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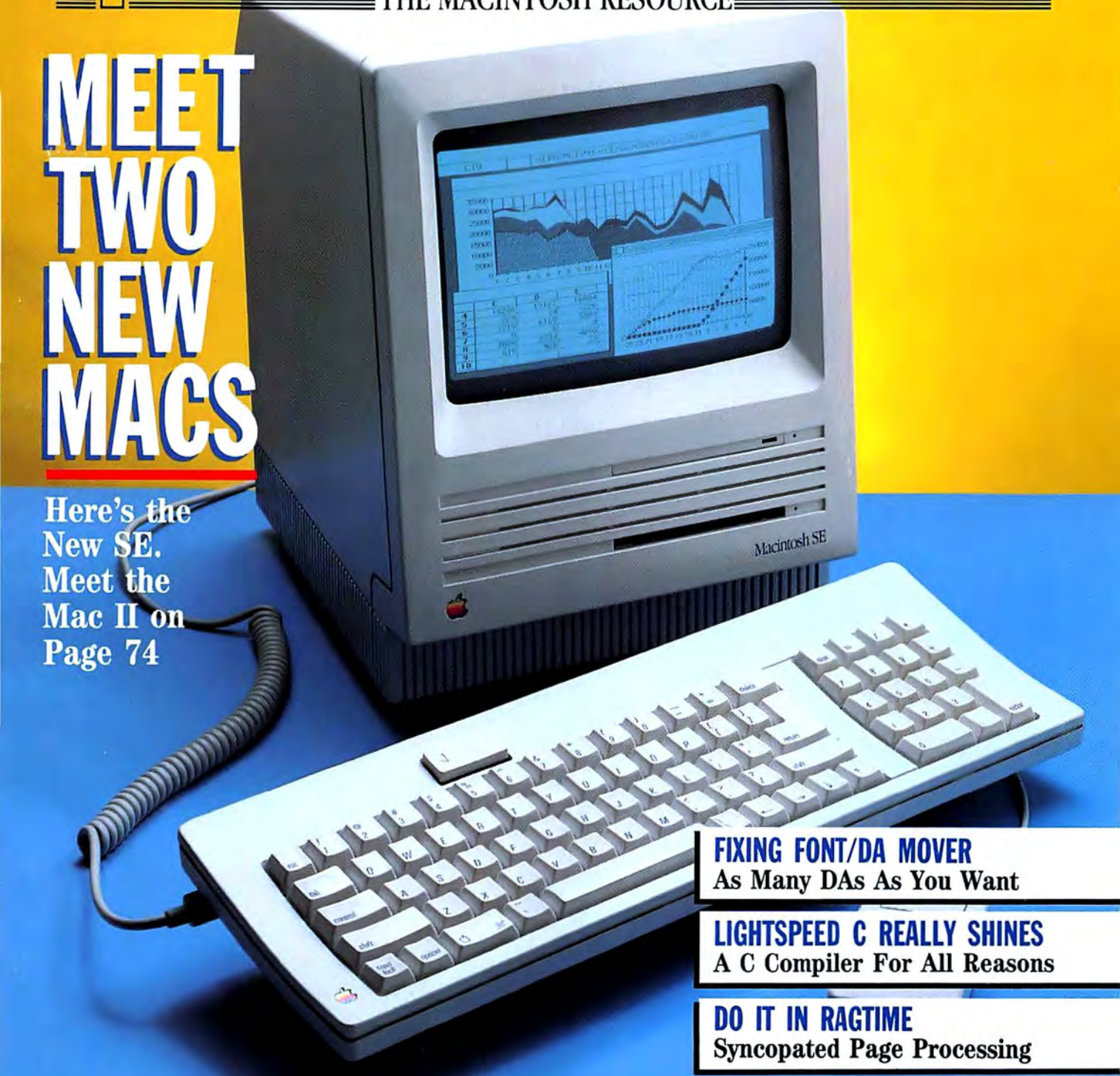
MacUser

THE MACINTOSH™ RESOURCE

MEET TWO NEW MACS

Here's the New SE. Meet the Mac II on Page 74



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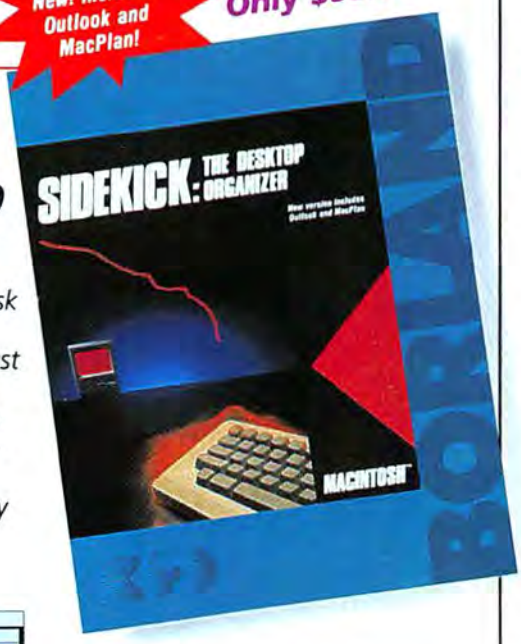
Borland software: technically superior

SideKick®

New! Includes Outlook and MacPlan!

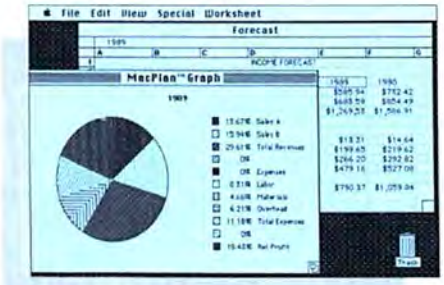
Only $99.95*



SideKick: The Desktop Organizer, Release 2.0

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

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



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

SideKick: The Desktop Organizer, Release 2.0 now includes

- ☑ Outlook: The Outliner
- ☑ MacPlan: The Spreadsheet
- ☑ Mini word processor
- ☑ Calendar
- ☑ PhoneLog
- ☑ Analog clock
- ☑ Alarm system
- ☑ Calculator
- ☑ Report generator
- ☑ Telecommunications (new version now supports XModem file transfer protocol)

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

*Introductory offer expires July 1, 1987

Outlook: The Outliner

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

MacPlan: The Spreadsheet

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

New Version!

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

Reflex®: The Database Manager

Why are so many critics praising Reflex?

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

Its simple spreadsheet approach makes calculations a snap.

And creating database designs, forms, and reports is as easy as drawing them on your screen.

Reflex lets you organize, analyze and report information faster than ever before.

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

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

Reflex: The Database Manager— MacUser Editor's Choice Award

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

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Innovative, and easy to use

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The Critics' Choice

"With 49 arithmetic, text and statistical functions . . . can handle business and engineering calculations that would stump most data managers.

MacWorld

. . . can be used quickly and easily even by someone who has never heard of a relational database. It is a good buy for its quality, not just its price.

MacUser

. . . a powerful relational database . . . uses a visual approach to information management that makes this power easy to manage.

InfoWorld

. . . a combination of power and flexibility that distinguishes it from any other product we've seen.

Esther Dyson, Release 1.0"

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

*Introductory offer expires July 1, 1987

Turbo Pascal®

Turbo Pascal: The fastest, most efficient and easy-to-use Pascal compiler!

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

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

Turbo Pascal: Truly compatible, easy-to-use

Turbo Pascal is compatible with your Mac's Hierarchical File System, Macintosh Programmer's Workshop Pascal, and Inside Macintosh. You're in familiar territory, but going a lot faster.

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The Critics' Choice

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

Robert Forras, MacTimes

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

John Sculley, Apple Computer, Inc."

System requirements:

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

*Introductory offer expires July 1, 1987

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VOL. 3, NO. 4 APRIL 1987

MacUser

THE MACINTOSH RESOURCE

Cover Photo by Chris Stevens

POWER COMPUTING

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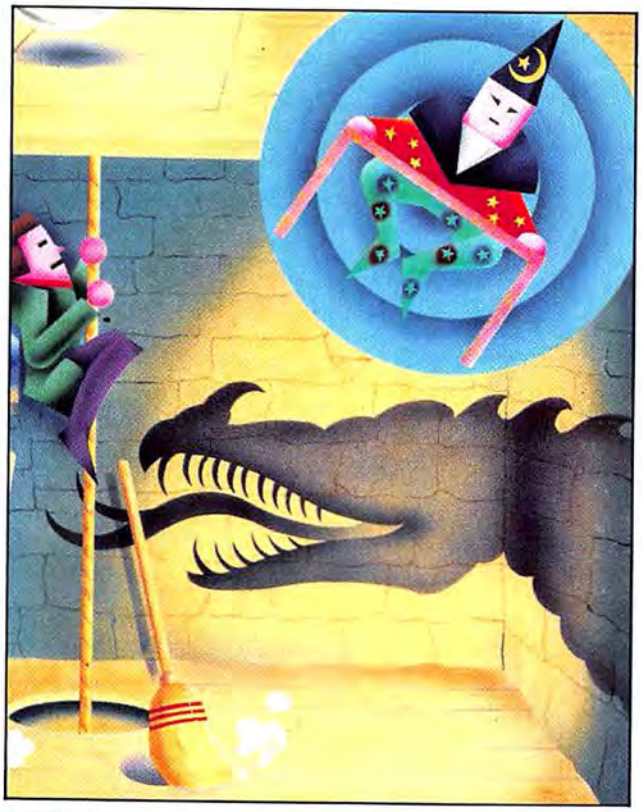
MAC OFFICE

PROOF OR CONSEQUENCES *MacProof* puts a copy editor in your computer and makes sure all your mistakes will be little ones. *by Fred Terry* **100**



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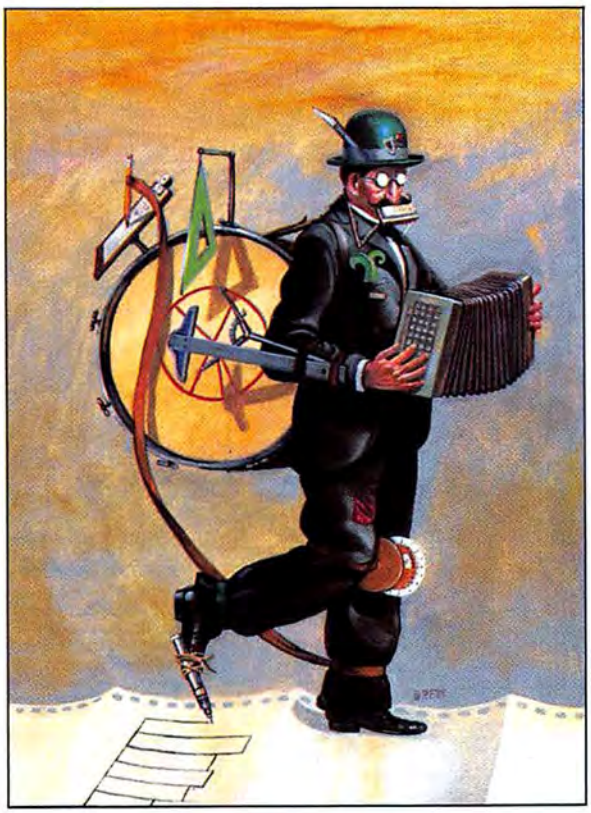

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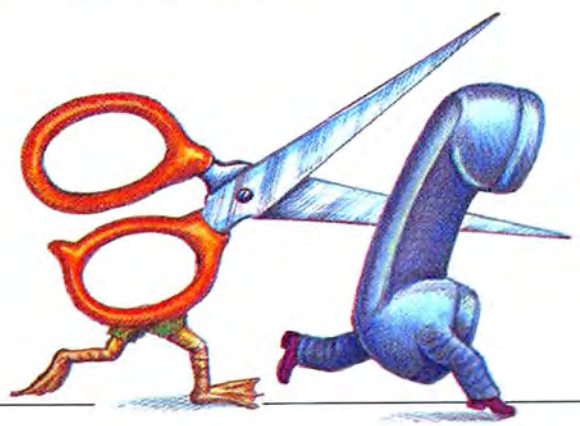

Publisher's Thought For the Month:
"It is not the employer who pays wages — he only handles the money. It is the product that pays wages." — *Benjamin Franklin 1706-1790*

OverVUE. Best Database of the Year.

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

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

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

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

Infoworld (July 8, 1985): "...it is Macintosh software done right."

Icon Review (Fall 1985): "OverVUE 2.0 is our favorite database workhorse...it simply offers the best balance of power and ease-of-use available on the market today."

Nibble Mac (Oct. 1985): "OverVUE is not only easy to set up, it's the easiest for data entry. Its tools for entering repetitive data minimizes typing time."

Online Today (electronic version — Nov. 1985): OverVUE 2.0 is a heavy-duty data management tool...It does all the things a good relational database manager should."

OverVUE's features and power make it the ultimate database choice. Clearly, users and editors alike think OverVUE is something special. We think you will, too.

So visit your nearest software dealer and purchase your very own copy of OverVUE, the Best Database of the Year.

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BPA

MacBottom SCSI Hard Disk Drive

The compact that takes you and your Macintosh for a ride in the fast lane.

MacUser EDITOR'S CHOICE AWARD 1·9·8·6

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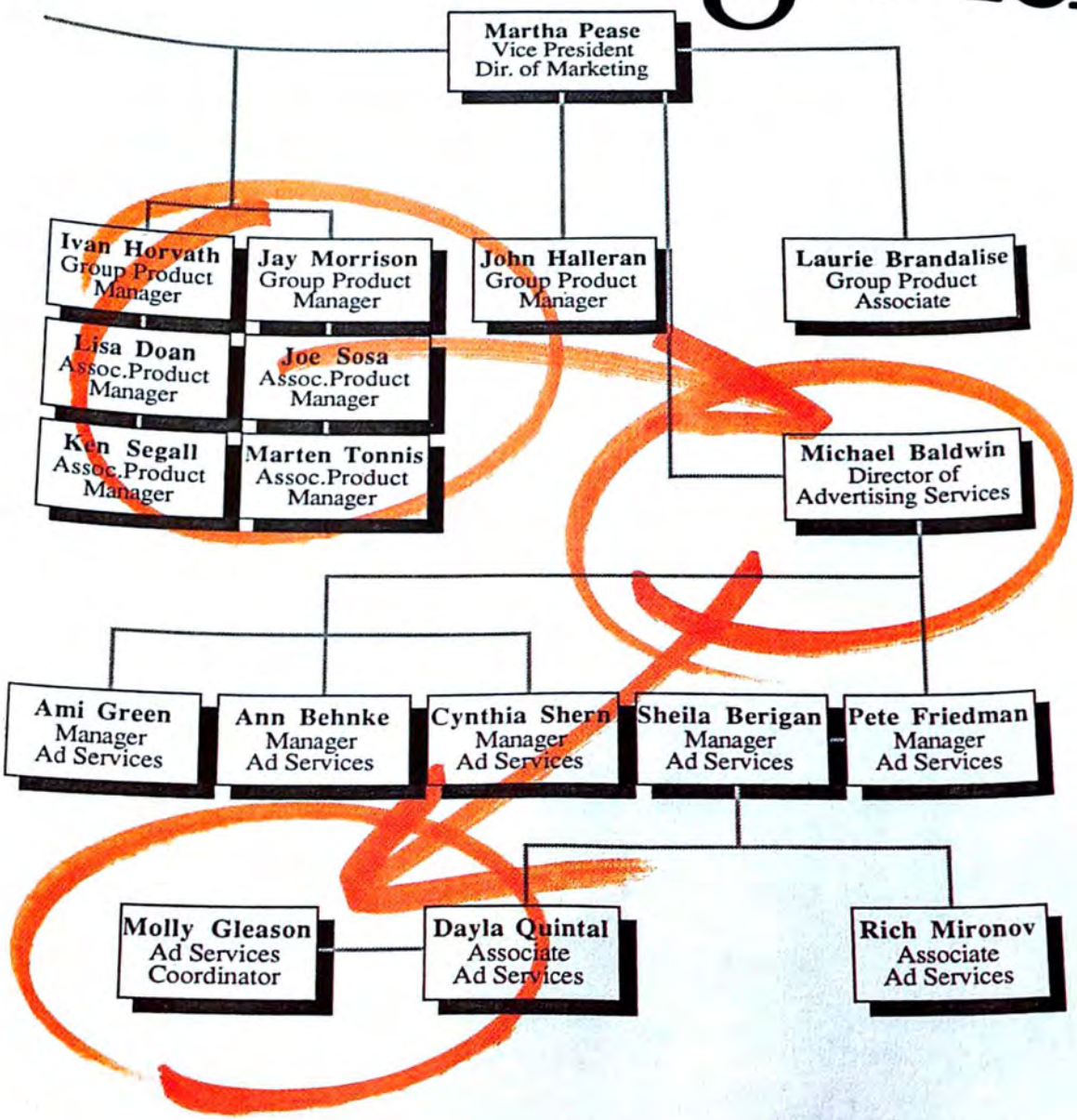

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You've heard the talk about the future of personal computing.

About how Desktop Communications will change the way we work together. Let us share important documents. And allow us instant access not only to information, but to each other.

Well, enough talk.

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It's a new file-serving system designed to build on the power of the AppleTalk® network. So each person can share information with other individuals, groups of people or everyone in the organization.

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The system utilizes a Macintosh with virtually any hard disk as a file server, so sharing is easy. Simply put a document into a folder, and it's available on the network. Instantly.

In fact, to use AppleShare, you need only a fleeting familiarity with two of the most basic Macintosh skills.

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THE FREEDOM OF INFORMATION ACT.

Every time you create a document, AppleShare lets you decide how (or if) it's to be shared.

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Apple Desktop Communications can do wonders for productivity, beyond merely sharing folders.

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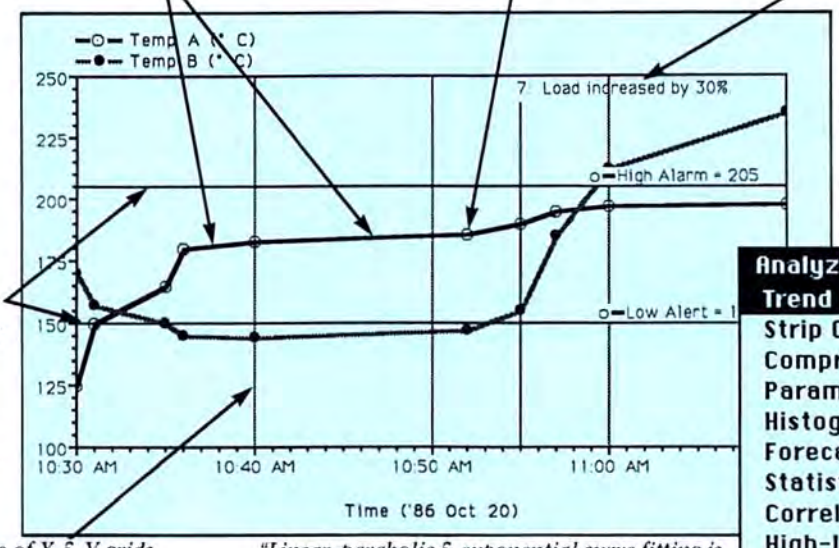

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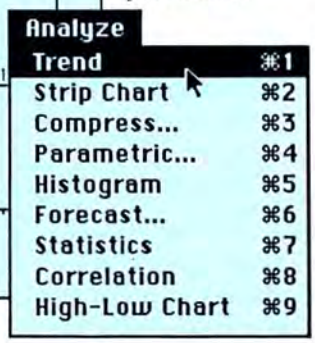

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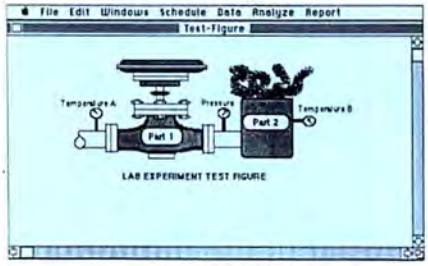

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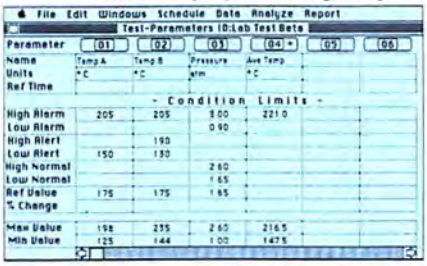

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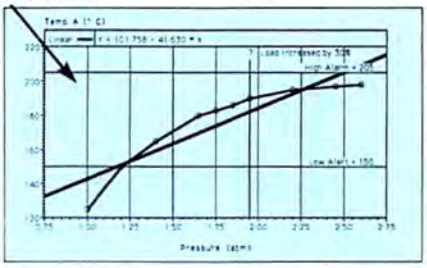

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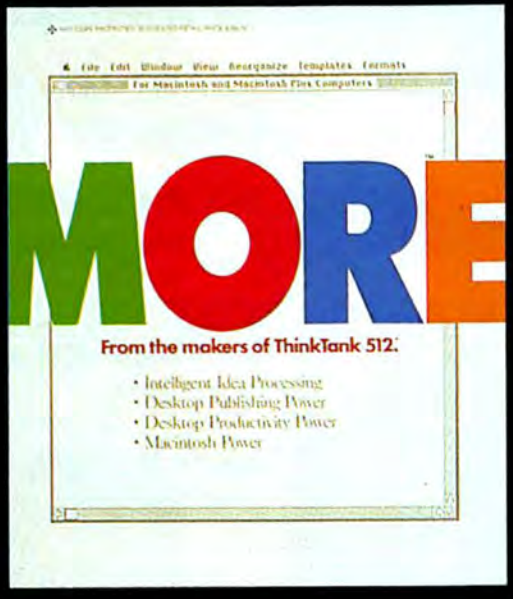

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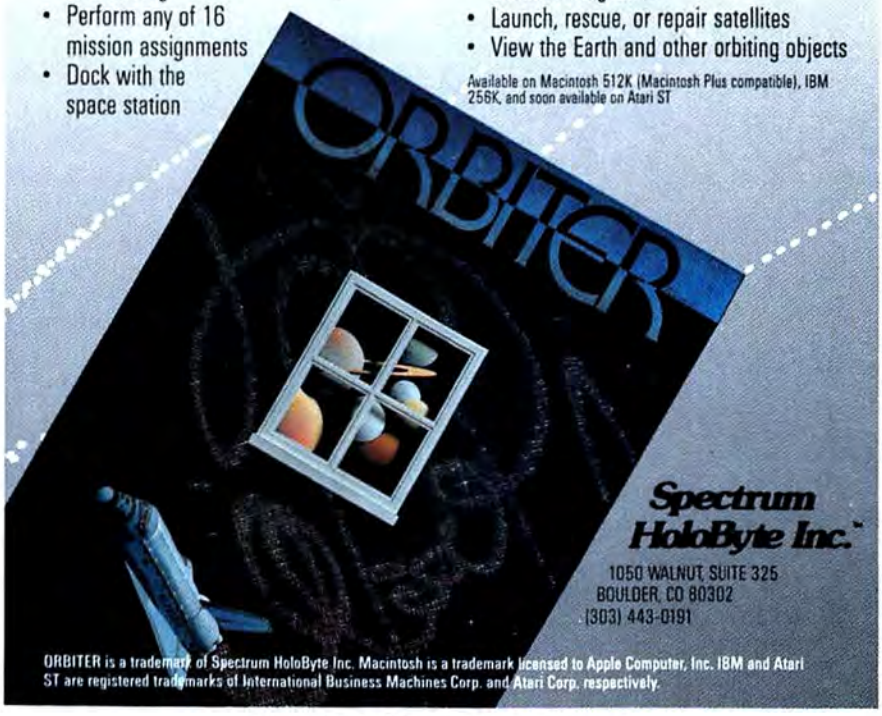

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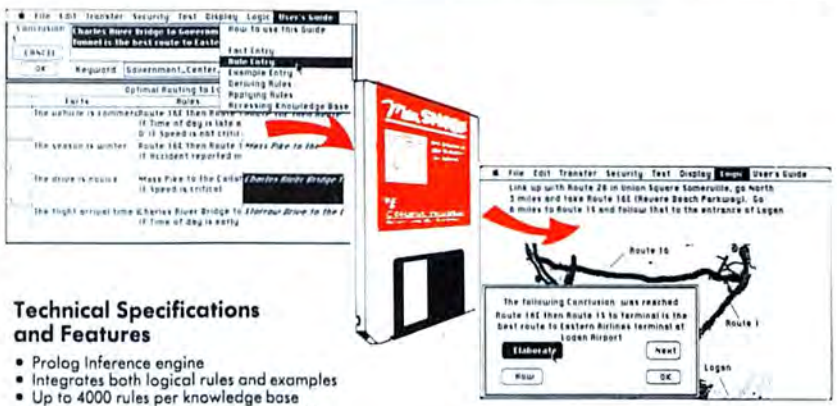

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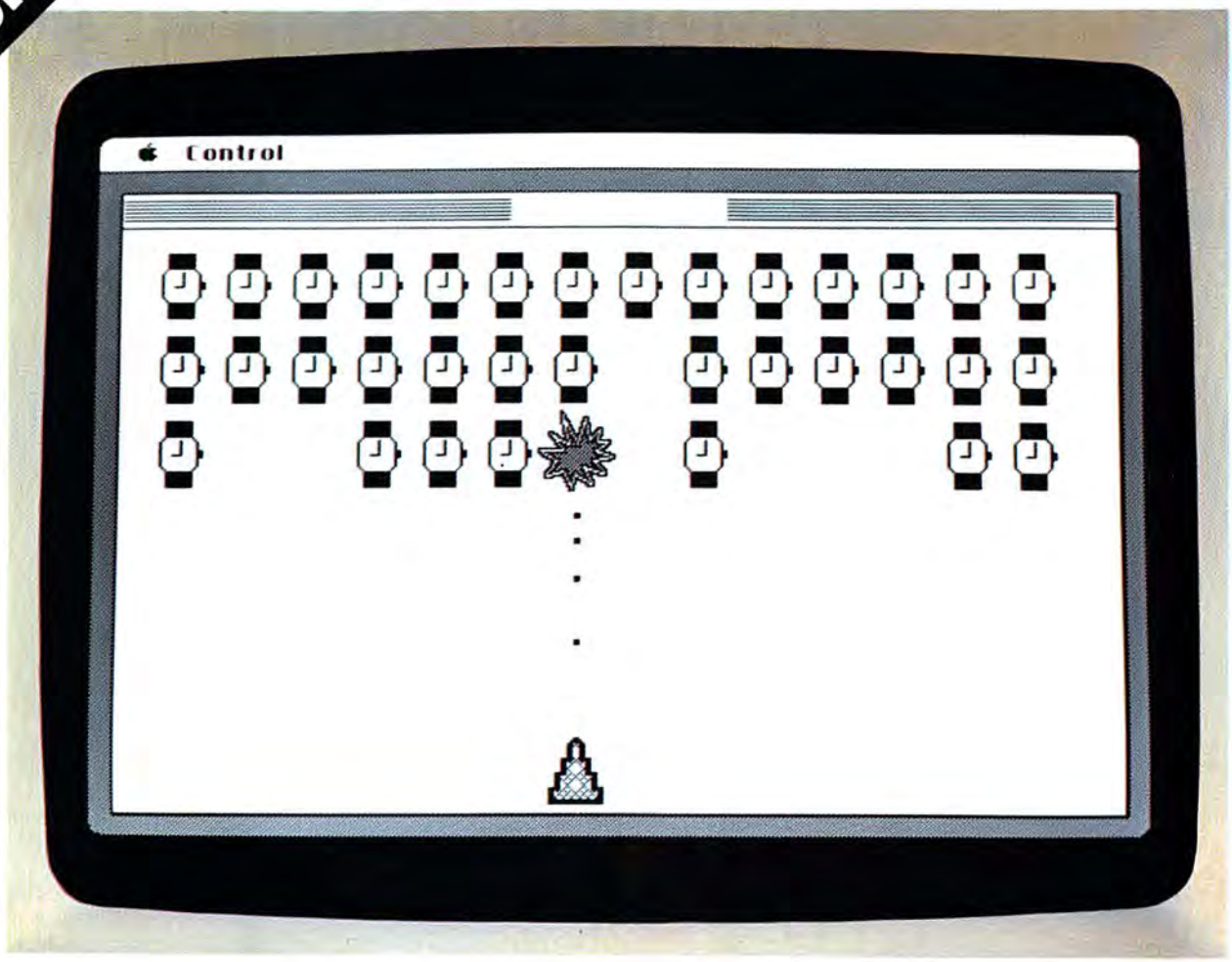

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by Neil L. Shapiro

A MAC BY ANY OTHER NAME....

