triplane** is about as near to flying as you can get seated in **||||** front of a computer. Very realistic simulation and excellent graphics. Well designed and implemented. \$59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Feb 86)

**Gato** puts players in command of an American submarine in World **||||** War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." \$49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. CP (Nov 85)

**Grand Slam** is an absorbing and realistic tennis simulation game. **||||** Practice or play tournament against Mac-controlled players

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# MINIFINDERS



with different styles and abilities on four different surfaces. 512K or Mac Plus. \$49.95. Infinity Software, 1331 61st St., Emeryville, CA 94608. CP (Nov 86)

**HardBall** is a baseball simulation game complete with umpire's calls and crowd sounds. Great graphics and a lot of fun for fans. \$44.95. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. CP (Feb 87)

**Hollywood Hijinx** substitutes a modern Hollywood estate for the famous Underground Empire, but otherwise represents a return to *Zork* gameplay and feel. There's even a maze to navigate. Simplistic, but good, "finely wrought and good-hearted game." \$39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Jun 87)

**Leather Goddesses of Phobos** is another in the long line of witty and entertaining Infocom text adventures. This one lets you choose your sex and comes with a 3-D comic and a scratch 'n' sniff card. It has three levels of play: tame, suggestive and lewd. \$39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Feb 87)

**Lode Runner** is a 150-screen action-strategy challenge. Move around a grid of ladders and platforms collecting treasure; dig a hole to trap pursuers. Build your own challenges. \$39.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP

**MacCourses** adds four very challenging new courses to *MacGolf*. Courses are swapped on the original *MacGolf* master disk two at a time. Nice add-on for a good game. Requires *MacGolf*. \$34.95. Practical Computer Applications, 1305 Jefferson Hwy, Champlin, MN 55316. CP (Apr 87)

**MacGolf** is a dynamic simulation of real golf. Players have a choice of courses and difficulty levels. Superb playability makes this a must for all golfers and gamers. Requires

512K+. \$59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (May 86)

**MacMan** is a two-part package. The software portion is a decent *PacMan*-like game. The hardware part is a tiny converter that lets you use a joystick with a Mac or Mac Plus. \$39.95. Nuvo Systems, 225 Tank Farm Rd., San Luis Obispo, CA 934401. CP (Aug 87)

**Mac Pro Football** is a terrific sports simulation that gives you the chance to pit any combination of 38 Super Bowl teams against each other and direct team play. It comes with excellent, detailed (and necessary) documentation. Play selection can get a bit Byzantine. \$49.95. Avalon Hill, 4517 Harford Rd., Baltimore, MD 21214. CP (Mar 87)

**MacRacquetball** uses digitized videos and sounds of professional players for a realistic simulation. Has lots of control settings and can be played against someone else over a modem or between hard-wired Macs. Turn off hard disks before playing. \$59.95. Practical Computer Applications, Inc., 1305 Jefferson Highway, Champlin, MN 55316. CP (Oct 87)

**Make Millions** is a fascinating business simulation in which the player competes against the computer to take control of five companies, then run them profitably. Appeals to the closet capitalist in all of us. \$49.95. Scarborough Systems/Mindscape, 3444 Dundee, Northbrook, IL 60062. CP

**Maze Survival** challenges players to destroy maze walls before roving bugs squash themselves against it. Bugs lay eggs to spawn a new generation. Repetitive. \$34.95. Oluvai Software, 830 NE Pop Tilton's Pl., Jensen Beach, FL 33457. NCP (Aug 87)

**MazeWars+** is an interactive, multiplayer game to be played on AppleTalk or through a modem link. Chase opponents

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# MINIFINDERS



through a four level maze. Requires 512K+, AppleTalk or Hayes compatible modem. \$49.95. MacroMind, 1029 W. Wolfram, Chicago, IL 60657. NCP (Nov 86)

**Mind Over Mac** features five games. Entertainment for the whole family. Good graphics paired with synthesized sound and on-screen help. \$49.95. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP (Feb 86)

**MoonMist** is Infocom's latest introductory level text adventure game. This is a typical haunted English castle story, not quite up to Infocom's best. It has four versions, so it's good for more than one play. \$39.95. Infocom, 125 Cambridge-Park Dr., Cambridge, MA 02140. NCP (May 87)