Ah, Paris in the Springtime! It's when many a young person's thoughts will turn to love — and to such things as larger screens and hardware expandability.

As I write these words, in the first snows of January, I don't know anything more about "Paris" than I guess most other people who read various computer news journals. I expect that Apple will put me under some sort of nondisclosure soon (maybe not, who knows?) but for now I can have the glory of talking on about things I know nothing about....

THE FRENCH QUARTER

Ever since John Sculley and Jean-Louis Gassée moved into the catbird seats at Apple we've been waiting for the sound of two hands clapping. Up until now, on the Macintosh side of things, we have not truly seen Apple's new team's thoughts and dreams taking marketable wing.

Up until now, John and Jean-Louis have enhanced and redesigned an already existing computer. (Let's leave the IIGS out of this for the moment — after all, we're a Mac magazine). While they have guided the Macintosh through wave after wave of enhancements and redirections, this new machine will be the first real sea-change.

I expect that this new machine, code-named "Paris," will show us for once and for all just how John and Jean-Louis see the future of Apple. After all, if this wasn't true, wouldn't Jean-Louis Gassée have code-named the machine "London?"

SLOTS DE TRIOMPHE

Some people say that there will be six slots in the Paris Macintosh, some say five, and a few real killjoys (who probably thought the Peace Corps glass was half-empty) insist on three. Myself, I'm going to guess six at least. If I understand the present Apple strategy then they need at least that many (or few?).

Slot One has to be for a MS-DOS card. Apple never preannounces anything, and they *have* preannounced MS-DOS and IBM PC compatibility. It seems to me that they are probably developing one card for the Macintosh Parisienne and another for the Apple IIGS' bus. This is good news as it will remove the final obstacle of upgrading to the Mac from the IBM PC in many corporations — what to do with all those *1-2-3* data files. I expect that this card will be available on the introduction date.

Slot Two is destined for a color enhancement card. I don't think that Apple is going to come out with a Macintosh that features absolute built-in color. It will always be an option. After all, if you've spent all this time telling people that color is, at best, optional then that's got to be how you feel about it. I suspect that the color card will work in two ways. The first way will be under IBM PC emulation (see Slot One above) and it will deliver about the same performance to an optional RGB monitor as a high-end graphics card on the PC. In mode two it will allow full-color capability to QuickDraw in normal Macintosh operation and may contain, in ROM, an extension of those tools. I would guess that it would be available about 6 months after introduction to give people lots of time to buy the MS-DOS card first.

Slot Three will be your mainframe's buddy. This will be the card that will allow the Macintosh to become the VAXintosh and to hook up to various mainframes and act as a workstation. This card, I suspect, will go much further than the methods available today and will enable Apple to really crack this marketplace wide open. I would expect this to be available on intro date.

Slot Four belongs to Bill Atkinson. The MacMaestro has been rumored for over a year now to be working on something so marvelous as to be beyond all rational belief. Will it be a graphics data base with built-in artificial intelligence of the sort SF author Robert A. Heinlein is fond of imbuing machinery with? Who knows? (If I knew who knew I would be buying them drinks now instead of writing this and pumping them for all I was worth.) This slot will have whatever Bill is working on in ROM. It will change the way you use the machine in pretty much the way the Mac changed the way you use computers. I would guess announced and demoed on intro, but available some months later.

Slot Five is the chip-of-the-month club. This will not be filled by Apple but will be very much available for such things as coprocessors. This is where people who believe desperate media mavens who clutch at one straw after the next to proclaim "tomorrow's computer" will be able to plug in almost-useless but real fast chips. I predict that before the end of 1987 many people will have purchased a '386 chip to plug in here and will still be waiting for an operating system!

Slot Six will be.... Um, don't know what Apple might have planned for there. Gee, as I have already covered all possibilities that are now likely, I guess that means that I now get to design what it is that should be in Slot Six? Seems fair to *me*.

THE FINAL LOU(VER)(RE)

What does Apple have more of than anyone else in the world that would fit into a Macintosh Parisienne slot? Easy! *An Apple IIGS.*

For those who are not aware of the new Apple IIGS, let me just reiterate a few of its features. The computer features over 4000 colors, the possibility of a Mac-like interface, sound second to none, and total compatibility with almost all existing software for the Apple II line of computers.

As we mentioned when we reviewed the Apple IIGS, the release of that machine has demonstrated how Apple perceives their various marketplaces. In some respects there is a melding of possibilities between the two machines (the Mac and the IIGS) although there is a dichotomy in direction.

The IIGS is a machine specifically

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Developer Stuff (4087)
ResDecompile. (A Macintosh application which can convert certain types of resources in a resource file, into source code suitable for compiling with ResEdit (Apple's Resource Editor)
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Midi Music Applications

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Midi Term (4117) Midi 2, Midi Mouse, 7th Heaven
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Flashcard (4138) Orbital Mixing & Grades folder.
Math Master (4139) Venn, Conformal Maps, Automata, Tree and Tangent.
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The following programs demonstrate Speech Sybthesis: Rona,Talking Eliza with demo files & instructions, Speak Easy and La Limerick Machine. (This one will read limericks that are typed
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BootEdit (Alter the Welcome to Macintosh message),Change application font, Install (Install resources to your system that will RESUME your program after many system bombs), Window Changer (lets you customize the Save As & Open dialog boxes)
Disk Utilities (4183)
Disk Cat. Disk cataloging program. Disk Test, Display (text file reader), & Scavenger Mac (recover files).
Diagnostic Utilities (4184)
DiskTest, Speed Check, Ram Test 1.7, Dir-Acta-ry (Reads directory of & disk then converts it to an outline document for use with the Acta DA.), Remount HD20 (Remount an Apple HD20 that has been accidently thrown into the trash).

Updated Disks

Redit 1.2 (4185)
European Resource editor. This program is excellent for translating Macintosh programs to other languages. It does nor alter any of the resources.

Switcher 5.0.1 (4186)

Languages

Basic Compiler (4101) Complete with documentation and examples.
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designed for education, home use and light business. The Macintosh is the heavy-hitter for the power user. But there is an area of overlap there that Apple is presently not serving with any one of its machines.

Suppose you are a power user who also has kids? Or suppose you are a businessman who works mostly from out of your home? Right now Apple says that you can buy two computers. I think you should only need to buy one — a Macintosh Parisienne with a plug-in Apple IIGS board.

The Apple IIGS, as a board upgrade, will be made available to present Apple //e owners at a price point of $500. That means that Apple is still able to make a profit at that price on the components, while having some left over to pay off the dealer for installation.

Of course, they would have to redesign the shape of the board. I don't imagine that a Apple IIGS motherboard is going to fit comfortably inside the Paris Mac. But even with a redesign, I would expect that such a board might be able to be made by Apple to sell at $500 as a Mac plug-in.

Many of Apple's present peripherals already work on both computer systems. For example, there is a developer's tool called "Passport" that will transfer Apple II files to the Macintosh. You simply pop an Apple IIGS 3.5-inch disk into your Mac's drive *and it reads it.*

This would also do wonders for the Apple IIGS software market. It would open up a whole new audience of software users for the IIGS. That would have the net effect of increasing the educational and entertainment software base for the Macintosh as well.

No single other product would demonstrate more conclusively that Apple Computer has a unified product strategy. No other single product could serve as many people as quickly.

I hope someone in Cupertino is reading this. I know that I'll be one of the first in line to pay for a Paris. I hope I can also buy a IIGS to plug into it.

And, seeing as I started this project I think it's only fair that I get to pick the codename.

Fellows, call this one "Gigi."

[Editor's Note: Due to the volume of mail resulting from Neil's column on Apple dealers, we have decided to award recognition to the best and worst dealers we hear of. Send your kudos or horror stories to The Consumer Evangelist, MacUser, *25 West 39th Street, New York, NY 10018. Please include all the gory details.]*

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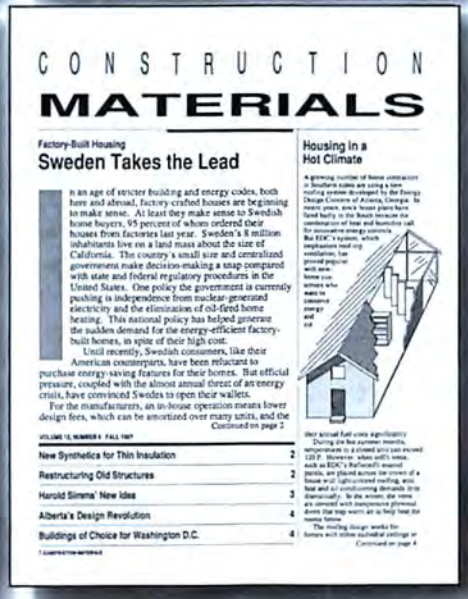

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How to dramatically improve the way you manage meetings, ideas, time and people with MORE.™

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

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

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

What's different about this meeting? The Macintosh on the table is running MORE. With MORE in the meeting, ideas will be focused and presented better than ever before possible.

1 Start a revolution at your next meeting.

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

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

Why MORE is so revolutionary in meetings.

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

2 Manage people and projects effectively.

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

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

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

3 Create a time-saving Status Center.

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

For you, MORE becomes a convenient and powerful electronic notebook and card file. You collect and organize the details of

The next best thing to having a clock that runs backwards is having a Macintosh that runs MORE. With MORE you can set up a Status Center to organize the details of your daily work.

Some of the best ideas you have don't always happen in front of a computer. (That could change after you've used MORE.) For example, you can take your ideas from scraps of paper to a finished presentation in minutes.

daily work in an outline—your personal Status Center. You keep this outline up-to-date, using it to:

- List and organize your tasks
- Record names, addresses and phone numbers
- Keep your daily calendar
- Write and file notes and memos
- Track your expenses

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

4 Process your ideas, then present them.

If you've ever had to prepare a presentation in a hurry, you know how frustrating and time-consuming the task can be. Technique is an important part of presenting your ideas effectively. Here are some simple steps that will take you from rough ideas to finished presentations:

- Make a "laundry list" outline of basic ideas.
- Become uninhibited with your ideas—don't edit on your first pass.
- Be generous with headings, call-outs, charts and illustrations.
- Allow yourself the flexibility to change your presentation, even at the last minute.

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

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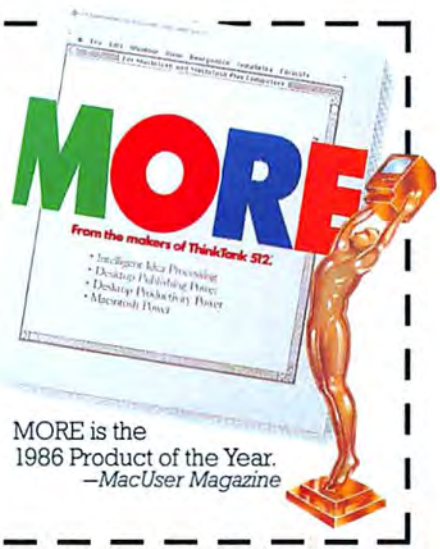

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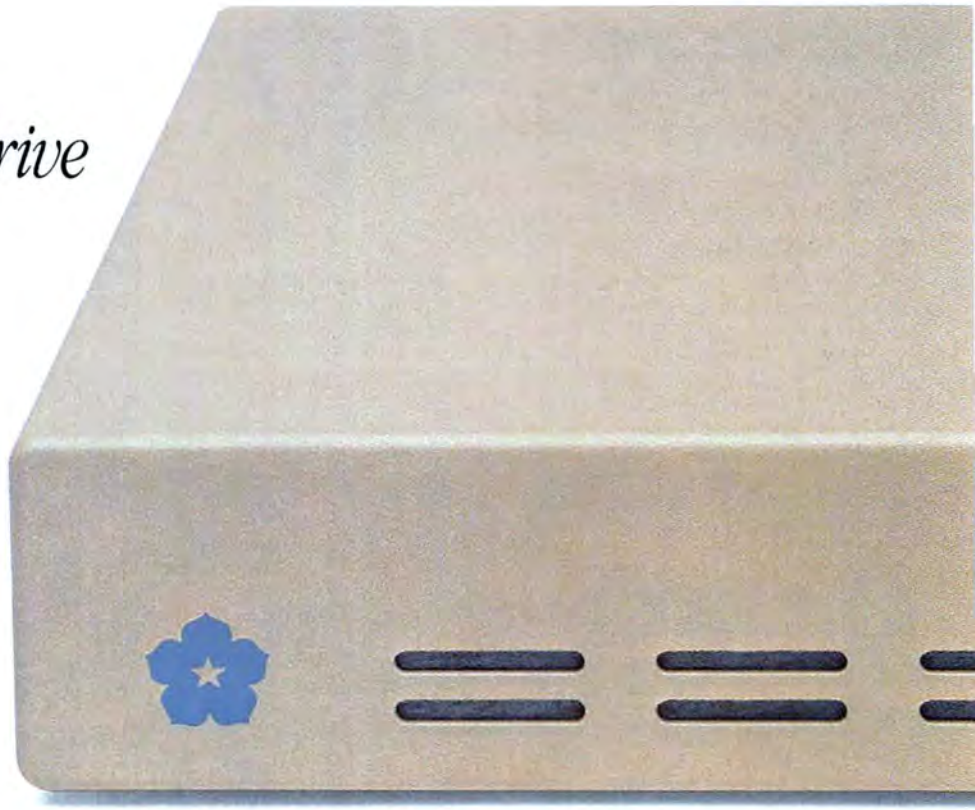

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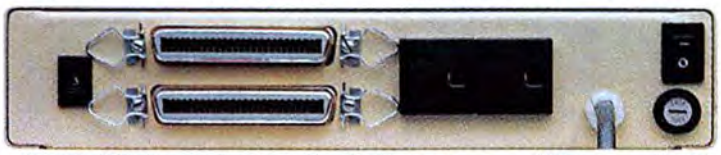

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Steven Bobker

We're always happy to hear from our readers (well, almost always), 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.*

YOU CAN PLEASE SOME OF THE PEOPLE

This letter is a response to the letters complaining about the Dvorak Keyboard Column Scandal.

Bravo, Brother Dvorak.

Clearly his column is THE DEVIL'S ADVOCATE.

A Devil's Advocate challenges convictions.

A good Devil's Advocate is no fun to talk to. You can't win.

He disagrees with you on everything.

If he's real good, you go away furious.

But you think about it later. And you talk. And you write.

Because the Devil's Advocate forces us to examine what we know and love. Which makes us stronger.

And that's hardly worth complaining about.

PAUL CLATWORTHY
LOS ANGELES, CA

Friends, Hackers, Power Users, lend me your ears. I write not to bury Dvorak but to praise him. In all the humorless world of computer journalism there is but one Dvorak—and think what he would say about us if we got him kicked out of *MacUser!* Surely hell hath no fury like an Anti-Editor scorned.

Even when he is wrong he provokes us to say why he is wrong and he is not, alas, always wrong. Now, if he does any more of the corny MacCult stories, I'll have to reconsider my position.

The following Biblical revision is provoked by new developments in the *Microsoft BASIC* story:

On the first day, Microsoft created the Earth and the Sky—and they were OK, but slow. On the second day Microsoft created, for a small additional fee to registered licensees, the Animals and Plants of the Fields, and the Seas—and they were neat, but nearly froze to death. On the third day, Microsoft, with the help of Clear Lake Research, created—again for a small additional fee—Insects and Marsupials and Catfish and a few other things it forgot the day before. On the fourth day Microsoft created—for a limited time offer of 99 smackers plus tax even if you live in California, plus another 7 smackers shipping (is Gates going to hand deliver?)—the Light! And it was a Compiler—and it was about time. On the fifth day, Microsoft hauled its bloated corporation to the bank and rested. But better late than never. So for All This we are most humbly grateful. Amen.

TED JONES
SAN FRANCISCO, CA

JIM LUDTKE

Who cares if John C. Dvorak prefers his IBM PC to our friendly little Macintosh? And who cares if his column is similarly biased? He happens to be one of the best writers appearing in any magazine today. He is clever, creative and more adept at using the English language than most of us will ever hope to be. His December dissertation on the Mak-Eee Tushes was a classic.

I admit that he makes me angry sometimes, too, but I read his column before anything else in *MacUser*. In fact, the inclusion of a column by John C. Dvorak inspired me to subscribe to *MacUser* before I had any idea whether or not you folks would put out a quality magazine.

So please don't let those Mac users who have little tolerance and even less humor influence you to drop Dvorak's column. Anyone who writes that well should be allowed to say what he thinks, even if it does upset the rest of us.

PAMELA L. ROGERS
ANCHORAGE, AK

Dvorak's right—there's still plenty wrong with the Macintosh. Shouldn't we thank him for his well-considered criticisms? How sad to see the computer dedicated to flexibility and creativity defended by a mob of inflexible nerds. May they be condemned to tiny screens, flimsy keyboards, unreliable power supplies and frequent system crashes forever.

GORDON INKELES
MIRANDA, CA

Responding to the backlash against John Dvorak, I must stand up in his defense. How do we expect the Macintosh to get better if computer professionals and users don't evaluate and criticize? It's also funny that most if not all of Dvorak's criticisms have been heard and recognized by Apple Computer themselves. My only criticism of *MacUser* is that too much ink is devoted to desktop publishing and entertainment. I'd like to see articles on hardware explaining the engineering concepts and programming information—not for the computer scientist, but for the layman.

MAXWELL MILLER
BERKELEY, CA

For some reason — probably due to the recent rare alignment of the Earth, sun and moon — we've received a lot of fan mail for John Dvorak this month. For a while we thought he might be slipping in his anti-editor commitment to keep everyone's adrenalin flowing, but before we could take him to task, we got evidence that all is well — as the following letters indicate. — LK

BUT NOT ALL OF THE TIME

Please spare us future articles written by John C. Dvorak like the one in the December 1986 issue, "The Lost Tribe Revealed."

"The Devil's Advocate" is a valid section, but its content has gone astray. It should be used for pointing out details of the Mac that need improvement, not as a forum for a cynic spouting nonsensical drivel.

MacUser is a fine publication. An objective, rational/critical analysis of the Mac will only make the magazine and the Mac better. Leave the cute stories to *Reader's Digest*.

CARL B. SAUERS
BARBERTON, OH

Let me put it in Dvorak's own words: "I never heard a tale so silly."

It's nice he managed to so succinctly sum up his December ramblings in *MacUser*. The sophomoric little adventure through the world of Anthropology and reversed names didn't exactly have me sitting on the edge of my chair. More accurately, I was sitting in front of it and resting my head on it, and it wasn't

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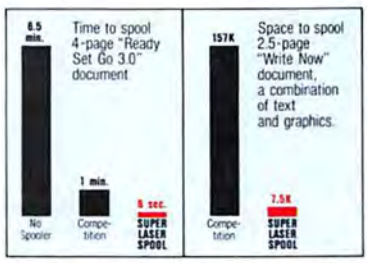

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exactly a chair, although it is something you sit on from time to time. It flushes, too.

So why don't you flush Dvorak? He's a waste of paper, not to mention precious editorial space. Let him have his IBM (he can eat it, too). Give Doug Clapp the vacant space for some more of his column. Clapp is a talented writer. I never tire of good writing. Clapp's column is like ten cups of coffee; Dvorak's is like a suicidal dose of sleeping pills.

In all the humorless world of computer journalism there is but one Dvorak—and think what he would say about us if we got him kicked out of MacUser! Surely hell hath no fury like an Anti-Editor scorned.

And just so you know I haven't been hypnotized by that "Mac Cult" Dvorak "wrote" about, I used an IBM computer in a past life as a copy writer. When I want a piece of machinery to stand between me and what I'm writing, I'll buy an IBM. When I want to wrestle with overpriced software and a kluge design, I'll buy an IBM.

Otherwise, I'll use my Mac. It's the best tool on the market for turning ideas into words. And that's what writing is all about.

TOM CHANDLER
SANTA CLARA, CA

SOMETHING COMPLETELY DIFFERENT

Regarding "Secrets of Pascal" by Doug Clapp in the December 1986 issue of *MacUser:* He remarks on page 132 that his AddOne procedure makes him happy. I would like to suggest he might be *ecstatic* if he defines the procedure with VAR x:Integer declared as the argument so he can see the results of the addition.

Good article, good magazine . . . .

JIM SHORES
SOLANA BEACH, CA

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BLAZE, PASCAL

I'm a serious programmer, writing programs for my school and for fun. But all in BASIC. My MS version of BASIC seems to work slower every day. I was getting tired of BASIC and wanted to learn a new language on my Mac Plus. Bravo to Doug Clapp on his article "The Secrets of Pascal" in the December 1986 issue. Before I read that I thought Pascal was some type of tropical fruit or a cuss word in an old European language. No, just kidding. I knew what Pascal was, but didn't have a clue when it came to understanding it. Doug Clapp's article opened the eyes of this BASIC warlord. I don't feel afraid of Pascal now. Before I thought Pascal only conversed in the hallowed halls of some college like MIT. But now I'm ready to take on this papaya.

JEFF WANDLING
BOTHELL, WA

GET THE PICTURE

I recently read your article about resource editors in the September 1986 issue. Would it be possible, using the editor, to copy an icon from a program to a *MacPaint* document? If not, is there another way to come up with similar results?

DAMON SCHECHTER
WHITTIER, CA

The easiest way to copy an icon or any other graphic in a program is to get what you want on the screen and then hit COMMAND-SHIFT-3. This should "dump" the graphic onto your desktop and you'll be able to paste it or print it.—LK

TOOLING ALONG

This letter is for Doug Clapp.

I have just read your column entitled "The Eyes Go First" in the December 1986 *MacUser*. I agree with you, but I must point out that there are other reasons for visual enfeeblement and loss of acuity. One concerns my search for your own *Word Tools* package. I have scanned enough Mac magazines to dog poop proof Canada's Parliament buildings, including annexes and administrative offices (hundreds of hectares of floor space). My vision and my hopes of ever finding a copy of the program are dimming rapidly.

I have reached the limit of my patience and of my visual endurance. My nose is black with printer's ink. So please tell me:

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where the hell have you hidden it? At the risk of appearing critical, didn't you have to make a business plan before embarking on the entrepreneurial path in pursuit of the software developer's Holy Grail, Mammon? Didn't the plan include product distribution? You know, some place that would actually exchange your magnum opus for currency, clutched in sweaty hands by the phalanx, nay, legion, of yearning purchasers? Since you have admitted to being the developer and even put your name on the product, I feel I am within my rights to ask.

Please tell me where and when *Word Tools* may be purchased—I'll even put up with a Beta test version. Thank you . . . I think.

CHARLES A. ROVIRA
OTTAWA, ONT

ONE BAD APPLE?

Okay, you've done your Apple II thing (December 1986 issue), now let's not see any more of that in *MacUser*.

I'm not anti-Apple II, I just don't want the valuable editorial space in *MacUser* wasted on such drivel!

SCOTT PETERS
POTOMAC, MD

IN REPLY

This is in response to the letter by Sue Gelinas, published in your December 1986 Letters column. Ms. Gelinas has obviously missed the point of desktop publishing entirely.

I do not doubt that many "people with very little to say" are using their Macs to produce newsletters, but, obviously, it doesn't stop there. The real excitement of desktop publishing is that for the first time ever, small companies with very limited funds (like my own) have the power to produce *all* types of publications for a fraction of the cost of traditional publishing methods. I can now sit down at my Mac and produce a beautiful brochure in about 4 hours. If I paid an advertising agency to do the same, it would mean thousands of dollars out of my pocket. I can inexpensively produce all types of advertising materials, including flyers, pamphlets, display ads and more. I can create my own letterheads, company forms and manuals—and I haven't begun to mention graphics capabilities.

Ms. Gelinas asks in her letter "Who really needs it?" My reply is, I certainly do. Without desktop publishing, *this* entrepreneur would have a hard time marketing her company successfully.

LAURIE RICH
MOUNTAIN VIEW, CA

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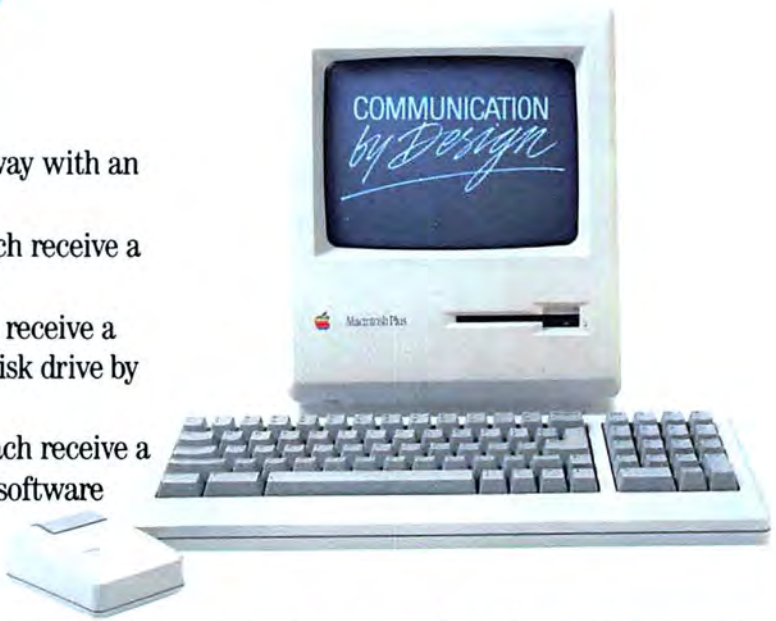

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The word processor you have

By the time you read this ad, Microsoft® Word 3.0 for the Mac should be at a store near you. Like the IBM program from which it was derived, it's a significant advance in word processing technology. Unfortunately, it's just not good enough.

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- *WYSIWYG multi-column display.* What you see on the screen as you're editing is everything that prints on the page. Word 3.0 makes you switch out of the editing mode to see what you'll get. And unlike Word 3.0, all special features (endnotes, etc.) are displayed as you type.
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EDITED BY LOUISE KOHL

Excel Again

For the second year in a row, *Excel* has been selected as the top microcomputer software product by the Datapro Research Corporation. Datapro has a software test lab that subjects business software to hands-on testing and analysis. Each product is evaluated for basic functions, advanced functions, ease of use, documentation, support and cost/performance ratio. Each product is given a rating from 1 to 10. (Sounds a bit like what some Mac magazine does.)

Excel earned an 8.4 rating, narrowly beating out several IBM programs. Datapro feels that *Excel* has had as great a role in the Mac's surge in 1986 as anything else. We'd have to agree. — *SB*

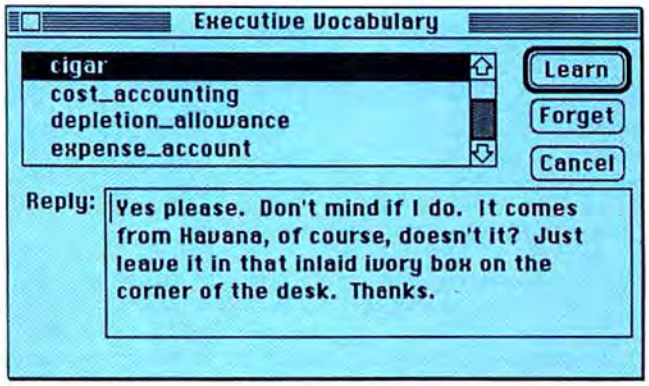
Introducing MacBureaucrat

Surgeon General says artificial intelligence may be carcinogenic; cites studies with mice.

TONY LIMUACO

by Ezra Shapiro

(Special to *MacUser*) Long known for experiments in unusual uses of personal computer technology, Marginal Software, Inc. (MSI) of San Luis Abysmo, CA, has introduced its first entry for the Macintosh environment. Called *V.P. Surrogate,* the product is a package of hardware and software goodies designed to provide user-configurable emulation of corporate officials. According to Ignatius Sportle, Vice President of Product Development at the firm, "When computers were first introduced, there was a lot of fear among secretarial and clerical workers that machines would cost them their jobs. *V.P. Surrogate* is the first product to seriously threaten employees in middle and upper management."



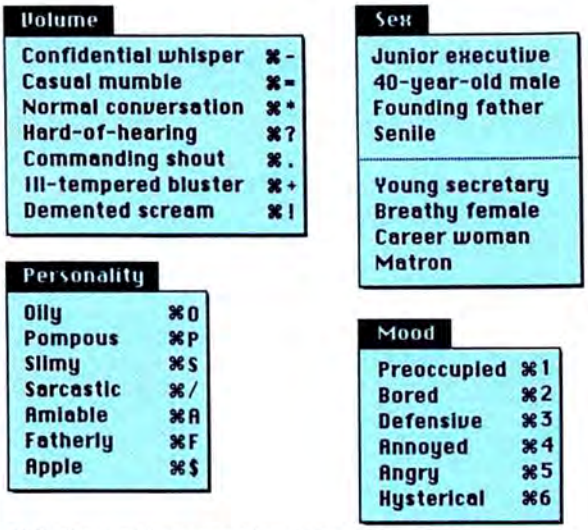
You'll need to teach *your V.P. Surrogate* how to respond to each of the 75 predefined keywords. Some experience in dealing with bureacracies will be helpful.

Utilizing the *MacInTalk* speech synthesis driver and a sophisticated voice recognition unit that plugs into the Mac's modem port, *V. P. Surrogate* can be set up to portray a wide variety of supervisory personnel, in an expansive range of vocal, personality and management styles. The product is priced at $14,995. "Anyway you figure it," says Sportle, "it's a bargain, even at that level." He estimates that *V.P. Surrogate* will be used to replace human workers that typically cost their companies "upwards of 40K a year, not including perks and stock options."

The product is intended to sit on an executive desktop or swivel chair, facing the door. Macintosh owners familiar with the "glossary" interface of *Microsoft Word* will have no trouble learning to use *V.P. Surrogate.* You type in a keyword that the program will listen for, and a response phrase of up to two hundred words. *V.P. Surrogate* comes with a list of 75 predefined keywords, including "raise," "promotion," "proxy," "takeover bid" and "cigar," among others. Responses are left to the creativity of the user, though MSI suggests that a simple evasive statement will work in most situations. Their recommendation: "That's an interesting point. I'll give it some consideration and get back to you next Monday."

Pull-down menus offer attributes in several categories, including Personality, Mood, Sex and Volume. Most of the choices were pretty straightforward (see illustrations), but one entry in the Personality menu caught our attention. Labeled "Apple," it turned out to produce voice output with a thick French accent. When we phoned MSI's Tech Support department to ask about this, the support person denied all knowledge of such a feature. When we insisted, he placed his hand over the mouthpiece and we heard 30 seconds of muffled screaming. When he returned to the line, he explained that we had been looking at "beta software, REAL beta" and that certain things would be changed in the final release. The phone call was then mysteriously disconnected.

"We used a whole bunch of powerful, advanced artificial intelligence algorithms in building this product," claims Sportle. "It may look easy, but it's not *Talking Moose.*" MSI is quite proud of the preset vocabulary, though their research shows that an



***V.P. Surrogate*'s menus offer many useful options.**

executive emulator only needs to be able to recognize 14 words to be effective.

V.P. Surrogate was originally designed under contract to the IRS, but programmers found that the complex evasive strategies used in government bureaucracies were beyond the scope of any existing artificial intelligence software. "Government employees are just too creative," says Sportle. "They routinely answer questions with incomprehensible jargon that they make up on the spot, or they invent nonexistent forms that have to be filled out — it's impossible to duplicate the convoluted logic on a microcomputer." There were also hints of union trouble should the project ever be completed. So MSI turned to the private sector. "Look for major enhancements in future releases," chortles Sportle. "Right now, our engineers are working on teaching *V.P. Surrogate* to play golf."

Ezra Shapiro is a freelance author who frequently writes about subjects for a variety of publications. He is the author of a book about a subject, soon to be published.

Macintosh Police Blotter I

Some of you may know (in the Biblical sense) *MacPlaymate* from Pegasus Productions by way of Frank Brooks. We won't ask you how you feel about it — that comes too close to violation of privacy. However, we thought you might like to know how SF law feels about it.

TONY LIMJACO

It seems that *MacPlaymate* was up and running at the Macintosh show in San Francisco when a passing assistant DA was offended by the demo (a response shared by at least half the population). One phone call later and the Vice Squad showed up more or less in force. Despite rumors to the contrary, the people in the booth were not dragged away handcuffed and screaming for their lawyers. They *were* told to turn the monitor away from the passing stream of show visitors — who might not share an interest in female anatomy — and show the demo only to an "invited" audience. Luckily for those whose interests do lie in that direction, you could invite yourself. The incident gave rise to one of the better computer quotes of the year: When confronted with the argument that *MacPlaymate* screens were pornographic, Mike Saenz, the artist, was overheard to say, "No, they're not; they're bitmapped." — *LK*

RUMOR MANAGER

Coming very soon to a dealer near you: Mac clones of several types. Type 1 will be straight ripoffs of the Mac Plus, made in the Far East. They'll be priced around $750 and will actually be able to use some Apple parts for the inevitable repairs. One name we hear tossed about is Delicious. Type 2 will be a very simple basic Mac (1MB RAM, 1 400K drive) made in the United States. Name: maybe Granny Smith. Target price: $495. Types 3 and 4 will use actual Apple ROMs, licensed by Apple. They'll be expensive, made by major companies and aimed at very specific vertical markets. . . . Look for a big add-on market in Mac monitors, as Apple misses the boat and offers only smallish units. . . . If you liked *Deja Vu: A Nightmare Comes True* and *Uninvited,* Mindscape and ICOM Simulations are about to knock your socks off again. . . . The best Mac word processor will arrive within 45 days of you reading this. . . . *Wizardry* fans have a long wait in front of them before they get a new *MacWizardry.* Seems all the versions for *all* other computers are sort of similar, while Mac versions require a lot of special work. . . Hayes is about to break out of their telecommunications straightjacket with an astounding new presentation graphics program. Its interface will be loosely based on *Smartcom II.* . . There'll be a big hard disk shakeout by midyear with up to half of the current manufacturers either failing or moving on to manufacturing add-on boards for the new Macs. . . . A big debate going on at many publishers is how to deal with color. Do you upgrade your programs and then give the upgrade away? Or do you charge, and if so, how much? Do you add features? Change features? And how does that effect your marketing? Do you just shaft your installed base when you come out with the super-duper color version? There are as many answers as there are options. Stay tuned. . . . Desk managers and desk accessories in general will boom in late 1987 as more RAM becomes yet cheaper. Look for many major standalone applications to become DA-format programs. No category will be untouched by this trend except integrated software and page layout where the programs are already enormous and will become even bigger. In a way, the rumored 1.2- to 1.6-megabyte floppy drives will be more harmful than beneficial as software enlarges to fill the space available to it.

Erratum

In our January '87 issue, we told you about P. C. Beast, a furry "add-on" for your Mac, but we printed the wrong price. It should have been $14.95, not $29.95. Look at it this way: It's a bargain at half the price.—*LK*

Winner of MacUser's 1986 Best Desk Accessories Award

Automate

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Superior Performance. *BackPrint* eliminates both printer slowdown from heavy typing and typing slowdown from printing. And thats important because your background printing shouldn't be accomplished at the expense of working at full efficiency. And *BackPrint* is incredibly fast at formatting your documents. This comparison from MacUser (August 1986) tells the story best.

	Time required to format a 5-page Word file.	Time required to format a 5-page MacWrite file.
BackPrint	16 seconds	44 seconds
MacMate!	2 minutes, 8 seconds	9 minutes, 28 seconds
MacSpool	5 minutes	7 minutes, 40 seconds
MaxPrint	2 minutes 33 seconds	2 minutes, 58 seconds

- Queue up an unlimited number of pages from different documents to be printed in succession
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"BackPrint is by far the fastest spooler" - MacUser (Aug 86)

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Human Interest

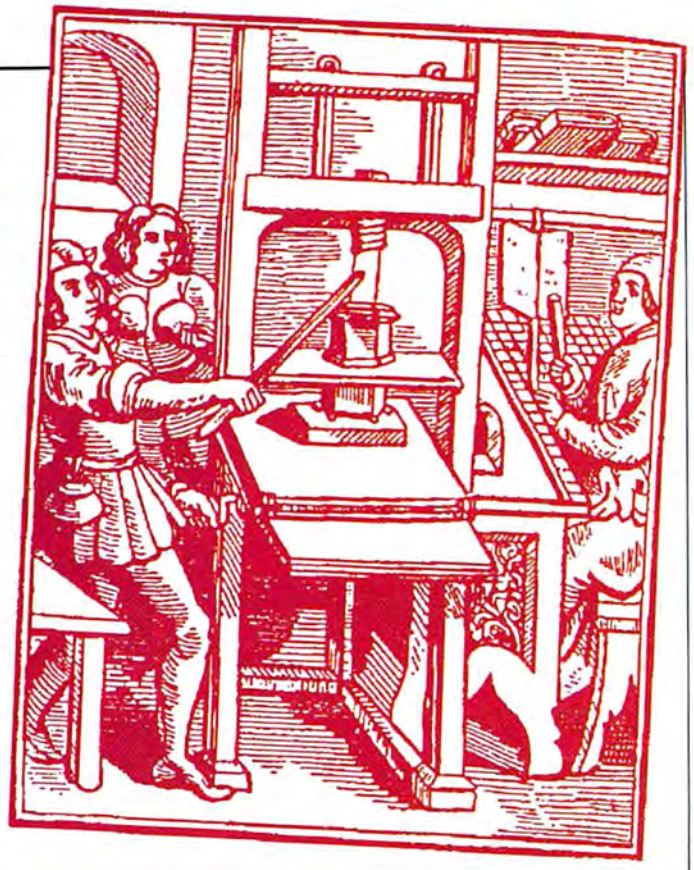
No matter how powerful your computer or software is, it's still the human user who makes the real difference in the end. And the more you know about both, the better results you'll get. While we all recognize the obvious truth of this, there can still be a problem in implementation. Not all manuals and programs are simple; and not all users know as much as they should about their hardware.

To the rescue come Training Resources Unlimited and ConQuest Video productions with their video seminars. Their first effort is an informative and well-made 2-hour videotape that combines a history of printing methods and a *ReadySetGo* section.

The first section covers all those printing terms none of us will admit we don't know the meanings of. It also includes a subtle and timely message: that keeping up with technology may be the best way to avoid being displaced by it.

The *ReadySetGo* section has a hands-on cues to follow along on your Macintosh.

What makes this video all but unique in training films is a genuine sense of humor and humanity, making the learning process more comfortable — and ultimately more productive, more quickly. For info contact TRU, 31849 Pacific Hwy. So., Suite 115L, Federal Way, WA 98003. — *LK*



In the old days, rooftop publishing was more like it — and it was manual labor all the way. This Mac-digitized woodcut appears in a desktop publishing video tutorial.

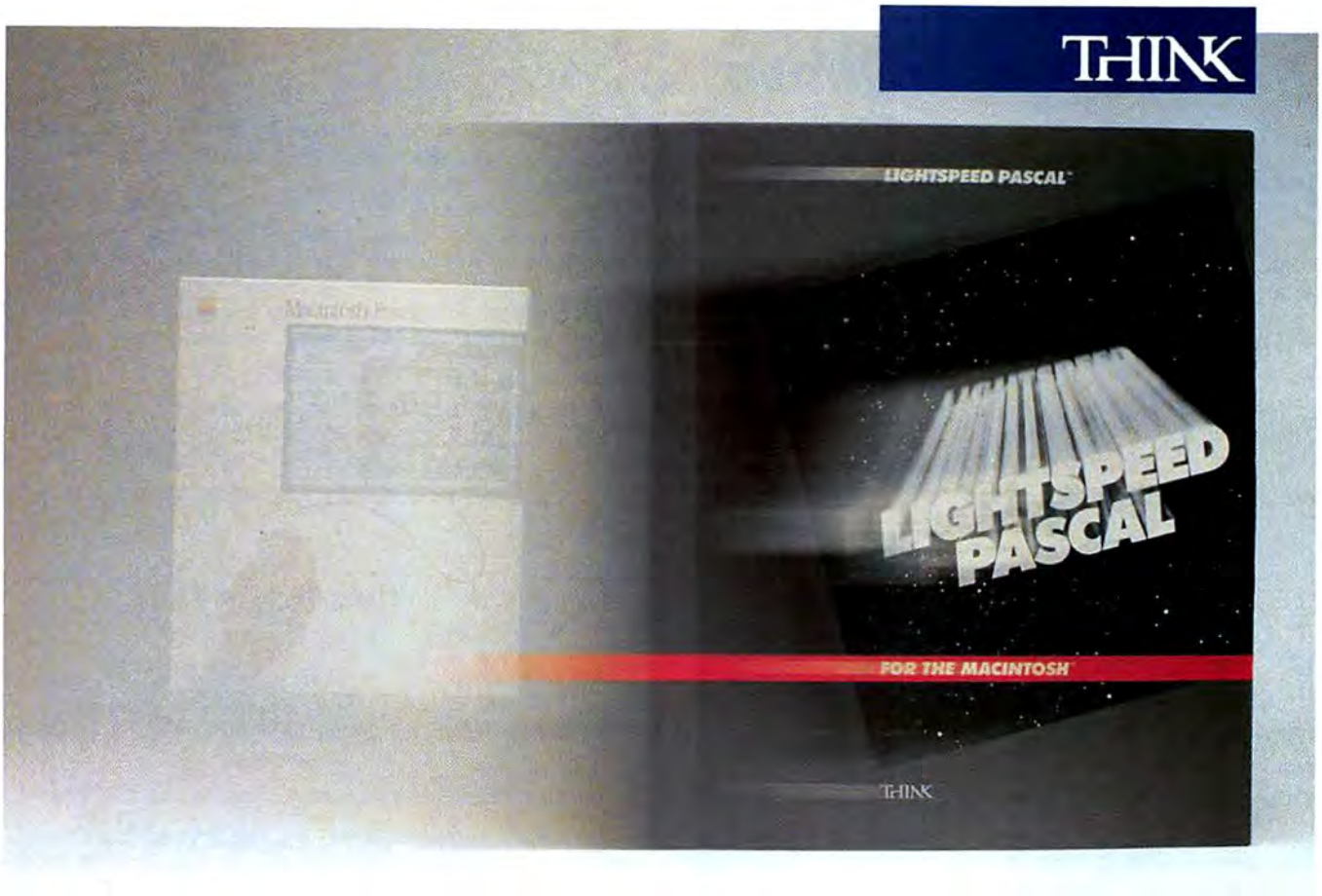
UPDATES

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. Unless you have a 128K Mac, you should be running *System* 3.2 and *Finder* 5.3 (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 along with the versions of other Apple software, free from an authorized Apple dealer. Be sure to bring in a blank disk or two.

The meanings of the codes in the right column are as follows: CP or NCP, copy protected or not; +, known to be HFS compatible; —, known not to work under HFS; S, shareware (try before you buy software); and 5, requires at least 512K of RAM.

Acta	1.2	NCP,+
Aztec C	1.06H.1	NCP,+
Back to Basics	1.03	CP?,+
Balance of Power	1.03	CP,+
BatteryPak	1.23	NCP,+
Business Filevision	1.1	CP,+
CalendarMaker	2.2	NCP,+,S
Chooser	2.3	NCP,+
ColorChart	1.3	NCP,+
ColorMate	2.1	NCP,+
ColorPrint	2.03	NCP,+
ComicWorks	1.0	NCP,+
ConcertWare+	3.1	CP,+
Copy II Mac	6.3	NCP,+
Copy II HD	6.3	NCP,+
Cricket Graph	1.1	NCP,+,5
DesignScope	1.14	NCP,+,5
Desk Accessory Mover	1.4	NCP,—,S
Disk Express	1.10	NCP,+,5
Disk First Aid	1.0.1	NCP,+,5
DiskInfo	1.43	NCP,+,S
Disk Ranger	2.6	NCP,+
Dollars & Sense	1.4	CP,+
Dungeons of Doom	4.0	NCP,+,S
Easy3D	1.01	NCP,+
Edit	2.0	NCP,+
ExperLogo	1.1	NCP,+
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)	5.3	NCP,+,5
FlashBack	1.4	NCP,+
Flight Simulator	1.0	CP,+
Fokker Triplane	1.0	CP,+
FONTastic	2.7	NCP,+
Font/DA Mover	3.2	NCP,+
Fontographer	2.1	CP,+,5
Front Desk	3.0	CP,+
FullPaint	1.0	NCP,+,5
Gato	1.42	CP,+
Hard Disk 20	1.1	NCP,+
Hard Disk Utility	1.29	NCP,+,5
Helix	2.0r11	NCP,+,5
Helix, Double	DH1r35	NCP,+,5
HFS Backup	2.0	NCP,+,5
HFS Locator Plus	1.4	NCP,+
ImageWriter	2.3	NCP,+
ImageWriter, AppleTalk	2.3	NCP,+
InTalk (was inTouch)	2.1	CP,+
Jazz	1A	CP,+,5
Just Text	1.1	NCP,+,5
Laser Prep	3.1	NCP,+
LaserWriter	3.1	NCP,+
Lightspeed C	2.01	NCP,+
Lightspeed Pascal	1.0	NCP,+
Lode Runner	1.0	CP,+
Mac-3D	2.0	CP,+
MacASM	2.0	NCP
MacBase	1.0	NCP,—
MacBillboard	4.01	NCP,+,S
Mac C	5.0	NCP,+
MDS	2.0	NCP,+
Mac Disk Catalog II	2.1.1	NCP,+
MacDraw	1.9	NCP,+
MacDraft	1.2a	CP,+
MacGolf	2.0	CP,+
MacInTalk	1.1	NCP,+
MacLabeler	2.2	CP,+
MacLightning	2.0	NCP,+
MacLink	1.14	CP,+
MacMoney	2.02	NCP,+
MacNosy V2	2.41	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,+
MacServe	2.1	CP,+
MacSpec	1.3	CP,+
MacSpin	1.1	CP,+
MacSpool	2.1	NCP,+
MacTerminal	2.0	NCP,+
MacTools (MFS/HFS)	6.3	NCP,+
MacWrite	4.5	NCP,+
Mac Zap Copier	4.2	NCP,+
MailManager	1.0	CP,+
Measure Test	4.4	CP,+,S
MicroPhone	1.0	NCP,+
Micro Planner Plus	5.7	CP,+
MindWrite	1.0	NCP,—
miniWriter	1.3	NCP,+,S
MockPackage+	4.3.4	NCP,+,S
MORE	1.00A	NCP,+
MS BASIC	3.0	NCP,+
MS Chart	1.0	CP,+
MS Excel	1.03	NCP,+
MS File	1.02	CP,+
MS Fortran	2.2	CP,+
MS Word	1.05	CP,+
MS Works	1.0	NCP,+
Multiplan	1.1	CP,+
MusicWorks	1.1	CP,+
myDiskLabeler	2.11	NCP,+
Omnis III Plus	3.22	CP,+
OverVUE	2.0d	NCP,+
PackIt III	1.2	NCP,+,S
PageMaker	1.2	CP,+
PictureBase	1.1	NCP,+
QUED	1.51	NCP,+
Quick & Dirty Util., Vol. 1	1.6	NCP
Quick & Dirty Util., Vol. 2	1.0	NCP,+
Rags to Riches	3.0	CP,+
Ragtime	1.0	CP,+
ReadySetGo	3.0	NCP,+
Record Holder	2.1	NCP,+
REdit	1.2	NCP,+
Red Ryder	9.4	NCP,+,S
Reflex	1.0	NCP,+
ResEdit	1.0.1	NCP,+
Sargon III	1.0	CP,+
SideKick	1.11C	NCP,+
Silicon Press	1.1	NCP,+
Slide Show Magician	1.3	CP,+
Smartcom II	2.2B	NCP,+
SoundCap	4.3	CP,+
SpellNow	1.0	NCP,+
Spellswell	1.3	NCP,+
StatView 512+	1.0	NCP,+
StatWorks	1.2	NCP,+
Studio Session	1.2	CP,+
SuperPaint	1.00	NCP,+,5
Switcher	5.1	NCP,+,5
System (MFS-128K)	2.0	NCP,+
System (HFS)	3.2	NCP,+
Tempo	1.1	NCP,+
ThinkTank 512	1.3	NCP,+
Thunder!	1.0.1	NCP,+
ThunderScan	3.2	NCP,+
TML Pascal	2.01	NCP,+
TMON	2.585	NCP,+
Top Desk	1.5	CP,+
TurboCharger	2.0,Revd	NCP,+
VersaTerm	3.0	CP,+
VersaTerm Pro	2.0	NCP,+
VideoWorks	1.1	NCP,+
Word Handler	1.6	NCP,+
WriteNow	1.0	NCP,+
ZBasic	3.02	NCP,+



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THE FUTURE REPEATS ITSELF.

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

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

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

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

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

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

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NEW ON THE MENU

How To See Anything

Solutions, Inc. and Apple have arranged to make Solutions' *Viewer* program available to AppleLink users. *Viewer* is part of the *Glue* package that lets users "print to disk" from virtually all applications. The files that *Glue* creates, which can include graphics, will be placed on AppleLink and will be readable by all AppleLink users. Recipients will be able to display, print and even copy from the file, without having to have a copy of the creating application.

This capability will enable dealers to get actual sample output from new programs via AppleLink. It will allow AppleLink users to write letters with any word processor, ImageSave the output, and send it to any other AppleLink user without worrying about whether the addressee has a copy of the creating word processor. Graphics-oriented newsletters can be transmitted and graphic items placed in the AppleLink libraries.

Since all dealers must subscribe to AppleLink and most publishers also are subscribers, your dealer should now be able to show you sample output from most programs. — *SB*

DIALOG BOX OF THE MONTH

It seems that if you annoy your Macintosh with the diskette being locked or full, while you are running *ComicWorks* or *GraphicWorks,* by Mindscape, you will stumble on a couple of cunning dialogs with pictures of diskettes relaying the appropriate messages.

Boy, that disk really does look like it is full. Probably a bit too many bitmaps. — *DS*

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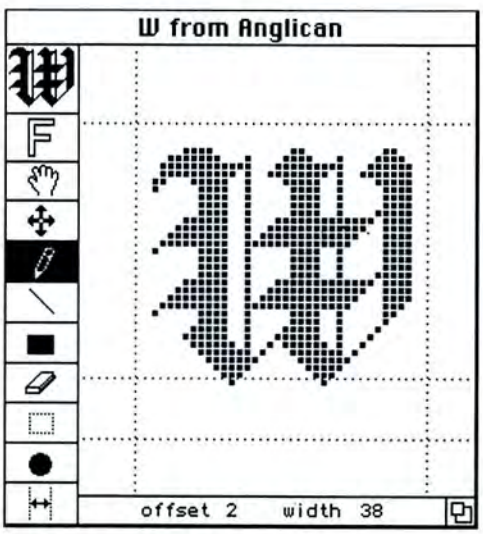

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BUG OF THE MONTH

Version 1.0 of the recently released *MindWrite* word processor seems to have a number of problems when choosing menu items when there are no windows on the screen. Selecting menu options that are highlighted but have no function will produce some very unusual results.