**NewGammon** is animated backgammon that will challenge even good players. Features include variable skill levels and strategies and options to play the Mac or watch the Mac play itself. An arcade-like high speed mode is included. \$39.95. Newsoft, PO Box 3046, Newport Beach, CA 92663. CP

**NFL Challenge** simulates coaching and watching professional football. Comes on two disks, one with program and system, the other statistical data. Play against either human or computer coaching. Plays are selected from pre-defined playbooks. \$99.95. XOR Corp., 5421 Opportunity Ct., Minnetonka, MN 55343. NCP (Jun 87)

**Orbiter** puts a real space shuttle on the Mac screen. A multitude of controls, intelligent on-board computer with speech capabilities, real-time graphics and 16 distinct missions help this program succeed as both a game and a simulation. \$49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (Jul 86)

**Orbquest** is a fantasy role-playing adventure with better-than-average puzzles and an excellent sense of humor. Not as

sophisticated as some, but a good value. \$49.95. QWare, PO Box 850415, Richardson, TX 75085. CP (Dec 86)

**Patton vs. Rommel** is traditional-style strategic wargame. It covers events in Normandy in 1944. While complex, it's well designed and very playable. \$39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Apr 87)

**The Pawn** is an unusual British interactive adventure game with text and graphics. The unique interface has some drawbacks, but *The Pawn* has humor, social satire, is entertaining and is challenging. \$44.95. Requires a Mac+. Firebird, PO Box 49, Ramsey, NJ 07446. CP (Mar 87)

**Pinball Construction Set** lets users create their own pinball games, as elaborate or as easy as desired. Uses *MacPaint* for backgrounds and has lifelike sounds (on 512K+ Macs). \$39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jan 86)

**Portal** is an intriguing science fiction novel for kids that suffers from having a poor interface. Storyline: all of humanity is missing and you have to search through a data base for files that reveal the mystery. Nothing in the way of role-playing, and the Mac version is slow and buggy. \$49.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Oct 87)

**Puppy Love** is a combined game and teaching tool. As you teach your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. \$29.95. Addison-Wesley, Route 128, Reading, MA 01867. CP (Mar 87)

**Real Poker** is five-card draw against five other players with Old West names, distinct personalities and playing styles, in a saloon setting. \$39.95. Henderson Associates, 980 Henderson Ave., Sunnyvale, CA 94086. CP

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# MINIFINDERS



**Seven Cities of Gold** is an educational program masquerading as an adventure game; and is practically unique in being equally good in both respects. You are to land (not the easiest part) in the New World and attempt to placate the natives, seed a few missions and collect gold. Nice work if you can get it. \$39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jun 87)

**Shadowgate** is an icon-based graphic adventure. You, as the seed of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound and adventure. \$49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Sep 87)

**Shanghai** challenges players to clear a board of all 144 tiles, by matching pairs of mah-jongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. \$44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Nov 86)

**Skyfox** is a sophisticated 3D shoot-em-up. You're fighting tanks, planes and enemy cities floating in the sky. Fast graphics, good sound, slick, on-board attack computer and many levels of difficulty will keep fans of this genre happy for hours. \$39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

**Smash Hit Racquetball** is an accurate and entertaining simulation of a day on the courts. Digitized sound adds to the realism. Includes a hard disk install, unusual for a game. The low price makes this the perfect Mac gift. \$19.95. Primera Software, 650 Cragmont Ave., Berkeley, CA 94707. CP (Dec 86)

**Space Quest** is a three-dimensional, animated adventure in which you play a janitor in a dicey situation. All you have to do is

get off your ship before it explodes and save the Earnon System. Runs on any Mac. Sierra On-Line, PO Box 485, Coarsegold, CA 93614. CP (Sep 87)

**Strategic Conquest** is a large scale, strategic conflict on the Mac. This very involved war game will be enjoyed by those who like this genre. \$59.95. PBI Software, 1163 Triton Dr., Foster City, CA 94404. CP (Dec 85)

**Tass Times in Tone Town** is a slightly off-the-wall graphic adventure in which you need a flashy hairdo and a jumpsuit before you can get anywhere, and you pay for things with guitar picks. Decent puzzles, with a sense of humor. \$44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Jan 87)