For example, choosing WORD SEARCH from the Search menu will usually make your screen shimmy and shake until the dialog box appears. In the File menu, PAGE SETUP... is the only option that does not function, producing a bomb with an ID of 2. Every item on the Arrange and Windows menu produce flaring problems and FIND on the Search menu will also cause a System crash.

When choosing these commands, we experienced a flurry of bombs with IDs of 2, 3, 10, 15 and 28. We really had fun (Bugsy sure is a weird guy) when the machine went into a colorful array of shifting, flashing patterns a few times.

For turning us on to these bugs, Mr. Roger Hart will be out on the town in Merrimack, NH splurging with his $25 prize from *MacUser*. When you find your bugs, send in those bug reports to Bugsy, c/o *MacUser*, 25 W. 39th St., NY, NY 10018. Don't forget to include all of the details, such as what versions of the *Finder/System*, what DAs, etc., and exactly how the bug can be reproduced. Until next month, may few bugs crawl across your path. — *DS*

TONY LIMUACO

Mac International

The first ever European Macintosh trade fair is being brought to you by Y-Tech Innovation Centre (Amsterdam) and Apple's Dutch subsidiary. MacWorld Expo will take place April 22, 23 and 24 at the Ahoy Complex, Rotterdam, Holland. (We hope it's not too late to change your vacation plans.) Perhaps this will give rise to a new slogan for Macintosh: Today IBM, Tomorrow, the World. More information is available from Y-Tech, PO Box 14572, NL 1001 LB Amsterdam, Holland. — *LK*

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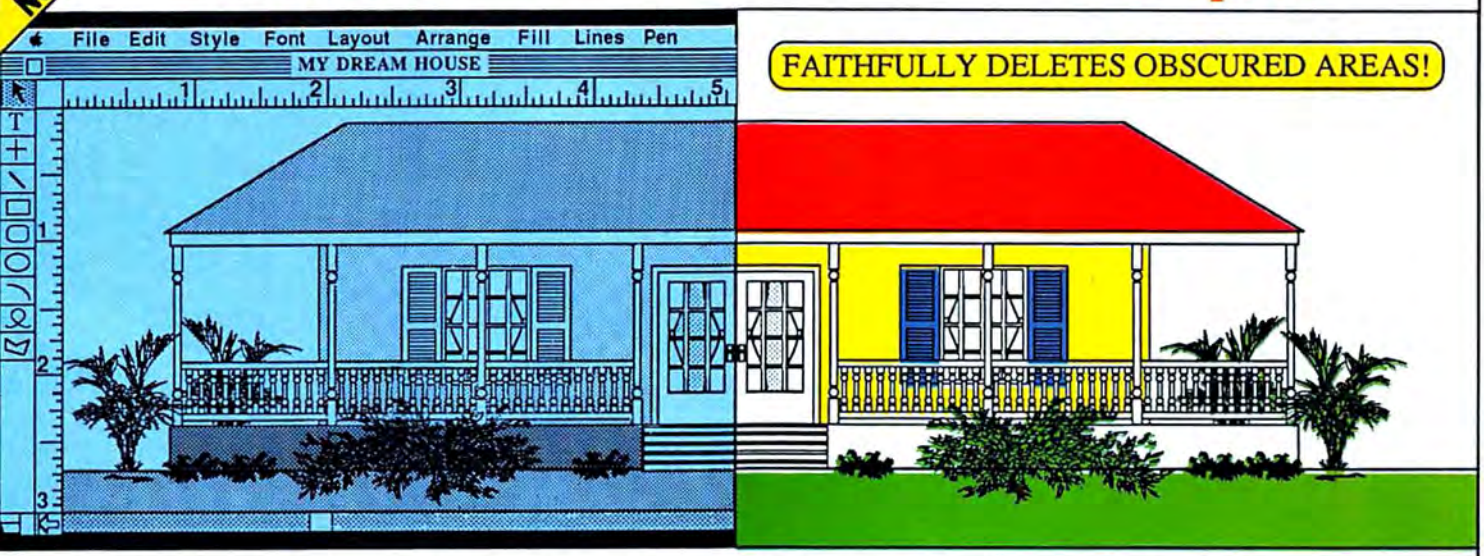

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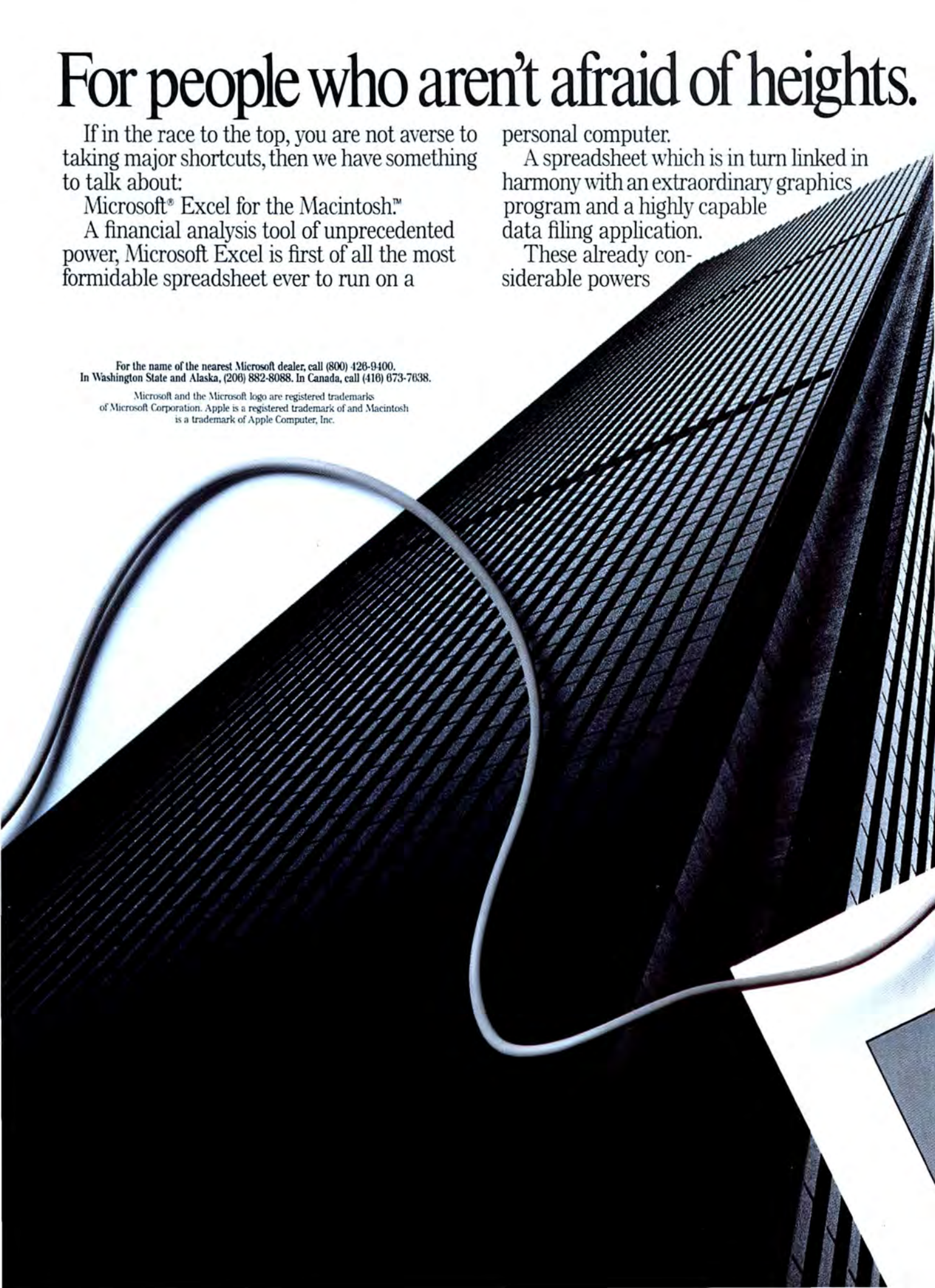

are magnified geometrically by the capacity called macros. Which give Microsoft Excel the capacity to learn your most complex routines. And then activate them at a single keystroke.

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by Robert R. Wiggins

DEATH AND TAXES

While scientists continue research into ways to extend life, accountants and tax lawyers continue to pull their hair as they struggle with the Tax Reform Act of 1986. It's beginning to look like the scientists may succeed first, and death will be avoidable before taxes are.

Yes, it's getting to be that time, as the Fifteenth of April bears down on us once again. But this year, our representatives in Washington have churned up a lot of mud in the water in their attempts to "simplify" the tax laws.

So what does this have to do with the Macintosh? Quite a lot, really. Many of you bought and use your Macs for business, and you are affected. Some of you do consulting and/or programming work for the Mac, and you are affected. And some of you may be planning to use your Mac to prepare your returns, and you are affected.

Let's start with that last group first. Thinking of using your Mac to do your taxes for you? Well, think real hard. The new tax laws are drastically different than they were last year, so be very careful that you are using the absolute latest version of any special tax software (remember *you're* liable, not whoever wrote the program), and that you are using the new formulas and tables if you are doing it yourself in a spreadsheet. Even if you've always done your own taxes, this might be the year to consider an accountant, since there are many deductions no longer allowed and much confusion in this "transition year" between the old tax brackets and the new. If you insist on using your Mac, get someone to double-check your return before you send it in.

Back to the main group, those of you who bought computer equipment in 1986 for use in business. Several changes here affect you. First, there is no more Investment Tax Credit (ITC) unless you entered into a binding contract for the equipment prior to December 31, 1985 — if so, check with your accountant. Second, computers are now considered 5-year property for depreciation purposes by law, no matter how long (or short) you think they will last. Third, the amount of property that can be taken under the Election to Expense Certain Depreciable Assets has been raised to $10,000 (with additional restrictions), so if you may want to check with your accountant to see if anything you bought may qualify for this election, since it could help make up for the 5-year depreciation rules and the loss of the ITC. Fourth, the rules regarding logging personal versus business use of computer equipment are still in place, so you may want to consider *MacInUse*, a program

that will keep track of what programs you run when (although at last look, the IRS was still insisting on handwritten logs, so you'll have to transcribe the information).

If you're a programmer or consultant in the Macintosh arena (or elsewhere) who does mainly contract work (as opposed to being an employee of a company), be aware that some major changes have been made in this area of the tax law. The section of the tax laws pertaining to controversies involving whether individuals are employees for purposes of employment taxes (the so-called Safe Harbor provision) has been amended to specifically exclude programmers and systems analysts (and engineers and other technical types) from the Safe Harbor coverage. So consult with your accountant and/or your attorney, or you may find you're suddenly an employee (for tax purposes) and subject to withholding, whether you're incorporated or not. And if you are incorporated, a lot of other changes in the new law affect you — another reason to get to an accountant or tax lawyer for advice.

So check with your accountant whether you want to use your Mac for tax preparation, want to deduct it or make your living from it. The new tax law makes some sweeping changes, and you don't want to get caught with your mouse down.

NO ACCOUNTING FOR TASTE

After burning the midnight oil closing out the books on 1986, some people are going to start thinking of getting some accounting software, or changing the software they are using after discovering its shortcomings in the year-end crunch. I may be labelled a heretic, but I think using accounting software can be a big mistake for many people and small businesses. Before you pick up your brickbats, let me give you my reasons.

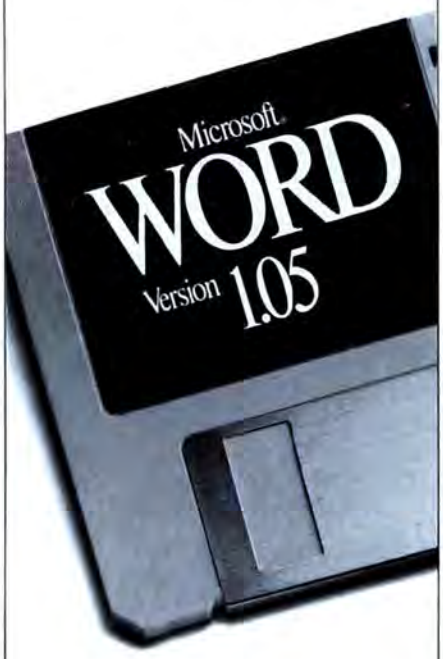
1. *Flexibility.* Most accounting software expects you to adapt your business to it. While it would be impossible to write software to accommodate everyone's way of doing business, there's just not enough flexibility in accounting software packages to let you adapt them to your business instead of the other way round.

2. *Usability.* By its nature, accounting is complicated, and I haven't seen any software that makes it much easier. Some of the early programs didn't even take much advantage of the Macintosh interface, although this has changed.

3. *Reliability.* Even if you can find software that fits your way of doing business and that you find easy enough to use, you have to worry about support. After all, you are entrusting your business to this package. Does the publisher provide telephone support? What about bugs — does the publisher update the product? What if the publisher folds gets acquired by another company?

4. *Reporting.* The real test is getting the information to your accountants and/or auditors in a form they can use, and many of the accountants I've spoken with say that *no* accounting software package they've ever seen (other than custom software) gets 100 percent of the information to them in a form they can deal with readily, causing them to spend additional time tracking things down.

BRIDGET STARR TAYLOR



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So if none of the accounting software packages on the market fits my needs, what do I use for keeping track of my business? *Excel*. I took the green ledger sheets my accountants prepared for my bookkeeping, and transferred them to spreadsheets. I now have a flexible system I can change at any time, that mirrors exactly the manual system I was using before. I created a few simple macros to cross-post items from worksheet to worksheet to make it easier to use. I don't have to worry about my "software" being outdated or losing support, as I could transfer it to any spreadsheet package. And the reports I produce are *exactly* what my accountants want.

Excel may not be the answer for everyone. A bigger, more complicated business may need the advanced features of one of the accounting packages. But when it comes to accounting software, you're just better off writing your own than adapting your business to someone else's idea of how to run a business. If your company is too large to use an *Excel* solution, but too small to afford custom software, evaluate the packages very carefully. And make sure your accountant is involved in the decision.

PINSTRIPE PICKS

Now that folks are starting to realize the Macintosh is a business computer after all (something *we* knew all along), there is just so much going on in the business arena that this month I'm starting a new regular addition to my column called Pinstripe Picks, where I'll point out products worth looking into if you use your Mac for business. Most of these products will have been mentioned elsewhere in the magazine — in Quick Clicks, and MiniFinders I want to be sure you don't miss them.

LASERSERVE: If you have a LaserWriter, even if you don't share it, buy this. You'll find you have a lot more time to get real work done that you used to spend waiting for printing.

SMART ALARMS: The next best thing to your own secretary for keeping track of things to do.

SUPERPAINT: Not just another *MacPaint* clone. It has a lot of *MacDraw* in it, too, and can take full advantage of the LaserWriter.

DOUG CLAPP'S WORD TOOLS: If you do much business writing, this is a good investment. *[Editor's Note: That's if it comes out. The long-promised program was in the final stages of beta testing at press time.]*

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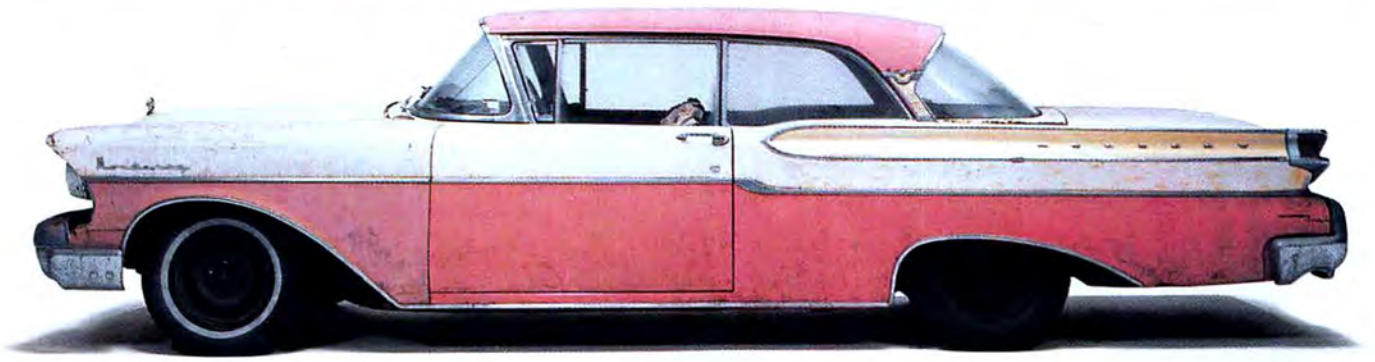

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We were the first to introduce an 800k drive for the Macintosh. First with the 20 meg tape backup. And first with the 85 meg, 172 meg and 340 meg hard drives.

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

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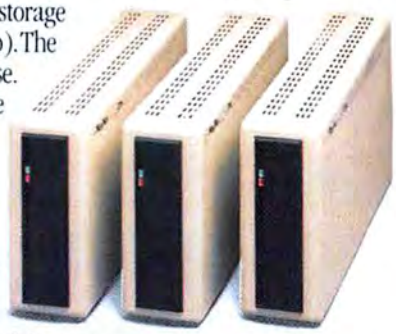

Here are all the choices for storage you need (20, 30 and 40Mb). The 20X, perfect for everyday use. The 30X, 50% more storage for the price of our competitor's 20 meg drives. And introducing the 40X, offers all the storage you need for power computing. All cooled by our extra-quiet fan. They sit beside your Mac, so the system won't heat up. Daisy chain up to 7 units. They come with backup utilities and optional MacServe networking software (a $250.00 value). Preformatted, so just plug them in and run.

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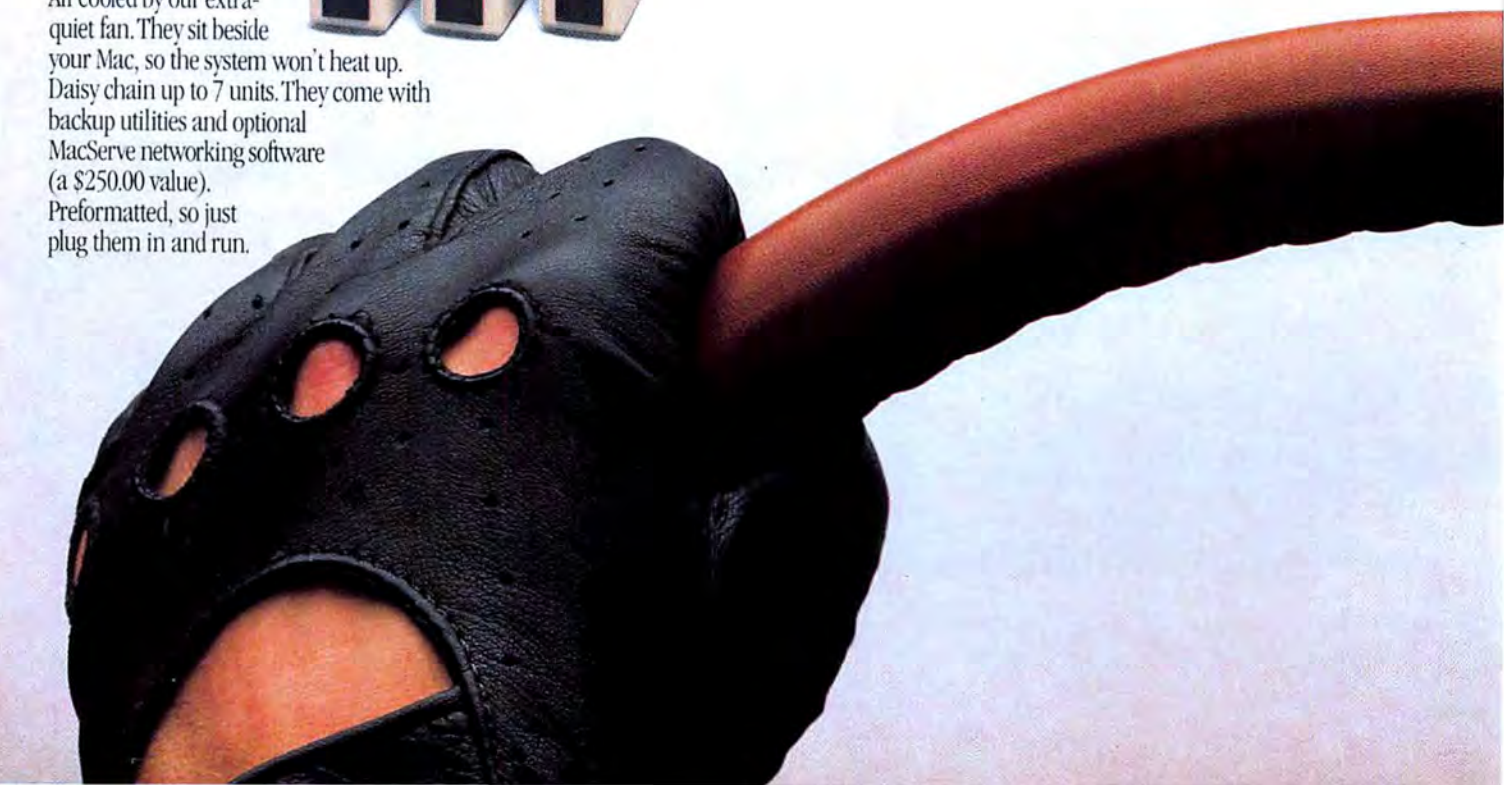

E IN THE OFFICE?

THE MAGNET 40/40.

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

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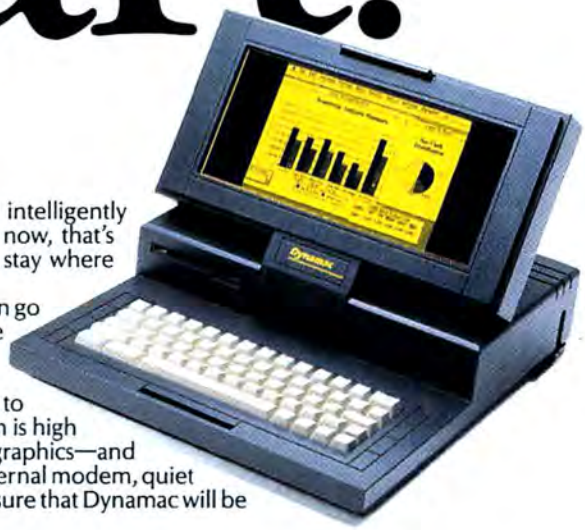

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by Michael D. Wesley

UNSUNG HEROES

TONY LIMUACO

The MacWorld Expo in San Francisco this January was a show filled with emotion for me and many of the people there, both exhibitors and attendees. For one thing, there was the surprise news that *MacUser* had been bought by Ziff-Davis. While all of us are excited about the tremendous opportunities present under the auspices of this large, powerful and highly respected publishing house, there is always unease around such a major change. *MacUser* has been a very close, almost family operation so personal emotions run very high.

Much else happened. Here are some of the major events of my show. Brad Fregger, formerly of Activision and now president of Software Resources International, sought me out at the *MacUser* booth to chastise me and the magazine (and rightly so) for oversights of spectacular proportions. Brad pointed out that I in particular and the magazine overall had mentioned the game *Shanghai* in four consecutive issues — in articles, in my column and in New on the Menu. Every time we mentioned *Shanghai* we raved about it because all of us, myself in particular, think that *Shanghai* is a brilliant program.

Brad did not chastise me for mentioning *Shanghai*, of course, nor for praising it. His point was that in every mention of the game we failed to name the author, Brodie Lockard. Although Activision publishes *Shanghai*, the game was conceived and written by Brodie. Normally we don't mention authors. But Brodie Lockard is not your run-of-the-mill author. His life is as much a good example as his programming. The wheelchair to which he has been confined as a paraplegic since a college gymnastics accident has obviously confined neither his creativity nor his talent. I met Brodie Lockard at the *MacUser* Editor's Choice Awards dinner, held one evening at the show. He is a delightful, intelligent and inspiring individual, and I was grateful for the chance to thank him personally for creating the game that occupies most of my waking hours.

Mr. Lockard, I want very much to say "Thank You" from all of us for *Shanghai*, and to let our readers know that it was you who created this fine game.

Brodie Lockard is not the only person in this position. Ed Bogus of Bogus Productions did much of the work for *Studio Session*, a superb music program. I have looked at *Studio Session* in depth and I'm tremendously impressed by it, as are all the editors of *MacUser*. For this reason, *Studio Session* has received excellent notices in the magazine and won the Eddy (Editor's Choice Award) for Best New Music Program in 1986. But we haven't mentioned Ed in the articles, only the publisher, the Kette Group. Well, once again I want to thank Ed Bogus publically for all the work and brilliance that went into this fine product.

I also want to thank Brad Fregger for bringing this to my attention, because up to the moment that he spoke with me, I was feeling a little sorry for myself. I had thought that some of the companies represented at the *MacUser* awards dinner would thank me for the columns and articles I wrote about their products. Although they all thanked *MacUser*, and rightly so, there was no public mention that I (or Louise Kohl, another unsung *MacUser* editor of very high caliber) had contributed to the success of a product by letting people know how good it was. Several developers came to me personally and privately to say they appreciated the support I had given them, but just as I had left out public mention of Brodie Lockard and probably others, so was I left out of the public accolades. I have always believed to a certain extent in the validity of the phrase "as ye sow, so shall ye also reap." I believe it even more now, having found myself personally reaped, but I no longer feel sorry for myself.

In the same vein of personal congratulations for a corporate product, I want to take a moment to mention some of the people involved in the Macintosh SE and Macintosh II development process. Apple Computer, the entity, generally gets the credit and complaints about products, but these beautiful machines would never have gotten to us if it weren't for a skilled team of engineers, designers, product managers and so on. I know I'm going to be leaving a lot of people out, so if I miss you I apologize.

The product manager for the Macintosh SE is Charlie Oppenheimer. Charlie is responsible for bringing all the elements together into a final product and making sure that it gets out on time. Three of the people who were most influential in the design of the SE were Bob Bailey, the project manager for hardware, Brian Howard, hardware designer and Tony Leung, the ROM product leader. These guys basically built the Mac SE from the ground up, while maintaining compatability with existing software. This could not have been an easy task.