**The Toy Shop** is a construction kit for building 20 different working model toys. Some parts can be customized. Manual gives clear instructions, but many toys are too complex for a child to build. \$49.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Nov 86)

**Ultima III** allows up to four characters to cooperate to explore the vast wilderness of Sosaria. \$59.95. Origin Systems, 340 Harvey Rd., Manchester, NH 03103. CP

**Uninvited** is an icon-based adventure game set in an extremely haunted mansion. Since you access the parser by double-clicking, command choices are always visible—you don't waste time trying to figure out which words the program understands. It has animation and sound. \$49.95. Mindscape, 3444 Dundee, Northbrook, IL 60062. CP (Sep 86)

**Winter Games** lets up to eight players compete against each other in Olympic events including figure skating, bobsledding, biathlon and ski-jumping. Excellent animation, good graphics, good theme music. \$39.95. Epyx, 600 Galveston Dr.,

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# MINIFINDERS



PO Box 8020, Redwood City, CA 94063. CP (Mar 86)

**Wizardry** is an outstanding dungeon exploration adventure pitting **|||||** a party of up to six characters against the guardian monsters of the evil wizard Werdna. Capture his amulet to earn your reward. Even after solving the game, you'll want to go back into the dungeon. \$59.95. Sir-Tech, 6 Main St., Ogdensburg, NY 13669. CP

**WordPlay** is a word game with over 50 crossword puzzles for different levels of expertise. User friendly, it offers on-screen Help menus. A Work mode allows development of new puzzles for the creative. \$49.95. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Mar 86)

**World Builder** is an adventure game construction set with what **|||||** amounts to its own programming language. The whole program (language including) is easy to learn and produces commercial quality games. No support for the programming language, though. \$79.95. Silicon Beach Software, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

**Xyphus** is a role-playing game pitting four characters (fighters or wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon control. \$39.95. Penguin, PO Box 311, Geneva, IL 60134. CP

**Your Personal Poet** creates personalized greeting cards on the **|||||** Mac. Comes complete with four greeting cards and matching envelopes. Does not run when connected to a LaserWriter. Requires 512K+. \$29.95. Computer Poet Corp., PO Box 7707, Incline, NV 89450. NCP (Jun 87)

**Zork II** is where the adventure continues in the underground **|||||** empire. A wandering wizard keeps things interesting, though there's a way to beat him if you persevere. \$44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

**Zork III** is the final chapter in the trilogy. Players come up against **|||||** the ultimate enemy—the Dungeonmaster himself. More closed-ended than previous *Zorks*. \$44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

## MUSIC

**ConcertWare+** is an enhanced version of *ConcertWare*. Has **|||||** different instruments and can use any four of a set of eight at any point in a piece. Can read and use *ConcertWare* and *MusicWorks* files. \$69.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Nov 85)

**Jam Factory** is a program for manipulating MIDI data in real time. **|||||** Absolutely impossible to figure out without a thorough reading of the manual and lots of practice. Requires 512K+, MIDI interface and MIDI synthesizer. \$189. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

**Listen** is an educational tool for ear training. It has both a piano **|||||** keyboard and a guitar fretboard for the student to input notes, and offers a wide range of exercises. It also produces some beautiful sounds. \$69. Imaja, PO Box 638, Middletown, CT 06457. CP (Jan 87)

**M** is a music creation program that uses real time MIDI data. **|||||** Absolutely impossible to figure out without a thorough reading of the manual and lots of practice. Requires 512K+ MIDI interface and MIDI synthesizer. \$219. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

**MIDIBasic** is a simple, but highly useful routine for writing MIDI **|||||** software. Good stuff. Sketchy documentation. Works with

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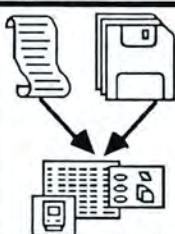
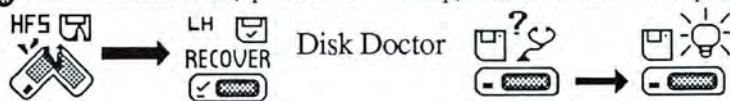


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## MINIFINDERS



both Microsoft and ZBasic. Requires 512K+ plus Basic. \$49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug 87)