Didier Diaz was the product manager for the Macintosh II. Another of Apple's charming Frenchmen, Didier (pronounced DDA, more or less) supervised the development of the open Mac. Ron Hochsprung and Rich Castro, two longtime Apple employees, were extremely important in making the Macintosh II happen. Ron was the hardware project manager and Rich the ROM project leader.

Two energetic and brilliant young men were responsible for the most dramatic innovations on the Macintosh II. Ernie Beernink wrote Color QuickDraw, which performs extremely well and has a lot of power built in for the future. And Mark Lentczner engineered the incredible stereo sound capabilities. Mark and Ernie are fun to talk to — they are both justifiably proud of and enthusiastic about their work.

Finally, two of the engineers who helped convince Apple to make the 68881 coprocessor a standard feature of the Macintosh II, and helped make it work, are Clayton Lewis and Toby Ferrand. Many thanks to you and to all who contributed for machines well done.

SENTIMENT VERSUS HYPE

It's great to witness the growth of a company like Aldus, who had tiny booths at their first two shows but brought an enormous, high-tech classroom and demonstration center with them to San Francisco. It's also great to see new, small companies in tiny booths with people radiating excitement about their products.

One product that caught my attention was Quark *Xpress*, developed by a com-

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pany, Quark, in Denver. Since Denver is my home town, I have kept track of Quark for some time. Their previous involvement in the Mac market was the development of one of the earliest hard disk subsystems. They have been in the Apple II and Apple III software market for many years, but *Xpress* is their first software product on the Mac, and it's a humdinger. Quark *Xpress* is a page layout and typesetting program with extraordinary capabilities that is also easy to use.

You may note that we have said this about programs before and often. What's fascinating about Macintosh software is that the quality and functionality of Mac programs keep growing in an upward spiral. Today's "powerful and easy to use" software does a heckuva lot more than yesterday's. To be specific, Quark *Express* does all of the following, very easily:

1. Works with text from 1 to 500 points in size (other programs are restricted to a 127-point maximum by QuickDraw limitations).

2. Flows text from column to column, page to page, text box to pipelined text box — repaginates and updates tag lines (Continued to Page...From Page...) on the fly.

3) Flows text around pictures of any shape.

4) Performs manual or automatic kerning in fractions of an em space (this is great if you have to change fonts — the kerning is relative to the font, not fixed by point size).

I was asked recently who was going to be the next *PageMaker* — well, keep a close eye on Quark *Xpress*. For further information about Quark *Xpress*, you can contact Quark at (303) 934-2211.

PARTING SHOTS

Some of the other fun things found at the MacWorld Expo this year:

— Howard Katz walking the floor wearing a cap with a flashing message board that displayed messages like "Personal Friend of Doug Clapp," "I'm a MacAppaholic" and "Three Piece Suits Out of Apple."

— The Palo Alto Shipping Company, makers of *Mach 2* multitasking Forth, using their product to control an unstable wing from a mobile Mac.

— Letraset, dropping *LetraPage* (now *MacPublisher III*) and picking up *ReadySetGo* 3.0, apparently overnight.

— Mirror Technologies, the hard disk company, who had the good sense (and the money) to paint their name on the back of a boat set up at Moscone Center to publicize a boat show.

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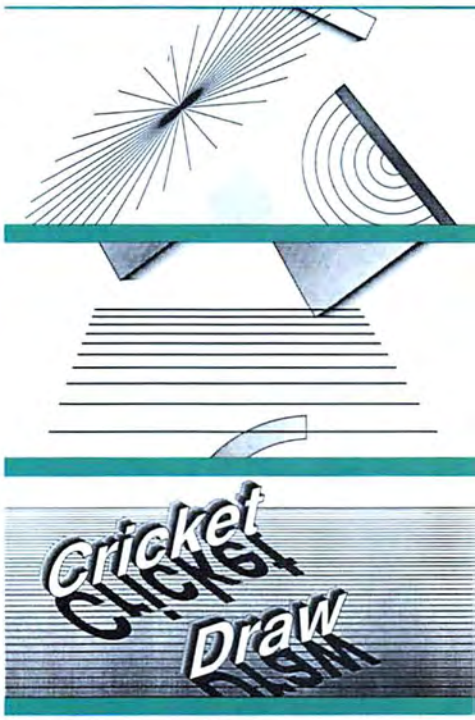

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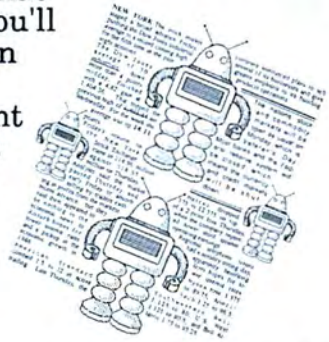

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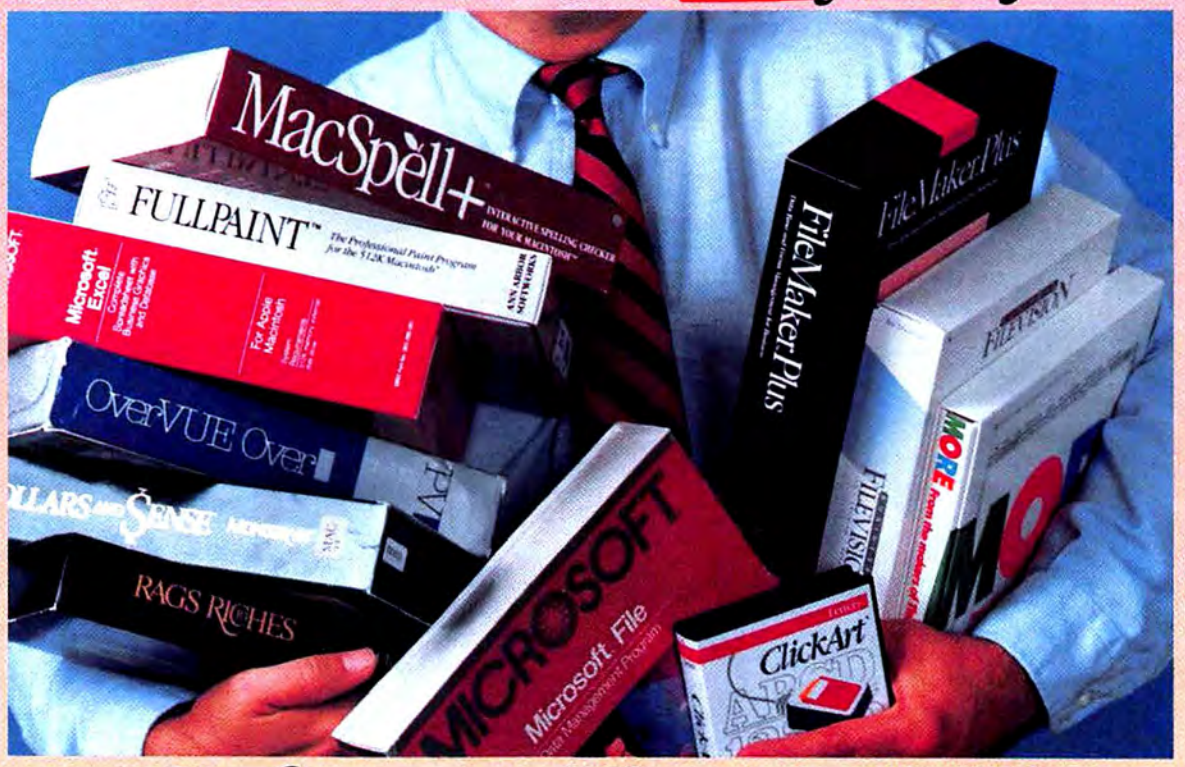

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by Doug Clapp

ALL ALONG THE WATCHTOWER

Do I care about the 80386? That hot fast new 32-bit processor for IBM-like computers? Nah.

Or the 68020? That hot fast new 32-bit processor for Macintosh-like computers? Not really.

Don't get me wrong: I like fast computers. If you don't like fast computers, people avoid you in public, your friends snicker and nobody at *InfoWorld* returns your calls.

But "fast" is as slippery as "good" or "well-educated" or "poverty level." More than that, fast isn't necessarily all-inclusive. The Amiga, folklore has it, is fast, but when you boot an Amiga program from a floppy, you might as well go to lunch.

And the Macintosh, which the trade press once derided as slow, turns out to be as fast as (or faster than!) an IBM AT. Same machine, new perception. Macintosh was always fast. It just took *Excel* to prove it.

I don't know if this has ever been stated explicitly: Fast computers engender higher productivity. That statement, I think, is what Compaq and the other '386 makers would have you believe. That "more productive" is better and "faster" equals "more productive."

Hogwash.

Sure, there's some truth to it. The 80386s and the 68020s will create — at last — Desktop Engineering in the micro world. If you're doing 3-D rotations, you need the horsepower. Or if you routinely sort thousands of records, you need the horsepower.

But for most of us, the rewards will be less apparent. Even a Cray can't make anyone type faster (more's the pity). We will benefit, somewhat, from faster disk access and all around zippier action, but don't expect miracles.

Keeping in mind the law that says "Anyone who names a law after themselves is a jerk," how about Doug's Dictum? This is it: Productivity rises as a fraction of processor speed. In other words, if you move from a 1-megahertz processor (like in the Apple II) to a 15.8-megahertz processor (like in the new Mac II), you aren't suddenly 15.8 times more productive. Somewhat more productive, yes; 15.8 times more productive, no.

Here's another dictum: Only advances in software or computer design can increase productivity exponentially. Macintosh is an advanced — a "better" computer — than the last generation of IBMish computers. Macintosh's advanced design creates higher productivity; mere processor speed, or wider bitpaths for aimless electrons to wander down isn't enough. And let's count 80386 machines as members of the previous generation; you can't make a new Mercedes by putting a supercharged engine in an old Chevy.

Fast processors are nice, but they're not a panacea. Still, fast processors provide an opportunity for designers. With more speed, hardware designers can "throw more dots." A higher resolution screen needs both more memory (to hold the screen image) and more speed (to draw all those dots acceptably fast). Maybe productivity rises in direct proportion to the number of pixels?

Processor speed, alone, isn't enough. But let's go farther: Mere increases in processor speed can be a trap.

Why? Because mere speed can get you in over your head. It's easy: If you can edit a chapter on a slow computer, certainly you can edit an entire book on a fast computer, right? If you can create a tidy little spreadsheet on a slow computer, you can whip up a huge spreadsheet on a fast computer, right?

Uh-uh. Not without better, more advanced software. Imagine a book of 65,000 words. If an average word is six characters, the book is 390,000 characters — edging toward half a megabyte. Even if your word processor won't gag on a file that long, you will. For one thing, nobody I know can keep an entire book "in their head" while they edit.

And the problem with spreadsheets isn't speed or size. *Excel* is both faster and bigger than most mortals require. With spreadsheets, the problem is auditing. The spreadsheet doesn't "know" what you're trying to do. Imagine pondering why one cell contains a "wrong" number in a 390K spreadsheet!

The only way out is smarter software. Only smart software can help us avoid the snares of faster computers.

For me, "smart" means watching. *Microphone* is a smart program. It watches you telecommunicate, and learns to do what you did. *MacLightning* is a smart program; it watches you type. Smartest of all is *Tempo:* Do what you want, it'll watch and learn.

The opportunity and the challenge of fast processors is this: now computers can watch all the time! Not surprisingly, this will be easier with Macs than with IBMs. In the IBM world, they haven't yet figured out how to make desk accessories (they call them TSRs) live with application programs. And you think *you* crash a lot!

But Macintosh has an event loop. The event loop, like a prayer wheel, goes round and round. On each turn it looks for an event. Just stick in a disk? That's a Disk event (or "diskEvt" to Macintosh). Message coming in over AppleTalk? That's a networkEvt. Hit a key? That's a keyDown event.

The event loop is a grand conception. A faster Macintosh will let software designers make the event loop even grander. How about a Watch event that watches all the other events? Better still, how about a Watcher application that runs in the background, invisibly, and watches everything you do, all the time?

But why not go all the way? Why not have every program live within a "Watcher environment?" An environment that records what you do, that maintains a compressed dictionary of your words, your style and your behavior at the keyboard? The environment could be accessed by applications that lived within it.

Program resources and desk accessories would become Watcher resources and Watcher desk accessories. Use a particular desk accessory frequently? It'll be moved higher on the desk accessory menu. Access a particular menu item often? It might suddenly have a command-key equivalent.

The more you used the computer, the better the computer would "get to know you." It would mold itself to you. Become easier and easier to use. "Fast" doesn't mean "productive." Easy means productive.

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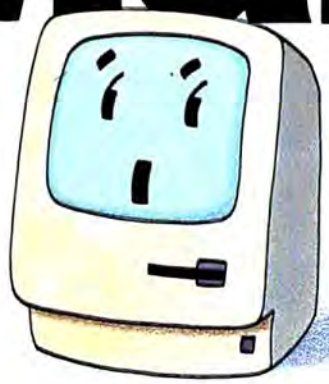

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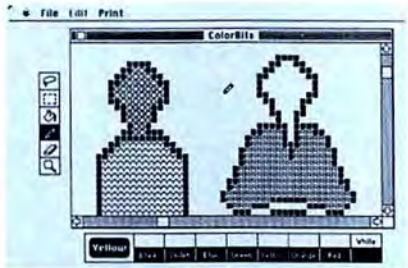

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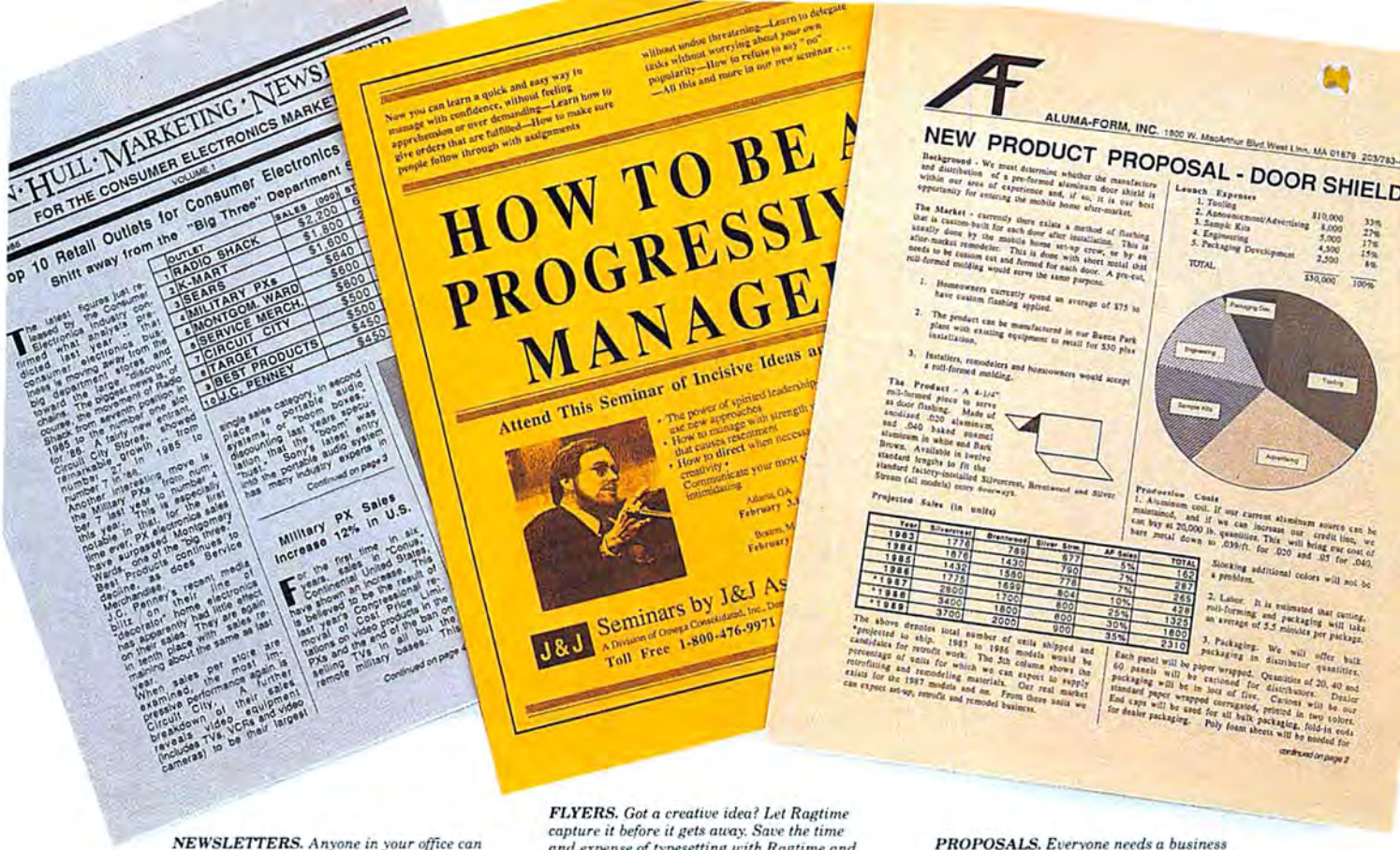

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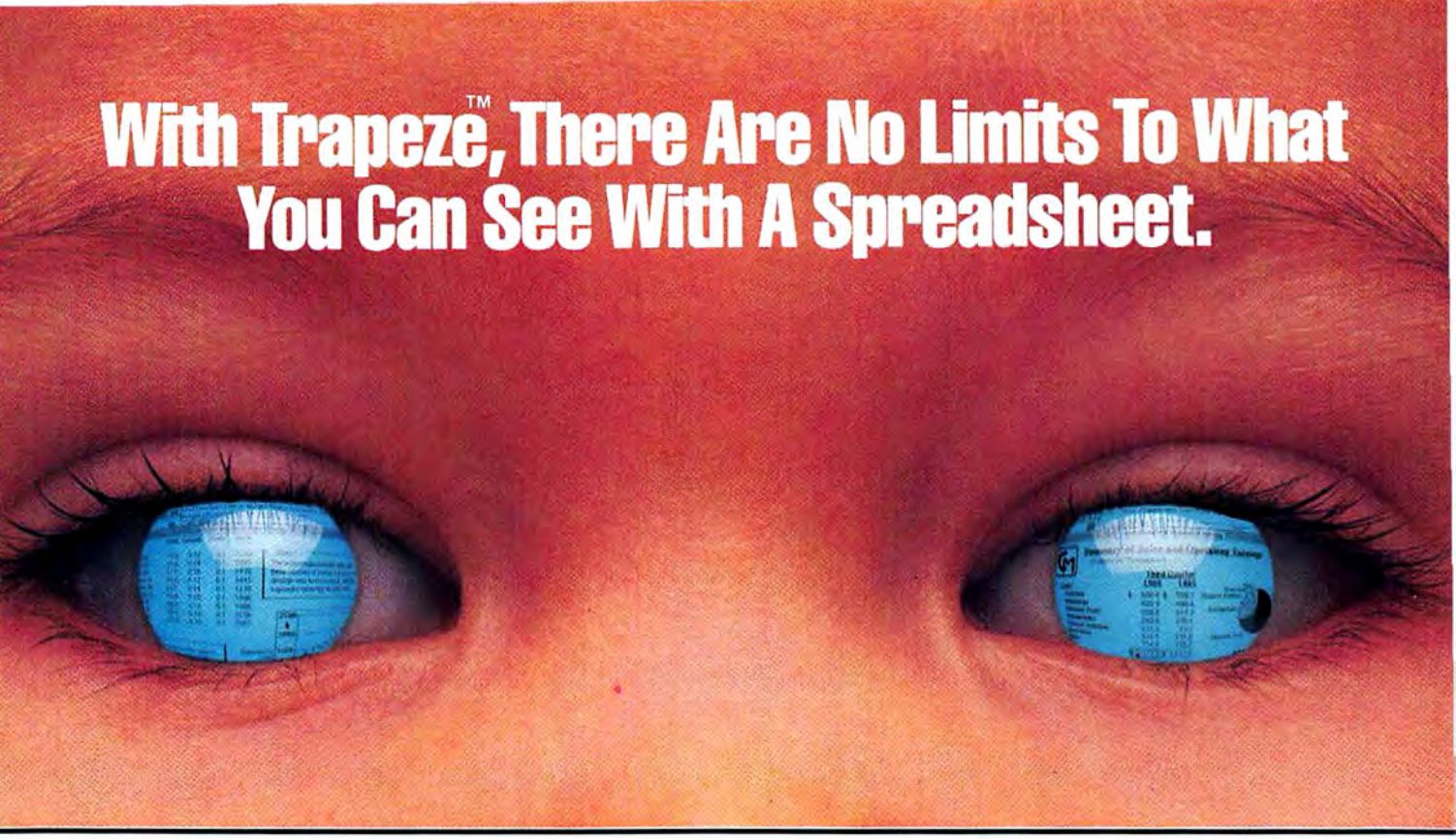

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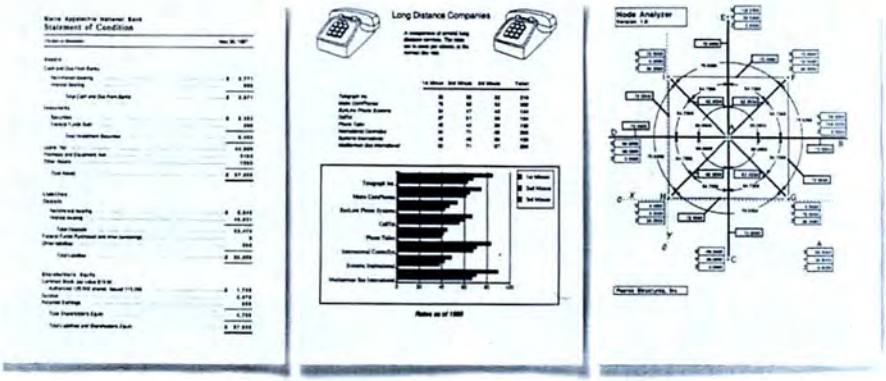

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DISK LIBRARIAN

Shareware, registration Fee: $20. Published by Little Bit, 469 Edgewood Avenue, New Haven, CT 06511. Requires 512K+. Version 1.81 reviewed. Not copy protected.

If you've never gotten around to cataloguing that ever-growing pile of video cassettes lying all over the house, it's a fair bet that you haven't got around to keeping track of what's on your Macintosh disks either. Not knowing where a particular document is or whether you are using the latest available version of a program is frustrating, to say the least.

Disk Librarian is a remarkably easy to use shareware program that allows you to create and maintain a catalog of disk names and the documents and applications those disks contain. And this well designed application provides much more than just a simple disk and file name listing.

Disk Librarian operates on the "feed me" principle: after starting the program you then insert each disk in turn that you wish to have listed in the catalog. Once all the required information has been obtained from a disk, its contents are then automatically displayed in two windows.

The Disks window lists disk names in bold type with a range of basic information underneath each of them including disk capacity, space remaining, file names and their sizes, creation dates, folder names, disk space occupied by each folder, and files contained in folders.

The Documents window lists each file name alphabetically along with its type (document or application), size, creation date and time, the name of the disk on which it resides and, if applicable, the folder on that disk in which it has been placed. HFS users will find the latter feature very useful.

You just keep feeding in disks until you get tired or there aren't any more and *Disk Librarian* will continue building the master catalog which can then be saved under any name you choose. If you have disks with duplicate names the program alerts you to the situation and offers the choice of canceling the update, renaming the offending volume or overwriting the current catalog entry.

If you want to get more detailed information about your disks and files there are some very useful choices available under the Options menu. You can ask that the catalog include the specifics of system and invisible files along with file creator and type. Two additional options allow you to highlight instantly those files that have not been backed up (as far as the master catalog is concerned) or that have been superseded by newer versions.

Subcatalogs that list only those disks or files which meet certain criteria can be produced from the master catalog. *Disk Librarian* will accept criteria for partial disk or file name, modification date, file size, and document creator and/or type.

If shuffling your disks makes you feel more like a card sharp than anything else, get a copy of *Disk Librarian* and give it a try — it'll be indispensable before you know it. As with other shareware programs, if you like it and use it, please remember to support the developer. — *Robin Webster*

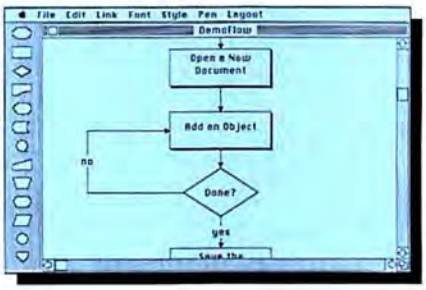
MACFLOW

List Price: $125. Published by Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. (818) 991-6540 (voice), (818) 991-5037 (modem). Not copy protected.

One of the first skills taught to aspiring first semester computer programmers is flowcharting. Learning how to visualize the flow of data throughout a system is fundamental to actually creating code, and a flowchart is the clearest way to get the overall picture. *MacDraw* has served well for many flowcharters, and will probably continue to do so. For a bit more power, however, take a look at *MacFlow*.

The main editing window bears a resemblence to *MacDraw*, although there are fewer editing tools in the tool palette. All of the graphics primitives are standard systems design symbols (ironically, most of them had their origins in the big bad world of IBM mainframe programming). Symbols are dragged out onto the main window, where they can be freely repositioned and resized. The program remembers the last size that a particular element was stretched to, and defaults to that size when a new one is created. Unfortunately, the included elements cannot be edited, which may not be a problem when using the program strictly for computer system flowcharting, but which limits using *MacFlow* for anything else.

Connecting symbols is easy: drawing lines between two flowchart elements connects them cleanly, without having to be very precise while placing them. Lines end in arrowheads.



By double-clicking on a symbol, another file window pops open; another flowchart can be constructed within this window, allowing the designer to layer the system, and view only what is necessary at any time. If you want to get to a level buried within the hierarchy, a ZOOM TO... command allows any file to be opened on top of the current window (normally, *MacFlow* can work with only one file on-screen at a time). Any file can also be linked to a selected symbol in the active window with the Assign command, and these links are deleted with the Release command. Drop shadows can be added to all elements in the window, or just those that have subcharts within them.

Click on an element, and begin typing; each symbol can contain text in a unique font. Three alignment modes are available: left, right and centered. Four patterns and four line widths that can be specified for each symbol (or each connecting line), or a symbol can have no outline at all (useful for adding text lables without visible borders).

Groups of symbols can be selected amd moved around: in most cases, connecting lines rearrange themselves appropriately. A problem cropped up here: if a group of elements is moved over another bunch of symbols, the lines begin to get messy, crisscrossing over one another. Think ahead of yourself when designing complicated flowcharts. A grid can be invoked when placing and rearranging symbols; this grid cannot be modified.

MacFlow's Show Page function is similar

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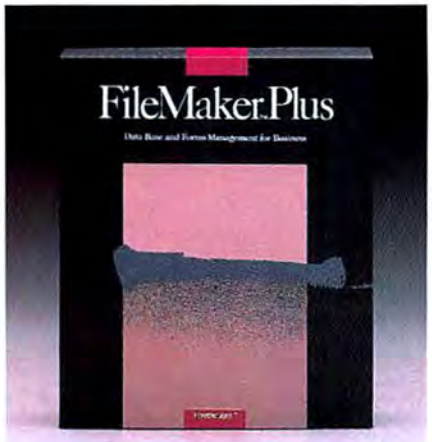

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to that in *MacPaint:* the viewing area and the placement of the flowchart on the page can be modified, but nothing can be edited, another drawback when working on complex diagrams.

MacFlow allows single files, related files under a symbol and entire linked flowcharts to be printed to either the ImageWriter or LaserWriter (symbols print as QuickDraw objects on LaserWriter. This means they're smooth).

A memory status window contains information regarding the number of symbols in the *active* file, the size of the flowchart, and remaining available remaining memory.

MacFlow is a program for a limited audience. It's really useful only when programming, and for people that are involved in computer systems design. For other organizational charting needs, *MacDraw* still makes more sense. — *DB*

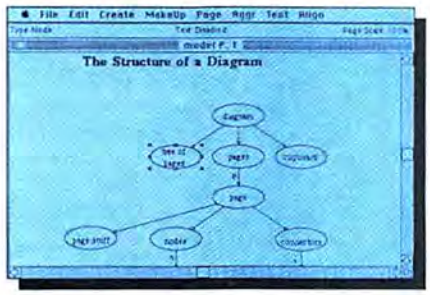
DESIGN ★★★★

List Price: $200. Published by Meta Software, 55 Wheeler St., Cambridge, MA 02138. (617) 576-6920. Not copy protected.

Design is one of those programs that defies easy classification. It combines graphics elements like those in *MacDraw*, outline processing and project managment software. The end result is a program design tool that goes beyond simple flowcharting and structure diagrams.

Design is geared toward professional systems analyst/designers and software engineer, as well as documentation expert. By defining on-screen graphic entities, establishing relationships and hierarchies among them, *Design* allows the user to move from the highest level of abstraction ("coarseness" in *Design*'s terminology) which is the page, down to nodes, which are objects having shape, size, position, attributes and text.

Objects most often are represented as rectangular blocks, squares, circles or ovals. These objects can be used to make up other nodes. The lowest (most "refined") node often is actual C or Pascal source code or other text as well as a graphic element imported from other applications. Connectors define the relationship between nodes. Many of the operations that deal with the placement of nodes on-screen will seem familiar to *MacDraw* users. What differentiates *Design* from basic object-oriented drawing programs is the fact that as you move things around, the connectors will be automatically redrawn to maintain the logical link between nodes. A distinctive



approach is used when adding text or displaying a node: A set of fully functional miniature scroll bars immediately appear outside the node.

There are several operations analogous to those of outline processors: Coarsen and Refine are similar to hiding and revealing lower levels of detail. One of the most interesting features concerns the importation of text from external sources: *Design* can recognize the braces and "Begin...End" pairs that are used by structured programming languages like C and Pascal to delimit logical blocks of code. It will automatically create nodes for each matched pair with the intervening text as its content. Once loaded, the node arrangement reflects the syntax tree as determined by the block delimiters. This is a great help in incorporating existing source code into system documentation.

Because of the rather specialized function of *Design*, it is not a program for the casual user. The manual and application notes are not directed towards the novice, although they are comprehensive and clearly written. Some of the sample applications are rather specialized examples of math, logic and computer language design. There is a special open architecture version available from Meta Software for those who wish to write their own applications using the *Design* kernal. *Design* is similar in scope and function to some design tools available on IBM-PCs that cost as much as a Mac for the software alone, and is a worthy candidate for the software engineer or scientific professional. — *Peter Mengaziol*

WRITER'S WORKSHOP ★★★½

List Price: $99. Published by Futuresoft System Designs, PO Box 132, New York, NY 10012-0132. (212) 674-5195. Requires 512K+. Not copy protected.

Writing is not a casual business. It requires hard work, and if you're going to earn those hard-earned dollars, then you need to keep good records. You need to know where your manuscripts are, how much they have earned (or might earn) for you, what each editor's preferences are, and so on. *Writer's Workshop* is a relational data base with three major files or sections: Manuscripts, Bookkeeper and Reference. The program, which is geared toward the needs of professional writers, is based on the *Helix* data base system. It comes with a version of *Runtime Helix*, so you neither have to have *Helix* or know how to run it.

The Manuscript section is versatile. It lets you track your progress in completing work, prepares queries, submissions and follow-up letters to publishers, and also can track your submissions.

You can also maintain a record for each publisher including names, addresses, contact people and payment per word, line, page or type of manuscript. The program can track an unlimited number of authors and manuscripts, keep a record of character summaries and also can maintain pictures related to any manuscript.

One very nice feature allows you to create and print professional looking mailing labels for your manuscripts (including separate return address labels). And you can prepare formats for up to four types of letters typically sent to publishers. The program will automatically insert both the publisher's address and your own when you use one of these self-composed form letters.

The Bookkeeper file will track your expenses and income and can also provide financial reports, broken down in almost any way imaginable. The creation of reports, as well as the retrieval of specific information or records, is dependent upon a Helix feature called *Query*. Queries consist of logical formulas that you must prepare. They can be daunting if you are not comfortable with mathematical logic (that surely includes most writers!). A major drawback of this Query system is that if you accidentally set a query in motion, it can plague all

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future operations. That is, if you have asked it to find all manuscripts written after a particular date, or with the word "Mac" in the title, you will not be able to access any other manuscripts until you have cancelled that query. It's a good idea to learn to routinely clear all Queries before beginning any new retrieval operation.

The Reference portion of the program will be very useful for many authors, but is dismally inadequate for others. You can index categories within Reference and it contains fields for some standard bibliographic data, but it is in no way designed for scientific references. There is no field provided for the name of the article, journal, issue or number of the publication. Although workarounds are possible, they're not easy. More flexibility should have been provided.

The interface is sometimes awkward and often strange. For example, Save is not a menu choice. Instead, you must choose Replace or utilize the Enter key. There is a substitute for Save, though, in a nice Auto-Save feature. And the program can't count entries or records. The only way obtain a count is to count the entries yourself!

Runtime Helix does offer some advances in error management. For example, when you open a file after a crash you are notified that there has been a System failure. And the icon of the affected file in *Writer's Workshop* appears visibly damaged. You are prompted to use your backup copy. You did back up, didn't you?

Overall, this is a valuable program despite its inconsistencies. Most of the complaints about *Writer's Workshop* are less significant than its contribution to bringing order out of chaos. On balance, I would recommend it.— *Linda Joan Kaplan*

PATTON VS. ROMMEL ★★★★

List Price: $39.95. Published by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. Copy protected.

Once upon a time military board games used cardboard-chip armies moved around a printed battlefield. Though interesting, those games were cumbersome to play. They cried out for computerization. Now their direct descendant, *Patton vs. Rommel*, designed by Chris Crawford (best known for *Balance of Power*), proves that, when fought on the Macintosh, war can be altogether less hellish.

Patton vs. Rommel recreates Operation Cobra, the post D-Day offensive designed to break through the German lines. You can command either the Allied or Axis forces against the computer or match wits against another player. Scoring, based on territory gained or lost, the number of towns controlled, and the casualties incurred, decides the winner.

Played on a map of the Normandy peninsula, the game uses icons depicting Allied and German divisions. A menu at the left of the screen changes these icons to show the type of unit, the direction it is "facing," its degree of battle weariness and its available strength. Clicking on an icon opens a Statistics window, displaying the unit's current condition.

Three levels of play are available. Beginners give orders by simply pointing and clicking at locations on the map. At the intermediate and advanced levels, more precise orders (for both the movement of the unit and style of attack or defense) are issued inside the Stat window. Sequences of up to 32 commands can be specified. During combat, either commander (Rommel or Patton) may amend the orders of any unit within a certain radius. At the expert level, individual units may be edited and the conditions of battle changed — options that can completely alter the play. Games in progress or such altered scenarios may be saved for future recall.

In battle, the icons move, flashing as they fire or take hits. However, if exciting graphics are important to you, look elsewhere. In deference to the sensibilities of others in the same room, the sound effects may be turned off. Dialogs offering a critique of your tactics appear at the conclusion of each day's fighting. I found them tiresome after a while. This feature may also be toggled off.

Game play is very straightforward, but don't expect to *blitzkrieg* your way through Europe right away. All the complexities of warfare, including the effects of weather, terrain, time and the condition of troops and equipment, have been coded into the program. Mastering these variables takes time and practice. A seminar at the War College wouldn't hurt, either.

In a triumph of marketing over accuracy, *Patton vs. Rommel* is based on a campaign in which neither was present, a fact that is duly noted in the concise, complete manual. However, the game reflects the theory and practice of warfare embodied by these men. War game enthusiasts should find themselves challenged and entertained. — *Carlos Domingo Martinez*

VERSATERM-PRO ★★★★½

List Price: $295. Published by Peripherals Computers and Supplies, Inc., 2457 Perkiomen Ave., Mt. Penn, PA 19606. (215) 779-0522. Requires 512K+. Not copy protected.

Ask anyone vaguely familiar with computers what sets the Macintosh apart from all the other micros around and chances are the response will be "graphics." Ask a computer professional the same question about Tektronix and the response will be the same. Take a top-notch programmer like Lonnie Abelbeck, give him these two facts and the result will probably be a killer program called *VersaTerm-Pro*.

VersaTerm-Pro is a communications program that among other things emulates a Tektronix 4105 graphics workstation. This is a neat trick considering the Tek 4105 is a high performance $5000 *color* terminal!

At its most basic level *VersaTerm-Pro* is a communications program that includes all of the standard features Mac communicators have grown accustomed to. File transfer protocols supported by this product include plain old Xmodem, Mac-Mac Xmodem, MacBinary Xmodem, plain old Kermit, MacBinary Kermit, save stream and send stream. This means you stand a pretty good chance of finding what you need when it comes time to transfer anything between you and the world.

The first four menus look more or less like all other communications programs that are based around Apple's *MacTerminal* program. Items like baud rate, number of bits and flow control are set by menu selections. However, there are a couple of additional commands that hint at *VersaTerm*'s strengths. Under the Edit menu you'll find Edit Commands and Edit Phone selections that allow you to create up to eight phone numbers with parameters and there are 12 user commands under the Phone and Commands menus. The commands (or macros) stored are strings of text sent by *VersaTerm* whenever you select them. The commands can wait for a prompt, but do not contain any conditional capability.

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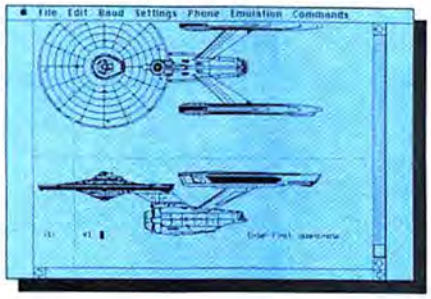
QUICK CLICKS

If that was all *VersaTerm-Pro* could do, it would be a very strong if not unexceptional program. Where it really shines, however, is in its terminal emulation modes. It offers a much better than average (and very faithful) VT100 emulation, including the 132-column mode, something most other programs don't attempt. The only items missing are the double height/double width characters and LED indicators found in *MacTerminal*. A neat feature is *VersaTerm*'s control of the mouse in regular text mode. As in *MacTerminal*, the user can place the mouse cursor over any character on the screen and when the mouse button is depressed with the Option key held down, the program sends the proper escape codes to move the mainframe cursor to that position. What's nice about *VersaTerm-Pro* is it is 99 percent accurate, even over multiple tabs.

The real power of this product is its Tektronix emulation. *VersaTerm-Pro* provides two emulation modes: Tektronix 4014 and Tektronix 4105. As a Tektronix 4105 this program is a scream! The emulation can be activated by the host computer in the same manner as the real Tek can. The mouse is utilized by *VersaTerm-Pro* as the joy button found on the Tek 4105. Colors are mapped into a series of Mac patterns



similar to those found in *MacPaint*. This is of limited use as it causes images with fine line detail to appear broken up. There is an option to map all colors into black. Local Pan and Zoom are also supported as well as the Tek's extensive macro key facilities. In terms of the program's emulation accuracy, I found it to be very good and it worked flawlessly when driven by a DEC VAX computer running *Intergraph* CAD software. The only problem found was the Tek write-through mode where dialog text written to the screen tended to flip back and forth between the Tek window and the VT100 window causing a lot of distraction.

Another feature of *VersaTerm-Pro* is its ability to capture the graphical images as *MacPaint*, *MacDraw* or *TekPrint* (another PCSC product) documents. This is a very useful way to bring down mainframe graphics to the Mac although the quality of the resulting images greatly depend on the mainframe software's accuracy.

At nearly $300 *VersaTerm-Pro* is not for the average user who only accesses the popular information utilities. If on the other hand you are in need of a strong graphics terminal for accessing a large CAD or engineering system as found in most large companies and universities this program is a *must!* — *Frank Conforti*

GRAPHICWORKS

★★★½

List Price: $79.95. Published by Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. (800) 443-7982; in IL: (800) 654-3767. Requires 512K+. Not copy protected.

GraphicWorks is perhaps the most complex and powerful bit-mapped graphics program currently available for the Macintosh. It is, consequently, the most difficult to use. But if you are a bit-twiddling artist, you will undoubtedly want this program in your collection.

Unlike *MacPaint* and similar programs, *GraphicWorks* does not restrict your artwork to a single bit-mapped image within the drawing window. Instead, it offers "easels" within which drawings are made, and "balloons," where text is entered. Easels and balloons are in turn contained within "panels," and you can have virtually as many panels as you like on a page. The overall effect is a layout that has the look and feel of a comic book. This is no coincidence, since the program was first published and is still available as *ComicWorks*.

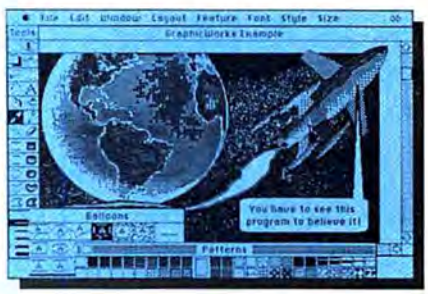
The advantage of the panels, easels and balloons approach is that each easel and balloon is a separate "object." Objects can be independently sized, moved and overlapped, as in *MacDraw*. But in *GraphicWorks*, the objects are not only ovals, rectangles and the like. Each easel is a full-featured bit-mapped drawing region and each panel is an editable text block, which can be revised at any time. As a result, you can create your overall drawing one small piece at a time, but remain free to rearrange the pieces as you like.

Four features facilitate the placement of the elements of your artwork. There is a "transparent paper" mode, which allows you to see the contents of panels and easels that are otherwise obscured by the one you are working on; a gridmaker, which lets you set a background grid of your own choosing; a set of command keys (cursor keys also work on the Mac Plus) that let you "nudge" an easel, balloon or panel one pixel at a time in any direction and a pair of commands that let you fine tune the front-to-back stacking order of the easels and balloons.

The familiar FatBits-style mode is available and you even get a choice of three different magnifications. In addition, there is a ThinBits mode, which allows you to see an entire page at once. The ThinBits window appears on the right side of the screen while a portion of the actual-size image appears on the left. This is best used for moving panels, easels and balloons; but you can do more. Both the ThinBits window and the original actual-size window are fully editable — simultaneously. Changes made in either one are instantly reflected in the other.

The best feature of *GraphicWorks* is the Air Brush tool. It leaves the standard *MacPaint* spray can gasping for propellant. Both the size and density of the spray, as well as the brush shape and pattern are user-selectable. This tool alone is worth the price of the product.

GraphicWorks also provides user access to all the different transfer modes (called "inks" by *GraphicWorks*) that QuickDraw allows. These affect how the black and white pixels of bit-mapped images interact when placed on top of each other.



An accessory program, *PosterMaker*, which can be launched directly from *GraphicWorks*, comes with the program. *PosterMaker* allows scaling of *GraphicWorks* images from 1 to 3200 perecent, large enough for just about anything you'd want to print. This is a very handy utility. Be aware, however, that while *GraphicWorks* works with *Switcher*, *PosterMaker* does not.

While full-featured text editing is available, the advantages of LaserWriter fonts are not, unless you are willing to put up with extremely long printing times. An approach that allowed the bit-mapped graphics in the easels to print quickly, while retaining the quality and speed of LaserWriter fonts when used in the balloons, would be a welcome improvement.

The interface is confusing. There is a lot going on in this program, but it's not always easy to sort it out. The concept of panels, easels and balloons is not that difficult to get used to, but their behavior can be. It is often difficult to tell exactly why something happened the way it did, such as a panel

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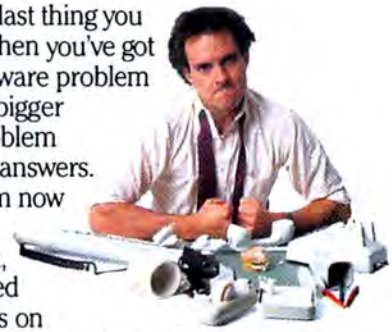

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QUICK CLICKS

appearing when you thought you were creating an easel. Another problem: There is no selection arrow tool, and I still haven't figured out when other tools will change to an arrow or perform a selection function. In addition, the menu structure is erratic. For example, while you set the scaling factor for scaling an object by calling up a dialog box from the Features menu, scaling is on the Edit menu. Seems to me these two functions should be more integrated.

The documentation isn't bad — it's just not good enough. The tutorial is a reasonable introduction to the basic use of the program. But this is a complex product, and it needs more thorough explanation than it gets. The lack of an index, together with a rather dense layout, makes it hard to find information on a specific tool or function without a lot of page flipping. There are also numerous small omissions bordering on inaccuracies.

Despite the shortcomings, I have no qualms about recommending *GraphicWorks* to any serious Macintosh artist, or for that matter to anyone who likes to draw pictures on a Mac screen. A little practice will unlock the power of the program. After that, you'll miss its features any time you work in another drawing program. — *MDW*

JAPANESE CLIP ART ★★★★½

List Price: $79.95 each volume; $149.95 set. Published by Enzan-Hoshigumi, 150 W. Acton Road, Stow, MA 01775. Not copy protected.

If you use clip art at all, you owe it to yourself to at least look at this extraordinary two-disk set, created and imported from Japan. As is common in clip art, most of the material is in the form of *MacPaint* documents (there are also some fonts that you can install in your *System* included). All of the *MacPaint* files take up the full page, so you are getting a lot of art in these packages.

The first volume (or Scroll, as the publisher calls it) is named Heaven. It covers a wide range of Japanese mythological subjects. The 14 files range from the Jomon legacy to Mandalas, Sutra, Evil Spirits and Ghost, Festival Spirits, Noh Theater and assorted Chinese and Japanese pictorial scripts. There's both a huge variety and a huge amount of material here. Most of it was created from digitized material, heavily reworked. It is as nice as any *MacPaint* art I've seen.

The second volume is called Earth, and is, well, more down to earth, than the first volume. There are only 11 *MacPaint* files here, but they are somewhat more tightly packed. Several files are made up of material from old woodcuts and paintings. There're also files of views of Mt. Fuji, samurais in their many guises, Japanese symbology, ceremonial images, Jomon sculpture (which has a distinct Aztec look about it), traditional decorative patterns and motifs, and a full sheet of Kanji calligraphy. As with Scroll I, there are several fonts that can be installed in your *System*.

Each volume comes packed in its own extremely beautiful, handmade Japanese folder. Also included is a quick reference sheet showing all of the art at reduced size and a large (approximately 65-page) manual. The manuals carefully explain enough about Japanese art and mythology so that you know what you are using. There are also detailed pages that identify each element in each file. The pages on the Kanji calligraphy also show how to create many words and phrases using the material included. Each User's Guide also has an excellent section of tips on how to best use the material, instructions and keyboard layouts for the fonts, some homespun philosophy (called "A Japanese Clip Art Coffee Break") and samples created with this art. The manuals each end with a bibliography.

While the art portions of these disks will be immediately useful, the font and calligraphy portions require considerable work to get useful results. Since Japanese is not read left to right, normal word processors and editors are not useful in composing text. Instead you must use *MacPaint*. — *SB*

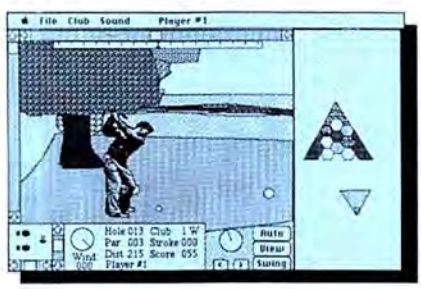
MACCOURSES ★★★½

List Price: $34.95. Published by Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. (612) 427-4789. Requires MacGolf. *Copy protected.*

MacGolf is a great game, no question about it. But after a while the two courses provided get boring. Eventually you've been in and out of every sand trap and hazard. The courses aren't hard. Breaking par is no longer an event, but an expected outcome.

MacCourses puts the challenge back into *MacGolf*. This disk provides four new courses (PCAI International, Cedar Creek, Golden Sands and Thunder Ridge), all designed by professional golfer and course architect Jay Wohlrabe. He must have been in an especially mean mood when he created some of them. The purely geometric course, PCAI International, is particularly tough, with its oddly shaped (and tiny) fairways and an abundance of hazards. Each 18-hole course is a par 72. None of these courses is as easy as either of the original two courses. You're going to need a lot of practice to break par on any of them.

Using the new courses is fairly simple. You swap the original two courses on your *MacGolf* disk for two new courses. There's



only room on the heavily copy protected *MacGolf* master disk for two courses at a time. The *Installer* program is straightforward, and has only one flaw. It doesn't warn you that the *MacGolf* master disk must be inserted in the internal drive for it to work. If you place the *MacGolf* master in an external drive the *Installer* simply hangs and you need to reboot. There is no documentation to speak of. A simple sheet explaining that the *MacGolf* master must be in the internal drive and that you will have less disk swapping to do if the *MacCourses* disk is placed in the external drive would be appreciated. The *Installer* also forces you to save the original two courses to an otherwise blank disk, which is a waste of disk space.

In spite of those problems, *MacCourses* has certainly rekindled my interest in *MacGolf*. And it's good to see the publisher supporting a game with new scenarios. If more game publishers did that, far fewer games would wind up sitting on shelves gathering dust.

MacCourses works with either *MacGolf* 1.0 or 2.0. Version 2.0 can save games in progress (an important consideration since a round can take nearly as long as a round of real golf) and shows (although it is unable to print) scorecards. There are other, more subtle improvements, and if you're at all serious about your *MacGolf* you should upgrade to version 2.0. — *SB*

FOR THE BEST OF US...

Colossal! Stupendous! The One You've All Been Waiting For! The Grand Opening of Macintosh!

BY MICHAEL D. WESLEY

THE "OPEN MAC" PROJECT AT APple has not been one of the year's great secrets. John Sculley made it clear some time ago that Apple would open up the architecture of the Macintosh. Jean Louis Gassée's California license plate reads "OPEN MAC." Rumors have been flying about what the machine would and wouldn't have and when it would be announced. All we've been waiting for is the official word from Apple that the product was ready for human consumption. At last the word is out — and it's "phenomenal."

MACINTOSH II — THE SEQUEL

While the open Mac project was no secret, Apple was able to keep the product's final name and several of its most significant features under wraps almost to its introduction — no small feat in an industry as inbred as the computer business is. Often known by the code name Paris, the machine's true and final name is Macintosh II.

The name is a logical one, indicating an upward growth path within the Macintosh family, and at the same time reflecting an historical and philosophical connection to the Apple II. Like the Apple II, the Macintosh II is an open box, with slots that make it expandable. And, like the Apple II, the new Macintosh is an evolutionary product, building on the foundation established by Lisa, the Mac and the Mac Plus.

I put Lisa first in that list in part because Lisa came first and set many of the ground rules for what is now known as the Macintosh interface. It is also at the head of the list because many of the Macintosh II's designers came from the Lisa division, and they have been able to incorporate much of the concept that was Lisa into a machine that is 100 percent Macintosh.

In designing the Macintosh II, Apple's engineers had four basic goals: open up the architecture (slots); answer user and developer needs; make the new machine clearly a Macintosh and make it the state-of-the-art in computer technology.

The first three are not listed in priority order, simply because they depend too much on one another. Opening up the Mac is something everyone — user and developer alike — has clamored for. But what good would it be to have an open Mac that wasn't a Mac? Retaining the essence of the Macintosh interface was an overriding concern all the way through the project, and made its impact on every design decision. It was also imperative to make the Macintosh II as compatible with existing software as possible.

Expandability has been at the top of the list of user needs and wants, along with increased speed and power, a bigger screen — and, of course, color. Macintosh II answers all these needs, and adds a few extra touches that will startle everyone. To meet the fourth design goal and make the new Macintosh a state-of-the-art machine, Apple has built in a high-speed math coprocessor, four-channel *stereo* sound (I'm serious) and the ability to take advantage of new developments in chip technology as they come along. Would you believe the capacity to address 128 *megabytes* of RAM on the motherboard, expandable to 2 *gigabytes* (2,000,000K) using the slots? The power is there in Macintosh II, just waiting for the chips to catch up.

COLOR

I was going to use this section to talk about speed, power and expandability, but after thinking about it I realized that everyone's immediate interest is going to be color. Well, you can rest easy. Macintosh II has color — boy, oh boy, does it have color. 640 X 480 resolution color. Glorious, magnificent, spectacular color. Although Macintosh II will still be able to read color routines done in the old Macintosh format, (from programs like *Cricket Graph* for example), the font manager, window manager, TextEdit and QuickDraw have all been completely rewritten to support color.

Control of the video signal has been taken off the motherboard and moved to an expansion card. Apple offers a video card with the machine that comes in two configurations. The basic video card has 256K of video RAM and can support from 1 to 4 bits of data per pixel. This configuration supports up to 16 colors on screen at one time, or 16 levels of gray (using a true gray scale, not the bit-mapped patterns found in the Mac and Mac Plus).