**Music Mouse** is a music program in a genre all its own. Called an **intelligent instrument**, *Music Mouse* gives you instant musical feedback as you move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. \$59.95. OpCode Systems, 444 Ramona St., Palo Alto, CA 94301. NCP (May 87)

**Performer** is a strong contender for the high-end of the MIDI sequencer market. Only those experienced with MIDI should get this. Files can be transported to *Professional Composer* for editing. No direct track or segment looping. \$295. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP

**Practica Musica** uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student, it is also fun for anyone who wants to develop a trained ear for intervals, chords and melodies. Requires 512K. \$59.95. Periscope Press, PO Box 6926, Santa Barbara, CA 93160. CP

**Professional Composer** is aimed at music professionals. Produces performance-quality sheet music; has only limited playback facilities. \$495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Prem)

**Studio Session** consists of two programs, an Editor and a Player, that produce music with six voices of digitized sound. Excellent program plus good manual make this a good buy. \$89.95. Impulse, 6870 Shingle Creek Pkwy., Minneapolis, MN 55430. CP (Dec 86)

## HARDWARE & ACCESSORIES

**CMS S-140 SCSI Hard Disk** is a very fast, high-capacity SCSI hard disk with a unity interleave and average access time of 18 msec. Holds 140 M. Help, file transfer and tape backup commands built in. \$2995. CMS Enhancements, 1372 Valencia Ave., Tustin, CA 92680. (Jul 87)

**DASCH** is an external RAMdisk available in half, 1 and 2M sizes. Connects to a serial port. Speeds up operations 200 to 300%. Can be used as a printer buffer. Works with all Macs. 512K, \$395; 1M, \$450; 2M, \$545. Western Automation Laboratories, PO Box 3438, Boulder, CO 80307. (Feb 87)

**Data Frame 40XP** is a very fast, very quiet 40-meg external SCSI hard drive. Comes with a good and complete set of utility software. About as fast as a SCSI drive can be. Requires SCSI port, 512K+, new ROM. \$1899. SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043.

**FX-20** is a good 20-meg external hard drive. Good utility software. Reliable, and reasonably quiet. Sits next to Mac, has a large, oddly shaped case. Requires SCSI port, 512K+, new ROM. \$1199. General Computer, 215 First St., Cambridge, MA 02142. (Feb 87)

**Hard Disk 20SC** is Apple's 20-meg SCSI hard disk. Reliable, fairly noisy unit. Good utility software, but no backup yet. Requires cable and terminator (\$80). Requires SCSI port, 512K+, new ROM. \$1299. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Feb 87)

**MacBottom 45 SCSI and Internal Modem** has a modem that fits into the top half of the 45-megabyte SCSI hard drive case. Comes with *HFS Backup* and *Eureka*. Does not work with a Mac II. \$1795. Personal Computer Peripherals Corporation, 6204 Benjamin Rd., Tampa, FL 33634. (Oct 87)

**MacBottom HD21** is a very low (about 2 inches high), external 20-meg hard drive. Fits under the Mac. Very quiet, very reliable. Good utility software, including *HFS Backup*. Requires SCSI port, 512K+, new ROM. \$1195. PCPC, 6204 Benjamin Rd., Tampa, FL 33614. (Feb 87)

**MacCharlie's** components slip around the Mac and convert it into an IBM PC clone. Amazingly, it works well. The enlarged keyboard has a few bugs but is a joy to use. \$995. Dayna Communications, 50 S. Main St., Salt Lake City, UT 84144. (Dec 85)



# MINIFINDERS



**MacIntizer** is a graphics tablet and absolute positioning device that replaces the mouse. Various scales are possible. \$599. GTCO Corp., 7125 Riverwood Dr., Columbia, MD 21046.

**MacNifty Sound Digitizer** turns ordinary analog sound input into digital waveforms which can then be manipulated using the *SoundCap* software it comes with. Capable of truly stunning effects. Requires 512K+. \$129.95. Impulse, 6870 Shingle Creek Pkwy., Minneapolis, MN 55430.