The same video card can be expanded to 512K of video RAM, which gives a depth of 8 bits per pixel. The expanded card can display up to 256 colors or shades of gray at one time. The video card also has a

The Mac II is the top of the line. This 68020 powered, 16-MHz fast beauty is really a small minicomputer. The program on the screen is the color version of Living Videotext's *MORE*.

color lookup table on board of over 16 million colors.

A custom Apple video chip lets the same card drive both black-and-white and color monitors. You can actually drive multiple monitors from the same card at the same time. Using system software similar to that used by Radius with their Full Page Display, you can move the cursor from monitor to monitor, spread windows across monitors, etc. The Apple video card has a screen refresh rate of 66 megahertz, slightly higher than the 60 megahertz standard, in order to avoid flickering.

By moving video control into one of the slots, Apple has opened the door for third party manufacturers to offer less expensive or more powerful video cards of their own. *More* powerful? Yes, because Color QuickDraw will actually support up to 32 bits per pixel. This gives the machine the theoretical capability of displaying approximately 4,294,967,296 colors on screen at one time. (Of

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FOR THE BEST OF US . . .

When you get your Mac II, you'll have a choice of monitors. The 13-inch color monitor and the 12-inch black and white monitor both have 480 x 640 x 16 pixel resolution. Yep, each pixel can have one of 16 shades. The richness of the images have to be seen to be believed. The color monitor requires an internal color board.

course, this would require a rather high resolution monitor — 72,000 X 60,000 should just about cover it.)

Color QuickDraw supports stretching of objects and depth changes. It also provides for patterns in any combination of colors or any size (in powers of 2). Previously, patterns have been limited to 8-pixel squares, but there is no such limitation with Macintosh II.

NOW ON THE BIG SCREEN

Along with color, one of the most important user requests has been a larger screen. Apple will offer a choice of monitors with Macintosh II, a 12-inch analog monochrome monitor that displays 76 dots per inch, and a 13-inch RGB color monitor with 69 dots per inch. The displays on both are incredibly clean and crisp, but the color monitor is spectacular, even when it's displaying in black and white.

EXPANDABILITY

Unlike the Macintosh, which is a self-contained system, Macintosh II is just a box with a logic board and space for things like disk drives. Keyboards, monitors and disk drives are separate items. All of the components for Macintosh II come in the same color — Apple's new corporate color, platinum, which is not exactly gray but not quite white. Unlike the self-contained Macintosh, Macintosh II is an open box — with slots.

Slots. If people weren't complaining about the Mac's lack of color, they were deriding the machine for not having slots. After all, the Apple II had slots, the IBM PC had slots. What good was a skinny little computer without slots? Well, we all found out that Macintosh was a very impressive computer even without slots, but there has been a pressing need to open up the machine and offer more power. Until Macintosh II, developers met the need by piggybacking controller cards on the Mac's motherboard, or jumping the 68000. Now there is a Macintosh with slots.

Macintosh II has six slots, to be exact, but these slots are unlike slots on other machines: Macintosh II's slots don't have to be filled up with cards that provide basic interfaces. Macintosh II already has two serial ports. One is exactly the same as the 8-pin serial ports on the back of the Mac Plus and the other provides an extra signal that permits access to synchronous modems. Macintosh II already has a high-speed SCSI port built in, a port for an external disk drive and two Apple Desktop Bus outlets for input devices (mouse, keyboard, graphics tablet).

Since these are the items usually found in the slots on other machines, what are the Macintosh II's slots designed for? One of them is for the video output card, while others may hold RAM expansion, coprocessors, UNIX, internal modems — any number of options.

Because the Macintosh II's NuBus slots have geographical addressing, any card can go into any slot. Each card has a configuration ROM that the computer will read on startup so it knows what card is where and what each card does without having to be told. This design is a direct result of the desire to keep the Macintosh II as simple to use as previous Macs.

NuBus is an industry standard connection developed by Texas Instruments. NuBus provides several advantages over other slot designs. Besides the geographical addressing capability, NuBus is processor independent (which means that coprocessors can directly access the same cards as the 68000, and in the same way) and it provides true 32-bit data transfer with a single 96-pin connector. Other systems require two, and even three connectors for true 32-bit communication.

Because NuBus sees the main logic board (and, consequently the 68020) as slot 0, a coprocessor in one of the slots can grab control of the ROM, slots, and RAM and use them just as the 68020 does.

POWER

Macintosh II is filled with raw computing power, some of it not accessible yet, just lying in wait until the industry catches up with it. Macintosh II comes standard with 1 megabyte of RAM in SIMMs, just like the Mac Plus. There is room on the motherboard for 8 megabytes using 1-megabit chips. But Apple, anticipating continued rapid developments in chip technology, made the machine capable of addressing up to 128 megabytes of RAM on the motherboard (using 16-megabit chips, which may be available in the

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Macintosh II Specs

Processor	MC 68020 32-bit internal architecture 15.6672-MHz clock frequency
Coprocessor (standard)	MC 68881 floating point math coprocessor
Memory	1-megabyte RAM standard expandable to 8 megabyte now, on motherboard (future) 128 megabyte on motherboard using 16-megabit chips expandable to 2 gigabytes using NuBus slots — if anyone provides the cards to do it
Memory Management	68851 Paged Memory Management Unit optional. This chip is expensive, of little use to current Mac applications, but required for UNIX.
Disk Storage	One 800K internal floppy standard Second internal 800K floppy optional Second or 3rd 800K external floppy optional (future) capable of supporting 1.6M Sony drive, when available. 20, 40 or 80M internal SCSI hard drive optional 20, 40 or 80M external SCSI hard drive optional
Video Display	Video card with 1 to 4 bits per pixel, 256K video RAM Displays 16 colors or 16 true shades of gray Upgradable to 512K video RAM, 8 bits per pixel Displays 256 colors or true shades of gray Color lookup table with 16.8 million colors
Monitors (optional)	Analog 12-inch monochrome, 640 x 480 pixels 13-inch RGB color, 640 x 480 pixels
Interfaces	Two mini-8 serial ports Same as on Mac Plus, except one port has extra signal to provide for use of synchronous modem. DB-25 SCSI ports Decided to keep the DB25 to maintain consistent interface across machines. Two ADB (Apple Desktop Bus) Port ADB is now Apple standard across all machines. Low-speed synchronous serial bus capable of supporting up to 16 input devices via daisy chain. Two standard ports are for keyboard and mouse. Six NuBus internal slots supporting full 32-bit address and data lines.
Sound	Apple Custom Sound (ASC) Chip Four-voice wave table synthesis Stereo sampling generator capable of driving stereo headphones, speakers or other equipment Internal speaker has been moved to the front of the machine
Power Supply	230W maximum power output, with built-in fan 90-140 VAC, 170-270 VAC input voltage range Automatically configured. Makes it possible for Apple to introduce 15 versions of machine for United States and all foreign markets simultaneously. Frequency range: of 48—62 Hz
Mouse	Standard Apple mouse Mechanical tracking, optical shaft encoding New mouse looks like Apple IIGS mouse (fastback model) connects through ADB port
Keyboard	Option 1: "Eastwood" Apple standard keyboard. 81 keyswitch, ADB detachable keyboard with 10-key numeric pad Option 2: "Saratoga" 105 keyswitch ADB detachable keyboard with 15 function keys, T-cursor pad and 10-key numeric pad
Actual Product Name	Macintosh II Carries through on the Apple II concept/philosophy, open architecture, etc.

1990's). And it's possible to build the RAM up to 2 gigabytes by filling the slots with RAM cards.

Those numbers are so staggering that they made me break out laughing when I first read the specs. What could anyone possibly do with 2 gigabytes of RAM? Nobody knows yet because the option has never existed, but it makes the imagination run wild with possibilities.

Besides RAM power, Macintosh II has storage power. It can house two internal 800K floppy drives (1.6 megabyte drives when available) or one 800K floppy and a 20, 40 or 80 megabyte internal SCSI hard disk. Apple will introduce a whole line of SCSI hard disks at the same time as the Macintosh II.

SPEED

The 68020 processor in Macintosh II runs at just slightly under 16 Mhz (15.6672, to be exact), twice the clock speed of the Mac Plus' 68000. And it's a true 32-bit processor, unlike the 68000 which crunches numbers 32 bits at a time but sends and receives data in 16-bit chunks. This difference in itself makes the Macintosh II faster than a Mac Plus, although when it's running Macintosh software (not specifically written to take advantage of this capability) the Macintosh II will emulate the 24-bit Macintosh mode and the only speed gains will be from the increased clock speed of the processor.

Most significantly, Apple has also included a 68881 floating point coprocessor as standard equipment. What that means is that most of the machine's arithmetic operations are handled by the 68881, leaving the 68020 free to do other things.

The 68881 was originally scheduled to be an option, not a standard feature, until Apple's engineers showed some incredible benchmark numbers. Applications that make use of Apple's SANE numeric package showed an increase of 3 to 30 times in speed, depending on the operation. But even more dramatic, applications that accessed the 68881 directly show increases from 30 to 300 times in overall operation. Macintosh II performs basic arithmetic

FOR THE BEST OF US . . .

Another Two Cents Worth

I approach computers like I approach my car: I'm a great deal more interested in where the thing takes me than in how it gets there. So when I went to Apple Computer to see the new machines, I expected to be alternately fascinated and bored.

Well, boredom didn't even enter into it. As the only woman journalist present at this particular briefing, I felt I owed it to my sex to at least *look* interested when the hardware was passed around. I basically understand what I'm looking at, you understand; I just don't usually feel like drooling over it.

This time I drooled. The new Macs take you down the yellow brick road — you can't help being interested in how they manage it. Even the photocopied "blueprint" of the Macintosh II's logic board looked good. What you really see when you look at all those NuBus slots and electronic elegance is possibilities. They may not be endless, but they're certainly nondenumerable.

And there's all that lovely sound and color — even more possibilities. For example, Apple says you can replace the alert beep with just about anything you want. Shades of HAL. Someone better start thinking about "clip sound" disks — looks like there's going to be a market.

As for the color, we all know the Macintosh doesn't need it — but wait 'til you see it. It's one of those so-called luxuries that quickly becomes a necessity — like talking pictures.

The best thing about the Macintosh II is all that as-yet untapped potential. There's a lot of room (maybe even more than even Apple knows) for new developments in both software and hardware — a generation of things we've never seen before.

There are probably going to be some diehards who'll think that all this is unnecessary and expensive; the Mac was just fine the way it was. And nobody's going to deny that the earlier Macs were a fine thing. But even if you're like me and more interested in the destination than the transportation, you'd still probably rather drive a Maserati than ride the MTA. — *LK*

functions 100 times faster than a Mac Plus, and logarithmic functions as much as 1000 times faster.

Apple's engineers were able to use these numbers to convince designers that the 68881 had to be a standard feature. With it, Macintosh II would be undeniably state-of-the-art. (Macintosh II is also ready to upgrade to the 68882 when available, which should double the speed increases found with the 68881.)

An optional Paged Memory Manager (PMMU) chip, the Motorola 68851, will make it possible to run UNIX, and Apple will make UNIX available on introduction. By placing the 68851 on the logic board, Apple made it easy to upgrade the system to the Motorola 68030 processor when it becomes available. The 68030 will combine the 68020 and 68851 into a single, high-powered chip.

The decision to put the 68851 on the motherboard was a necessary but gutsy one. Necessary, because the memory management was required to provide UNIX, but gutsy because the chip didn't exist in finished form yet when the decision was made.

SOUND

Many people thought Apple would let sound either wither away or stay the same with new Macs, but this is definitely not the case. Macintosh II has 4-channel stereo sound, with a sampling generator that can drive external speakers or headphones. Although you probably wouldn't want to do so yet, you could digitize virtually any musical composition, store it on disk and play it in stereo from your Macintosh II. You wouldn't want to do this yet because sound takes up an enormous amount of space. The theme song from *The Jetsons* cartoon show, digitized and played for us at a demo, took up about 2 megabytes of hard disk space. But Apple wants to make Macintosh II as significant a sound tool as it is a graphics tool and has provided the ROM support to do it.

SYSTEM SOFTWARE

The ROM for Macintosh II has been extensively rewritten and expanded: from 128K on Mac Plus to 256K on Macintosh II. Although a multitasking system will be available at some point, it is not offered at the machine's introduction. What is offered is a cleaner, more powerful set of routines that look and act very much like the system in Mac Plus.

A few changes have been made to add extra power and at the same time make things simpler. The Shut Down feature on Macintosh II is a true shutdown — a complete system power down, unlike the Shut Down in previous systems. Since this feature has historically acted more like a Restart, it has now been named that. Selecting RESTART from the Special menu turns the machine off then powers it back up right away. Shut Down turns everything off.

The control panel is now modular. Instead of having all the controls on a single screen, they have been separated out into individual screens. Select the keyboard icon, for example, and a smaller panel comes up to control repeat delay and repeat speed. The control panel also has a scrolling window attached where external devices can be listed, and the new Slot Manager lets developers have access to this area as a way to configure cards or devices. The Slot Manager also lets you select a card to use as a startup device.

Besides the addition of extensive software to control sound, the other significant change in the Macintosh II's ROM is a revision of the SCSI manager that creates a 1 to 1 interleave factor for SCSI disk drives. The interleave factor is the number of times a disk must rotate for each pass. The Mac Plus has an interleave factor of 3 to 1, the Macintosh SE 2 to 1. By reducing this factor to 1 to 1, Macintosh II should show significant increases in disk access speed with SCSI hard disks.

KEYBOARDS

Since the keyboard comes separately from the main unit with Macintosh II, keyboards are now optional, peripheral items, and Apple will offer a choice of two. The first has the same keyboard layout as the Apple IIGS, but in a sturdier, more businesslike design. This is now called the Apple Standard Keyboard. One new feature for the keyboard is a power on/off switch.

The second keyboard that Apple will offer has 105 keys, including 15 function keys, and is designed for those who want to use other systems that make use of such things.

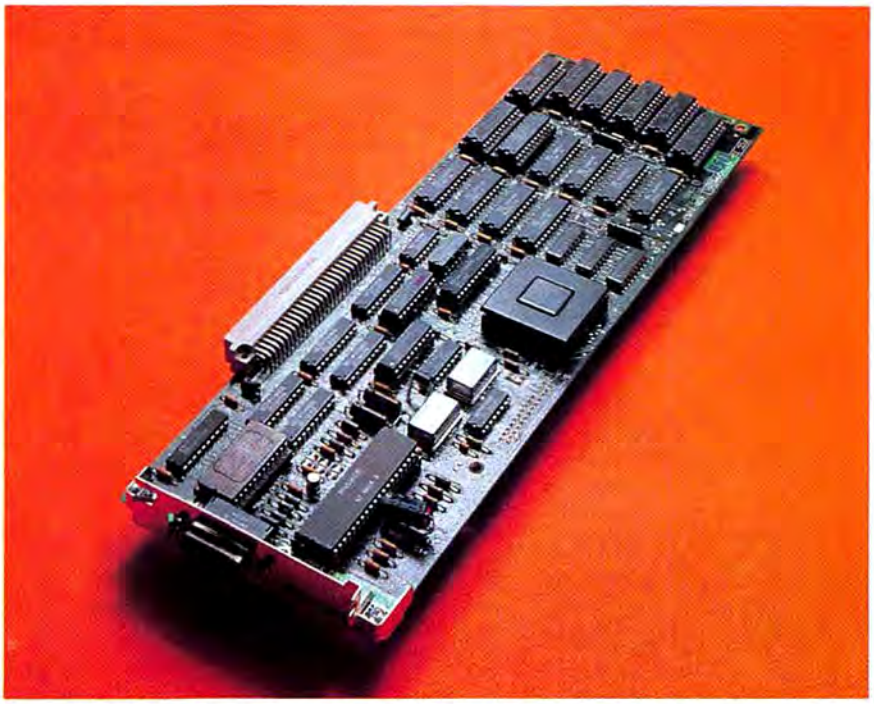
THE EXTRA MILE

Under John Sculley's direction, Apple has made communication between Macs and PCs, Macs and mainframes and Macs and minicomputers a high priority. Accordingly, Apple has developed several products of its own to simplify connecting Macs and other machines, and has worked closely with third party manufacturers to see that coprocessor cards and other necessary add-on items would be available from the introduction of Macintosh II.

Apple sees four possible levels of communication between its machines and those in the IBM world (PCs, clones, minis and mainframes). The first level is simply the ability to connect Macs and PCs on a network, to share files and resources (but not applications). This is already possible through the use of products like *TOPS* and *MacLink,* and will be further enhanced with the AppleTalk PC card.

The second level is media/file transfer — the ability to share files and trade disks. To make this level of connection possible, Apple will introduce a 5¼", 360K PC drive, a controller card for the drive and software called *Passport* that will allow the Mac II to read files off the PC drive. Since programs like *Excel, Jazz* and *MacCalc,* among others, can already read files created in *1-2-3* and other PC applications, this hardware will make it easy to read files directly from PC formatted data disks.

The third level, applications compatibility, is more serious and more of a problem in some respects. Applications compatibility means a coprocessor. Apple decided not to offer a coprocessor directly, but has worked with third parties to make sure that 8086 and 80286 coprocessor cards would be available for the Macintosh II. Along with the 5¼" PC drive and coprocessor card, third parties will provide MS-DOS and "compatibility" software that puts a Macintosh desktop on screen, with a window in the middle running MS-DOS. This system will offer full mouse support and access to the Mac's DAs and menu bar. The resulting hybrid machine can store and access Macintosh files and PC files on the same hard disk volume.



This is the logic board for the Mac II. That big square chip is the 68020. In this photo both the 68881 and the 68851 coprocessors are installed. The 68881 is standard, the 68851 is an option.

A MILE TOO FAR

The fourth level of compatibility would be to create an outright clone, something Apple will obviously not do. But in developing Macintosh II, Apple has done so much more. With the right controller card and software, Macintosh II can run virtually any system using virtually any processor, and almost anyone's software. Apple has made a Macintosh, with all that that entails, and still provided the most flexible desktop workstation in the industry.

Macintosh II will directly assault not only IBM personal computers, but higher priced graphics workstations from Sun and Apollo, costing thousands more. Developers have already taken to the Macintosh II with a fervor, and in the next year, expect the Macintosh family of computers to become the machines of choice.

PRICE

And just how much is the machine of choice going to cost? Since the system is now unbundled, you have a range of options that can spread over several thousands of dollars. For example, a basic Macintosh II with 1 megabyte of RAM, one internal floppy disk, the Apple video card and the Apple monochrome monitor can be yours for "significantly less than $5000" — probably around $3500. A fully configured Macintosh II, with internal hard disk and color, will probably be in the $6000 to $7000 range.

That's about what you paid for a fully configured sports car when I was looking to buy my first car. Fortunately, though, computer prices have gone down as much as car prices have gone up. Now, if you want high performance, high speed and flashy colors, test drive a Macintosh II. It may not be a Porsche but it will get you where you want a computer to take you in style.

MICHAEL WESLEY IS THE WEST COAST EDITOR OF MACUSER. HE IS ALSO A PERSONAL FRIEND OF HOWARD KATZ, WHO IS A PERSONAL FRIEND OF DOUG CLAPP.

CHRIS STEVENS

All creatures ma

SOFTWARE

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

Affinity Microsystems ... NCP
Tempo *(power user's macro utility)* ..... $59.
Altsys ... NCP
Fontastic *(create your own fonts)* ..... 27.
Fontographer *(Laserwriter font editor)* ... 249.
Ann Arbor ... NCP
FullPaint *(open four documents at once)* .. 55.
ATI ... CP
Teach Yourself Multiplan or Excel ..... 39.
Batteries Included ... NCP
The Mac BatteryPak *(9 desk accessories)* 27.
Time Link *(electronic calendar/diary)* ..... 29.
Thunder! *(50,000 word spelling checker)* .. 29.
Isgur Portfolio *(investment manager)* .... 109.
Borland International ... NCP
Sidekick 2.0 ..... 59.
Reflex *(information management analysis)* 59.
Turbo Pascal *(HFS compatible)* ..... 59.
BPI Systems ... NCP
General Accounting *(full-featured)* ..... 135.
BrainPower ... NCP
Think Fast *(improves recall)* ..... 23.
StatView *(statistics package)* ..... 35.
Graphidex *(DA graphics organizer)* ..... 75.
Designscope *(electronic circuit design)* .. 129.
StatView 512+ *(req. external drive, 512k)* ... 179.
Broderbund ... CP
Print Shop *(create cards and memos)* ..... 49.
Geometry *(over 350 problems!)* ..... 65.
CAMDE ... CP
Nutricalc *(diet & nutrition analysis)* ..... 49.
Nutricalc Plus *(dietician's delight)* ..... 175.
CasadyWare ... NCP
Fluent Fonts *(two-disk set)* ..... 29.
Fluent Laser Fonts *(Vols. 1-15)* ..... *each* 49.
Central Point Software ... NCP
Copy II Mac *(includes MacTools)* ..... 20.
Challenger Software ... NCP
Mac3D *(3D graphics, CAD features)* ..... 129.
Chang Labs ... CP
Rags to Riches Ledger ..... 125.
Rags to Riches Receivables *(req. 512k)* ... 125.
Rags to Riches Payables *(req. 512k)* ..... 125.
Rags to Riches Three Pak ..... 299.
Inventory Control ..... 245.
Professional Billing ..... 245.
Cortland ... CP
TopDesk *(7 new desk accessories)* ..... 35.
Creighton Development ... NCP
MacSpell+ *(spell checker, req. 512k)* ..... 55.
Cricket Software ... NCP
Statworks *(statistical package)* ..... 79.
Cricket Graph *(multiple windows)* ..... 129.
Cricket Draw *(advanced draw capabilities)* 179.
DataViz ... NCP
MacLink Plus *(transfer Mac/IBM data)* .... 159.
Desktop Graphics ... NCP
DrawForms *(requires MacDraw)* ..... 30.
DrawArt *(MacDraw artwork, req. 512k)* .... 29.
DrawArt Vol. 2 *(MacDraw clipart, req. 512k)* 45.
Digital, etc. ... NCP
Maccountant *(integrated accounting)* ..... 99.
Turbo Maccountant *(full-featured)* ..... 275.
Dow Jones ... CP
Straight Talk *(access News/Retrieval)* ..... 62.
Spreadsheet Link ..... $65.
Market Manager PLUS 1.5 ..... 159.
Dreams of the Phoenix ... NCP
Day Keeper Calendar ..... 35.
Quick & Dirty Utilities ..... *each* 35.
Twelve-C Financial Desk Accessory ..... 35.
Phoenix 3D *(3D graphics)* ..... 35.
Phoenix 3D Level 2 *(3D CAD)* ..... 65.
Dubl-Click Software ... NCP
World-Class Fonts! Vol. One or Vol. Two .... 29.
World-Class Fonts! *(both Volumes)* ..... 49.
Calculator Construction Set ..... 39.
EDO Communications ... CP
Laserworks *(requires 512k, Laserwriter)* ... 229.
Electronic Arts ... CP
Deluxe Music Construction Set 2.0 ..... 69.
Enabling Technologies ... NCP
Easy3D *(create solid 3D objects)* ..... 79.
1st Byte ... CP
First Shapes *(preschool learning tool)* ..... 32.
Speller Bee, KidTalk, or Mathtalk ..... 42.
Smoothtalker *(speech synthesis)* ..... 52.
Forethought ... NCP
Factfinder *(free-form info organizer)* ..... 49.
FileMaker *(custom forms & reports)* ..... 79.
FileMaker Plus *(feature-packed database)* 159.
Fortnum/Southern
MacInooga Choo-Choo *(512k, NCP)* ..... 21.
MacChemistry *(CP)* ..... 89.
FWB Software ... NCP
Hard Disk Backup *(protect hard disk info)* .. 39.
Hard Disk Partition *(speeds up hard disk)* .. 39.
Hard Disk Util *(program backup)* ..... 59.
Great Wave Software ... NCP
KidsTime *(educational, ages 3-8)* ..... 29.
ConcertWare+ *(music composition)* ..... 29.
ConcertWare+ MIDI ..... 75.
Greene, Johnson ... CP
Spellswell *(spelling checker)* ..... 52.
Hayden Software ... CP
I Know It's Here Somewhere *(handy filer)* ... 20.
Hayden:Speller *(for Word & MacWrite)* ..... 27.
MusicWorks *(songs for your Mac)* ..... 32.
DaVinci Building Blocks *(NCP)* ..... 46.
Home Design *(NCP)* ..... 49.
Score Improvement for the SAT ..... 59.
Score Improvement: Achievement Test .... 59.
VideoWorks *(animation)* ..... 59.
Ideaform ... CP
MacLabeler *(print disk labels)* ..... 29.
Imagine ... NCP
Smart Alarms *(DA reminder system)* ..... 39.
Impulse ... NCP
Comic Strip Factory *(create cartoons)* ..... 65.
Industrial Computations ... NCP
Powermath *(equation solving tool)* ..... 59.
Infosphere ... CP
LaserServe *(network software)* ..... 95.
MacServe *(network software)* ..... 250.
Innovative Data Design ... NCP
Paste-Ease *(requires Paint program)* ..... 35.
MacDraft *(new updated version, 512k)* .... 159.
Kensington ... NCP
Graphic Accents *(req. Paint program)* ..... 29.
Type Fonts for Text *(16 new fonts)* ..... 29.
Type Fonts for Headlines *(req. 512k)* ..... 42.
Legisoft/Nolo Press ... NCP
WillWriter 2.0 *(prepare your own will)* ..... 32.
Linguist's Software ... NCP
Tech *(1000 different symbols)* ..... 59.