**MacSnap Plus 2** is a 2M memory upgrade for the Mac Plus. The board has 256 kilobit chips. User installable. Not compatible with existing big screens or internal hard disks, and can't be expanded further. \$399. Dove Computer Corp., 1200 North 23rd St., Wilmington, NC 28405. (Jun 87)

**MacTablet** is a stylus-driven graphics tablet. Users can easily sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Allows concurrent use of the mouse. \$495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430. (Jan 86)

**MacTilt/MacTilt SE** is a Mac (and external drive) holder that allows a full range of swiveling and tilting. Very strong, this well made unit is also very easy to use. \$99.95. Ergotron, PO Box 17013, Minneapolis, MN 55418.

**MacVision** is a digitizer that uses an ordinary video camera for input. Capable of extremely fine results and special effects. Easy to use and well documented. \$349.95. Koala, 269 Mt. Hermon Rd., Scotts Valley, CA 95066.

**Magic Digitizer** is a hardware digitizer that works with video cameras. With *LaserMagic* software you can generate 300 dpi images (in PostScript). Requires 512K+. Digitizer with *Magic* software, \$399.95; *LaserMagic* software, \$49.95. New Image Technology, 10300 Greenbelt Rd., Seabrook, MD 20706. NCP (May 87)

**Mouse Mover** is a mouse pad-type surface that snaps on to the bottom of the mouse like a roller skate, freeing it up to glide over desk or mouse pad with ease. 99 tiny ball bearings at three strategic points. Mouse glides faster and saves on mouse wear and tear. \$19.95. Magnum Software, 21115 Devonshire St., Chatsworth, CA 91311.

**Moustrak** is a fabric covered foam mousing pad. It will increase the efficiency of your mouse while helping to keep it clean. Pad comes in a variety of colors. Particularly useful in the typical office desktop environment. \$10. Moustrak, 3047 St. Helena Hwy., St. Helena, CA 94574.

**NoLabelSystem** is a plastic permanent labeling system in which users slide new tabs into a transparent plastic case on the disk. The tabs stick out of the case slightly, making them easier to read while in the drive. \$19.45. Weber & Sons, 3468 Hwy 9, Freehold, NJ 07728.

**One Plus One** is a user-installable memory upgrade for a Mac Plus. Adds 1 megabyte of RAM to the 1M already there. Simple one-evening project. Includes MacBreeze, an excellent small fan. Requires Mac Plus. \$395. Levco, 6160 Lusk Blvd., San Diego, CA 92121. (Aug 87)

**PhoneNET** is an AppleTalk-compatible network. Network can be up to 3000' in length. In-place, unused phone cabling can be used for network, and can be combined with AppleTalk on same network. \$49 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec 86)

**SuperRam 2 and SuperRam 4** are 2- and 4-megabyte RAM upgrades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adaptor module, 1-meg memory module, modified power cable, jumper and fan. SuperRam 4 adds power supply booster and two 1-meg memory modules. Not compatible with most big screens. \$499. SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043. (Oct 87)

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# MacUser MARKETPLACE

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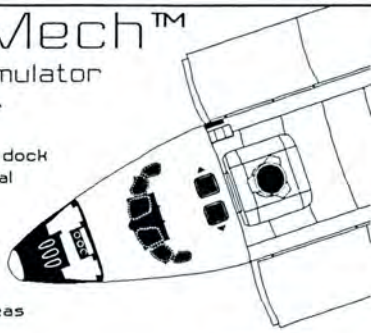
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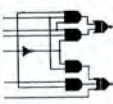
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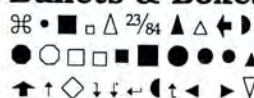
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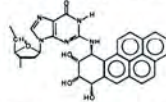
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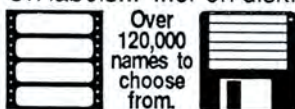
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by John C. Dvorak

## Tuning Into the Future

I was on vacation and a column was due. It was summer time—the slow time of year for news. That's when the most unusual experience of my life occurred.

I was driving through eastern Oregon when I stopped at one of the palmistry parlors that plague the area. While California has the reputation for wackos, that state doesn't hold a candle to Oregon. I figured I could minimally get an idea for a column if I had my palms read or maybe the bumps on my head analyzed.

It was a parlor east of Goose Lake where I ran smack dab into a raven-haired beauty, who I was later told was the state's top psychic channeler, Channel Number Five. As soon as she saw me, she began to tremble and quake. Before I could even suppose what got into her, she blurted, "Dvorak...DUH-VORACK." Suddenly she froze and her eyes bugged out. "What do you want to know? I know everything. Every living soul passes through me. I am whoever I need to be to answer your questions."

I was game. And I wasn't believing a word of it. How she got my name I'll never know. Anyway, playing along I asked: "What are the best ways for people to make money in the microcomputer business?" What was about to happen I didn't expect.

Her face contorted and an "eccccooooohhhhhthrup" emerged as her voice changed from feminine to masculine. "I am the entity Green—the color of money. There is money to be made in cassette-based software for the inexpensive computers. All you have to do is sell one cassette to each owner and you'll be filthy rich. And curse the Prime computer!" As I shook my head I again heard the eerie "eccccooooohhhhhthrup." The voice changed again. "Wrong, wrong, forever wrong, Green! This is the entity Helmers—The Magnificent. Invest everything you have into bar code technology! It is the wave of the future. Bar code. Bar code." This spirit began a chant just as the woman changed again.

"Eccccooooohhhhhthrup. I am the entity Byte. I am here to predict the future. Listen carefully to my words. APL and Forth. These are the great

computer languages of the spirits of the netherlands. Use these languages and you will be rich beyond your wildest dreams. These are the languages of the future. They are the languages of the Gods!"

"Eccccooooohhhhhthrup. Hahahaha. It is to laugh. I am the entity Succor—the mad genius of hardware. Dvorak, they are all fools. Only I, Succor, know the true way to wealth. But will they listen? No, of course not! First I gave them the Exidy Sorcerer, a magical machine. Then I gave them the Polo. Then I gave them the Mindset. Now my greatest machine ever. Take it. Behold it. I call it the Amiga!"

I jumped back at that one as the channeler began to contort and become still another entity. "Eccccooooohhhhhthrup! I am Mongo the soul of UNIX. Death to all languages, say I. Death to hardware, say I. Well, maybe we should keep the DEC machines and the programming language C. What do you think?"

"Eccccooooohhhhhthrup. I am the entity Fate O. Complete—the master of all.

**I figured I could minimally get an idea for a column if I had my palms read or maybe the bumps on my head analyzed.**



I'm from Richardson, Texas, boy. The key to the riches that you seek is a marketing key. The answer is marketing and that means a good gimmick. Now listen up here, boy. I say, the key is a good gimmick. I believe that if you give the public a product that it thinks is all it'll ever need then you've got it made. The be-all, end-all, killer, do-everything gimmick product. THE LAST ONE! That's the name. Get it? Get the drift? The Last One! I know, some other guys already tried it. Try it again. It'll work. If you don't like that name, then call it Pearl or Savvy or something like that there."

The channeler was working up a sweat as I jotted down note after note. "Eccccooooohhhhhthrup. Hey pal. This is, uh, God, uh, Godzilla, yeah that's the ticket. Word processing. What this world needs is a good word processor. I invented, uh, them all. Yeah, I did pretty good too. Did you ever use *Select*? How's that one? Or *Spellbinder*? They're all mine. Use them as models and you make some real dough."

Entity after entity came and went recommending everything from revitalizing the *Northstar DOS* to selling used Superbrains to the Contras. I heard predictions that something called *BaZic* would be the hottest software ever. An entity called Chris Dos told me about Radio Shack computers and how I could make a ton of money selling the Model III. Another hardware specialist calling himself the whiz said that I should devote my life to the Z-8000 microprocessor.

Soon an entity with a strange British accent told me that Lotus clones were the way to make millions. Another told me that writing *Jazz* templates would be a top money maker. If that failed, he said, try templates for *Context MBA*.

It was all too much. It seemed as though there were a million money-making schemes. But these were all old and none of them were making millions. It was ridiculous, I thought to myself as my note pad came to its last page.

"Hey, hey, hey!" I yelled. "What's hot now?! This is a bunch of old crap that came and went. None of it was hot."

The voice changed and Channel Number Five turned beet red as a deep growl emerged: "Hypertext!"

"Hypertext! Oh, brother!" I mumbled as I started to leave.

"Wait, wait, wait. Hey, yo!" said the medium.

I turned, expecting enlightenment.

"Where's my five bucks?" she asked. ☒

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