FOREIGN LANGUAGE FONTS
MacCyrillic ..... $39.
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SuperGreek New or Old Testament ..... 79.
MacGreek/Hebrew/Phonetics ..... 89.
LaserGreek ..... 79.
LaserFrench/German/Spanish ..... 79.
LaserCyrillic ..... 115.
Living Videotext ... NCP
ThinkTank 512k *(outline processor)* ..... 99.
More *(outlines, windows, & tree charts)* .. 159.
MacMemory ... NCP
MaxRam & MaxPrint *(Ramdisk, spooler)* .. 39.
Magnum ... NCP
Natural Sound Effects ..... 27.
Natural Sound Cable & Editor Disk ..... 89.
McPic - Volume 1 or Volume 2 ..... 29.
The Slide Show Magician 1.3 *(CP)* ..... 35.
Microsoft
Flight Simulator *(the Mac takes flight, CP)* 33.
Learning Multiplan and Chart *(2 disks, CP)* 39.
Basic Interpreter 3.0 *(NCP)* ..... 59.
Chart 1.0 *(42 chart styles, CP)* ..... 72.
Multiplan 1.1 *(63 col. by 255 rows, CP)* ... 111.
File 1.04 *(flexible data manager, NCP)* ... 111.
Word 1.05 *(word processor, CP)* ..... 111.
Basic Compiler 1.0 *(NCP)* ..... 119.
Fortran 2.2 *(compiler, NCP)* ..... 169.
Works 1.0 *(integrated tool, NCP)* ..... 189.
Excel 1.03 *(power spreadsheet, NCP)* ... 225.
Miles Computing ... NCP
Mac the Ripper *(req. Paint program)* ..... 27.
Mindscape ... CP
The Luscher Profile *(personality profile)* ... 24.
The Perfect Score: SAT ..... 47.
ComicWorks *(create your own comics)* .... 49.
GraphicWorks *(newsletters, ads, posters)* 49.
Monogram ... NCP
Forecast *(tax planning)* ..... 41.
Dollars & Sense *(home, small business)* ... 81.
New Canaan MicroCode ... NCP
MDCFinder *(requires 512k)* ..... 20.
Mac Disk Catalog II *(requires 512k)* ..... 32.
Odesta ... NCP
Helix *(req. 512k, external drive)* ..... 105.
Double Helix *(relational, custom menus)* 289.
Palantir ... CP
MathFlash or WordPlay ..... 26.
MacType *(typing instruction)* ..... 26.
Inventory Control, GL, or AR ..... *each* 59.
inTalk *(communication to emulation, NCP)* 79.
PBI Software ... NCP
Icon Switcher *(customized icons)* ..... 14.
Icon Fun & Games or Business Libraries .. 14.
HFS Locater *(DA organizer for HFS)* ..... 27.
Hard Disk Backup *(supports MFS, HFS)* .. 29.
Peachtree ... CP
Back to Basics GL, AP, or AR ..... *each* 89.
Personal Computer Peripherals ... NCP
HFS Backup ..... 39.
ProVUE Development ... NCP
OverVUE 2.0 *(power-packed database)* .. 149.
Mail Manager Template ..... 29.
Personal Finance Template ..... 29.
Rubicon Publishing ... CP
Silver Palate Collection *(NY's finest!)* ..... 29.
Dinner At Eight *(recipes to wines)* ..... 35.

... FOR THE REST OF US

There's a new Mac for you even if you can't afford the $5,000 to $10,000 you'll need for the Mac II.

The SE is the way to go — or at least to start.

BY LOUISE KOHL

HAVING JUST READ MIKE WESley's article on the new Macintosh II, you're no doubt now kicking yourself for not being born of independently wealthy parents. But let's get serious. I mean, how many slots are you *really* going to be able to use? Luckily, Apple has not forgotten the ordinary user in their bid for the corporate marketplace. In addition to the Macintosh II, they've also given us the Macintosh SE (for System Expansion.) If the Mac II is the only real "open Mac," the SE at least has its foot in the door.

The SE is essentially a repackaged Mac Plus, with certain performance enhancements and an internal hard disk (or two internal floppy drives, if you'd like that better) option. Apple says you should think of it as an expandable Mac Plus.

SOME THINGS DON'T CHANGE

The main thing the SE and Plus have in common is the CRT — actually, that's just about the only major thing they have in common. The ports are more or less the same (at least you have the same number of ways in and out), except for those for the keyboard and mouse.

The mouse port has been replaced with two ADB (Apple Desktop Bus) connectors and no longer shares a port with the SCC (Serial Communications Controller — the old Zilog chip). The bus is now the Apple standard and the same as that on the IIGS and has a daisy-chain capability of up to 16 drives. The sound is basically unchanged, too; four voices with an 8-bit D-A (digital to analog) conversion.

Aesthetically, the SE is a little chunkier than the Plus with new slots (for ventilation) in the front. The footprint, however, is the same. The mouse balances the cabinet by being somewhat sleeker; if you've seen the IIGS mouse, you'll know what to expect.

The keyboards (that's plural) have been unbundled. So you'll now have a choice between the "Eastwood" and the "Saratoga." The first is the new Apple Standard Keyboard with a 10-key numeric pad; the other an 105-keyswitch unit with 15 function keys, numeric pad and T cursor pad. The one really new keyboard feature is the on/off switch. All in all, the SE has a familiar look to it, except, of course, everything's gray. Sorry, *platinum*.

WHAT'S NEW?

A lot of the standard features of the SE are going to sound familiar, too. It's the options that'll make your eyes light up. For example, there's your standard one-megabyte in RAM — still expandable to four (count 'em) megabytes. There's also new ROM with who knows what all in them (besides HFS and ADB support) — 160K to 170K actually used out of 256K in chips on the board. (One thing you'll find in ROM are the new AppleTalk protocols to support *AppleShare,* the new file server.) That's a lot more code than you have now. Be prepared for super goodies. After all, *something* has to use all that extra memory. Go crazy.

There are two serial ports — again, the same as on the Plus, except that one now has an extra signal to support a synchronous modem. That's very important if you plan to communicate with some mainframes. The DB25-style SCSI port has been kept, too, for consistency's sake. (After all, you don't want to have to buy yet another set of cables.)

The differences are more obvious internally than externally. One of the more important changes in the internal architecture is a new gate array — a VLSI application specific integrated circuit, for short — that replaces 19 Mac Plus chips. Besides taking up less room, this also uses less power, generates less heat, and increases the machine's reliability.

The power supply is also larger — 100W maximum — in response to the demands of the internal hard disk option. And there's an interesting mechanical addition, as well: a built-in fan. The fan on the machines we saw at Apple at the press preview were on the noisy side, but were expected to be quieter by the time the machines actually shipped. The fan takes up space that was formerly occupied by the battery. Which brings to me one of my favorite improvements on the SE — a lithium battery with an expected life of 7 to 10 *years*. No longer is your favorite high-tech computer so dependent on a low-tech battery that you pick up at your local camera shop.

And, of course, there's the slot. It's not a true slot like the NuBus slots on the Mac II, but a 96-pin bus connector that provides direct, unbuffered access to the microproces-

cro and micro call M

Dinner At Eight-Silver Palate Bundle . . . . $59.
Satori ... NCP
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The Disk Directory *(holds 32 disks)* . . . . . 18.
The Library *(carousel, holds 80 disks)* . . . . 29.
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Programming Bugs.

Betty Faber investigates the stuff dreams are made of.

Putting out feelers.

"They spend most of their time feeding, grooming and interacting with friends. Their courtship dance consists of a lot of wing flapping, erratic running, and backing into things. The males tend to stay out late at night, and are much more obvious and vulnerable."

Sound familiar? Well, don't jump to any hasty conclusions. Contest winner Betty Faber is describing cockroaches. She is one of the foremost authorities in the world on their behavior. But any similarity between the characters in her research and personal friends of yours (or ours) is purely coincidental. We think.

Bugs 'R us.

Betty has been studying cockroaches for eleven years. She's spent endless days in the jungles of Trinidad, and endless nights in the greenhouse at the American Museum of Natural History in New York studying every gesture of her own tagged private collection. This lady knows from cockroaches.

But she didn't know from micros—until the Mac came along. Here at last was a machine that, like Betty, had the ability to make friends with the most unlikely life forms. She uses Excel extensively, particularly for analyzing "homerange" data—how far which roaches will roam to do what. She also uses Microsoft Word to write papers, and MacPaint to draw home-range maps for presentations.

Overall, the Mac has made it possible for Betty to spend a lot more time with her six-legged buddies. Which, from her point of view, is a good thing.

And, what about you? Is there anything creepy or crawly in your Mac? Your story could be worth a grant of $500 in free add-ons and software. So bug us with your true Mac adventures soon!

Contest Winner #5

Name: Betty Faber, Ph.D.

System: Mac 512

Applications: Analyzes the habits of cockroaches.

"My Connection"

MacConnection

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Please circle 82 on reader service card.

The Mac SE is a very enhanced Mac Plus. What you can't see is the beefed up power supply and the internal fan. This machine is built to have an internal hard disk.

CHRIS STEVENS

sor. What it means is no more piggybacking off the motherboard. Expanding your SE will be a lot more elegant than "hot wiring" the Mac Plus.

Another elegant development is that the logic board is much easier to get out for changes — it just snaps out. The cards clip down and lie flat (horizontally) across the board.

UP TO SPEED

Another noticeable change is the SE's improved operating speed. One reason for this is a change in the ratio of CPU to video accesses: 3 to 1 in the SE compared to 1 to 1 for the Mac Plus and 512E. (See the sidebar for a more detailed explanation.) And that's not the only place speed has been increased. We've been told that the IWM (Integrated Woz Machine; the chip that controls regular disk input and output) has

. . . FOR THE REST OF US

No, it's not the Personal LaserWriter. These two external hard disks will work with any Mac with a SCSI port. The 40-meg unit on the bottom has a built-in tape backup system.

Keyboards come in two flavors: big (81-key) and bigger (105-key). You get to pick which one you want. Both have the on/off switch for the whole system on them. The bigger unit has a row of configurable function keys, just like other computers.

been clocked at twice the hardware speed of the original Mac line. Apple claims that the SE *could* run 25 percent faster out of RAM than the older machines. You'll see improved SCSI performance, too, although that will be more evident on large reads.

NONSPECIFICS

After questions about the exact specs for the SE (which you'll find in the sidebar), the two things people seem most concerned about are upgrade policy and software compatibility. The first can be answered succinctly enough: no upgrades.

The changes between the SE and the Mac Plus (not to mention the Mac II) are so radical that in order to upgrade you'd practically have to buy spare parts and assemble an entirely new machine from the ground up. This would be considerably more expensive — if not virtually impossible for most users — than just buying a new machine outright. (Apple does say that there may be 68020 accelerator cards in the future.) And no trade-ins, either. This policy may seem a bit harsh to you, and in one sense I have to agree that it is. This is a major new development for a computer line that has a large established base of dedicated (in any sense of the word) users. A lot of early Macintosh owners held on in the face of derision with very little support from either software or hardware developers. It would be nice if Apple could recognize these owners with a break on the price of the new machines. If it weren't for all those loyal Mac owners out there, there would never have been a reason or a market for the Macintosh II and SE.

On the other hand — well, on the other hand there are what are referred to as the harsh realities of business; although the reality looks a little harsher for the public than for Apple Computers in this context. It's obvious why there can be no upgrade policy; the absence of even a token trade-in allowance on older machines is not so obvious.

As for software compatibility, Apple says there are very few software differences and while they'd obviously like to see 100 percent software compatibility across machines, compatibility tests in December were in the 97 percent range. The claim is that all programs designed to Apple specifications will run without any modification on the SE. On the other hand, not even Apple always designs to Apple specs. What

CHRIS STEVENS

one Apple spokesman referred to as the "typical *Flight Simulator* program that bypasses everything" will obviously have to be brought up to snuff or dispensed with altogether. Maybe there won't be any orphans made out of this, but there might be some one-parent families.

TO MARKET, TO MARKET

Once you've seen the two new machines side by side, questions of market position do seem to come up. Why announce and ship these two at the same time? The SE is a lovely piece of work, but it does pale in comparison to the more powerful and pricier Mac II. And what's going to happen to the Mac Plus?

Well, what Apple has now is a diversified Macintosh line with machines that are sufficiently different to allow for staggered price points. Their perception of the market positions is that the Mac Plus and 512E are entry-level machines; the SE is mainstream business; and the II is the high-performance model. As to whether the Plus and 512E will stay in the running, it's anyone's guess. Apple says they'll "let the market decide." My guess is that they'll be around for a while for people who want the ease of use and speed the Macintosh has always delivered but who don't want to pay for huge amounts of memory or power they don't need.

And that's no doubt part of the reasoning behind Apple's decision to bring out two new machines at the same time. Each represents a further step in power and application possibilities; each gives users as much as they need — and a bit extra for the future — without being either profligate or inefficient.

The Mac II is an impressive machine that puts incredible power in your hands. But if you don't need that kind of power, you don't need a Mac II. One of the corporate selling points of the larger machine is its ability to run UNIX, but as someone at Apple pointed out, "UNIX is not for normal people."

YOU PAYS YOUR MONEY

Now that you have some idea what you'll be getting for your money, you probably want to know how much money your dealer is going to want from you. There's no one answer to that question, as the price depends on the configuration you choose. The latest information on price is that the Macintosh SE will run anywhere from $2600 to $3600. The lower figure gets you the basic

(continued on page 168)

Macintosh SE Specs

Processor	MC 68000 32-bit internal architecture 7.8336-MHz clock frequency
Memory	1 megabyte RAM standard expandable to 4 megabyte 256K ROM 256 bytes of user-settable parameter memory
Disk Storage	One 800K internal floppy standard Second internal 800K floppy optional External 800K floppy optional 20 megabyte internal SCSI hard disk drive optional 20, 40 or 80 megabyte external SCSI drive optional
Screen	Built-in 9-inch monochrome monitor 512 x 342 pixel bit-mapped display
Interfaces	Two mini-8 serial ports Same as on Mac Plus, except one port has extra signal to provide for use of synchronous modem DB-25 SCSI port Decided to keep the DB25 to maintain consistent interface across machines. Two ADB (Apple Desktop Bus) Ports ADB is now Apple standard across all machines. Low-speed synchronous serial bus capable of supporting up to 16 input devices via daisy chain. Two standard ports are for keyboard and mouse. System expansion connector 96-pin CPU bus connector supplies all CPU signals unbuffered, plus ground.
Sound	Sound port for external audio amplifier Same as Mac Plus Four-voice sound with 8-bit D-A conversion 22-KHz sampling rate
Power Supply	100W maximum power output The entire analog board of the Mac Plus has been redone for the SE. The power supply had to be beefed up considerably to support the optional built-in hard disk. 120-240 VAC input range Frequency: 47-63, single phase
Fan	Built-in, 10-CFM crossflow The fan occupies the space where the battery resides on Mac 512 and Plus machines. The battery has been replaced by a lithium battery on the motherboard.
Mouse	Standard Apple mouse Mechanical tracking, optical shaft encoding New mouse looks like Apple IIGS mouse (fastback model)
Keyboard	Option 1: "Eastwood" Apple standard keyboard. 81 keyswitch, ADB detachable keyboard with 10-key numeric pad Option 2: "Saratoga" 105 keyswitch ADB detachable keyboard with 15 function keys, T-cursor pad and 10-key numeric pad
Actual Product Name	Macintosh SE, where SE = System Expansion

KIM DREW

REPORTING IN RAGTIME

A new direction in integrated software — Ragtime does it all from text to spreadsheets.

BY HENRY BORTMAN

IN THE WORLD OF MUSIC, RAGtime is a subset of jazz, but with a unique and definitive style all its own. *Ragtime* for the Macintosh (its name an obvious play on this relationship), is a new piece of integrated software that combines some of the features found in *Jazz* and other integrated products but strikes out in a whole new direction.

Ragtime takes a novel approach to software integration, combining a word processor with graphics, spreadsheet and page layout in a single program. Call it a page processor, if you will. Although the graphic capabilities of the program are limited, *Ragtime* makes it easy to place and edit text, graphics and spreadsheets on the same page. This is done through the use of frames, which are simply rectangles into which the various elements of a page are placed. Anytime you want to put something on a *Ragtime* page, you must first draw a frame.

WHAT'S IN A FRAME?

There are three types of frames: text, spreadsheet or graphics. Each frame type has its own menu bar and icon palette, both of which become active whenever the cursor is in that particular kind of frame. A fourth menu bar and icon palette appears in page layout mode — whenever you are drawing new frames or manipulating existing ones.

Page layout tasks are simple in *Ragtime*. Frames are easily drawn: just select the frame drawing tool in the page layout palette, and drag. As you draw, a readout informs you of the height and width of the frame and its X and Y (vertical and horizontal) distance from the top left corner of the page. Frames are easily moved on the page: just click on the border to select and drag. Frames are easily resized: click on the border, then on one of the handles, and drag. Text in a resized frame will automatically rejustify and graphics will automatically be rescaled or be cropped, depending on how they were originally placed.

You normally select a frame's type from the Frame menu when the frame is created. You can change the type later, although all of the frame's contents are lost when you do. By selecting the appropriate palette icon, you can change the thickness of a frame's border, give it rounded corners and/or give it a shadow. You can make a frame's border visible or invisible (although you can't, obviously, manipulate an invisible frame). You can also protect a

frame's border. A frame with a protected border cannot be resized or moved and a frame with protected contents cannot be edited.

Frames can be nested within one another, which makes it fairly easy to place text and graphics, or text and spreadsheet, side by side. But the edges of frames cannot overlap. Orange Micro says that overlapping frames will be possible in a future version.

Ragtime's page layout function is sorely missing a set of layout rulers. While the mouse position readouts provide useful information, they are not that helpful, for example, in creating three equally spaced columns. In order to place one column a specific distance from another, you must remember the positions of the two frame's adjacent edges and do the math yourself. This is precisely the type of thing computers are supposed to do for you. Also missing is a means of aligning frames.

TODAY'S WORD: PROCESSING

When a new document is created, it contains one large frame that defaults to text so you can begin typing right away. *Ragtime* requires you to enter text into the text frames that are used for layout. Other page layout programs, like *PageMaker*, allow you to do this, but they are more notorious than famous for their word processing capabilities. Most users usually try to avoid going this route, opting instead to create the words elsewhere. They are then poured into the spaces set aside on the page layout.

Ragtime's word processor, on the other hand, is full-featured, if a bit slow. It rates a slight notch above *MacWrite* in terms of functionality. The requirement of always having to type in frames may annoy some, but if it doesn't bother you, and if you prefer the style of *MacWrite* to Microsoft *Word*, you may find *Ragtime*'s word processor a workable alternative.

Text in *Ragtime* is formatted with the use of rulers, rather than having formats attached to paragraphs. These rulers are very small and they appear directly over top of text when displayed. Unfortunately, the rulers are not only too small, they have also been given too much responsibility. They not only carry margin, tab, justification and indent information, they also handle leading.

This has some inelegant implications. First of all, if you want to change the leading for a section of text, you must insert a new ruler. You cannot simply select some text and call for a leading change. Why? Because, unbeknownst to you, you are actually modifying the unseen default ruler that lurks at the top of every text frame. If you try to change leading by selecting text within a frame, rather than by inserting a new ruler, you end up changing the leading on the entire frame. Actually, you have to insert two rulers: one for the change, and one to get back to your previous leading, if the change is only a temporary one.

Second, these changes will not always automatically flow from one text frame to another. Consider two text blocks. Let's say the text in frame 1 has been modified for 1½ line spacing. The remaining text flows into frame 2. But if the frames are resized, pushing text from frame 1 into frame 2, the leading change is lost. This is messy.

One excellent feature of the word processor is its ability to perform global search and replace functions on fonts, point sizes and type styles. Why this hasn't been done in other products is a mystery. This is a good first shot at implementing a much-needed function. It can still use some work, however. It would be nice to have a "change, then find" option here, to allow global searches with only selective changes. However, be warned: You must use extreme caution with this feature. One false click and you can turn hours of careful work into a useless heap of Chicago italic. Permanently. This is not one of the actions *Ragtime* allows you to undo. There is no Revert option on the File menu, either.

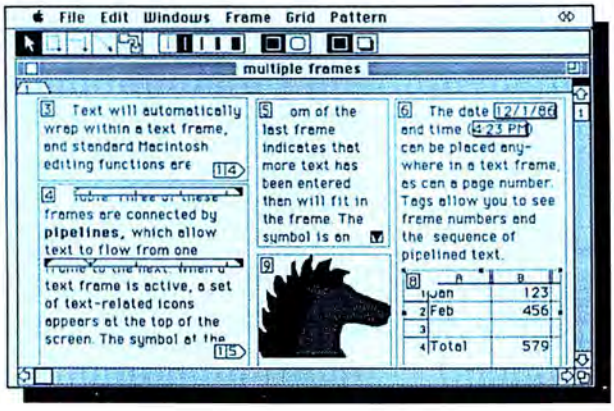
There are a couple of other major weak spots in the word processor. There is no way to do kerning or hyphenation of any kind. For a program with page layout as a major focus, these areas are significant deficiencies.

PUT IT IN THE PIPELINE

This brings us back to the subject of page layout, specifically to a discussion of pipelines. The pipeline function is one of the best features of *Ragtime*. To get text to flow from one frame to another you simply click on the "pipeline pencil," an arrow-tipped icon on the layout palette. Select the frame from which the text originates, and drag it to the destination frame. The text from the first frame now pours into the second frame.

With the help of the splitter bars, which allow the screen to be divided up into as many as nine different segments (three vertically and three horizontally), it is as easy to pipeline text between pages as it is between frames on a single page. The SHOW TAGS option on the Windows menu allows you to see the path that pipelined text follows.

Pipelines can also be cut, but this is not as smooth an operation. The text that has flowed in a frame other than that in which it was originally placed remains in the destination



A *Ragtime* page with multiple frames. Frame numbers are shown in the upper left hand corners. Frames 3-6 are text frames, 8 is a spreadsheet frame, and 9 is a graphic frame. Frames 3-5 are pipelined together, allowing text to flow from one to the other. Rulers are shown in frame 4. Frame 6 contains self-updating date and time icons, which print as regular text.

frame, rather than being sucked back up by the originating frame. This makes it impossible to redirect a pipeline once it has been established.

AND A ONE, AND A TWO....

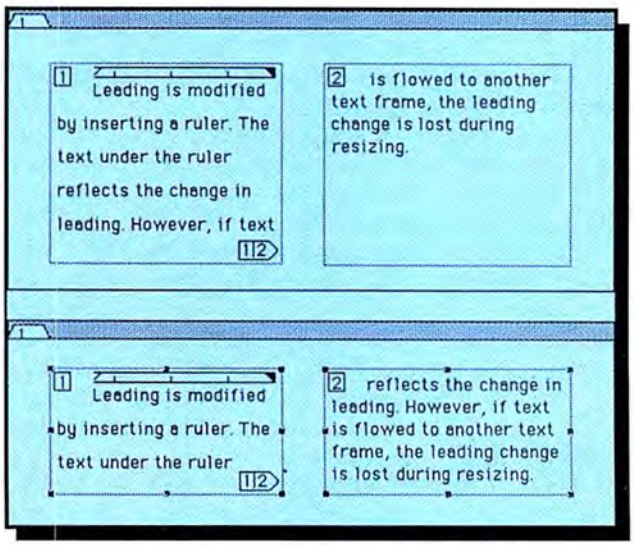
The *Ragtime* spreadsheet is also fairly full-featured, and includes a liberal assortment of the accounting, statistical, arithmetic and trigonometric functions. It also has relative and absolute cell references. You can link spreadsheets by indicating page and frame numbers as a prefix to cell numbers. There is no Paste Down or Paste Across function; you have to use the Clipboard to copy and paste.

The *Ragtime* spreadsheet has two advanced capabilities not found in most spreadsheets. Cells can be resized both horizontally and vertically. And text styles and fonts can be changed from cell to cell.

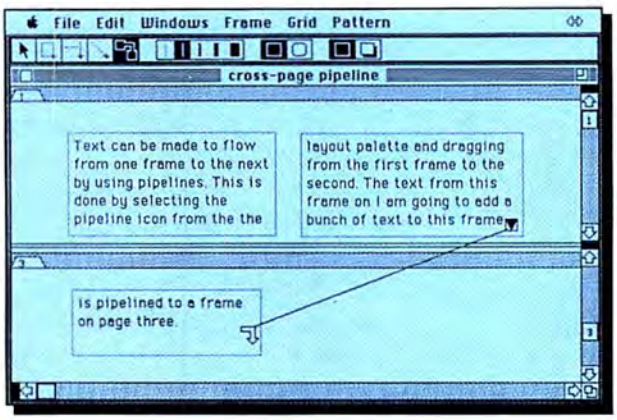
The *Ragtime* spreadsheet provides the option of using either A1 or R1C1 cell notation. You can import a text file into a spreadsheet (with tab delimiters for columns, carriage returns for rows) or export a spreadsheet to a text file.

The most notable aspect of *Ragtime*'s spreadsheets is that you don't have to do anything to place them in a page layout: they're already there. This is so simple that it may seem insignificant, but if you spend a lot of time calculating and recalculating, placing and replacing spreadsheets into a page layout, you will find this a real time-saver. No other program, not even *Jazz*, integrates these two functions as successfully as *Ragtime*.

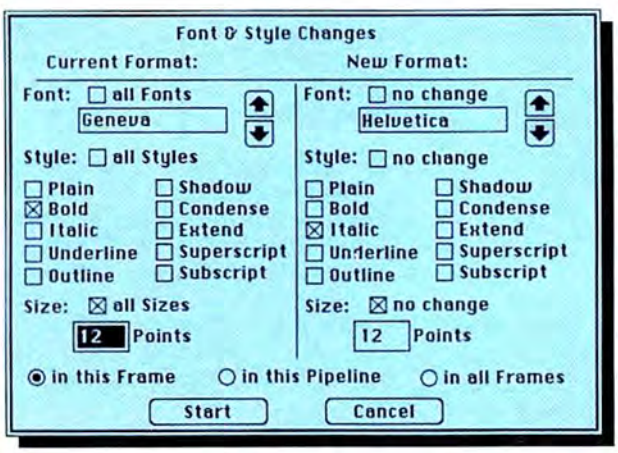
The biggest drawback of the *Ragtime* spreadsheet is that it has no charting capability. It seems logical that anyone who would want to mix spreadsheets in with their words probably also want to sprinkle in a few graphs and charts as well. Perhaps we'll see this in a later release.



Modified leading and pipelines don't always mix well. (a) All the text in the frame 1 is set to 1-½ line spacing. (b) After resizing the text frames, several lines have reverted to single spacing.



Using the splitter bars, text can easily be pipelined (made to flow) between frames on different pages. The little black arrowhead in the top right frame indicates that more text exists than will fit in the current frame. The bent arrow in the lower left frame is the pipeline pencil.



***Ragtime* is the first program we know of to implement search and replace on font, type size and/or style. Proceed with caution, though. Changes are global only and not undoable.**

PICTURE A FRAME

The manual says *Ragtime* has "graphics management." That means you can't draw within *Ragtime*, but you can import graphics, from *MacPaint* or PICT files. Graphics are brought into, surprise, graphic frames. They can be placed directly by selecting the interior of the graphic frame (it will turn gray) and then choosing the OPEN PICTURE command from the Picture menu.

One very nice touch is that you can choose between clipping the picture (it remains its original size but you only see the portion of it that fits in the frame) or scaling it (in which case the whole image stretches or shrinks to fit the frame). If you choose the Clip option, you get a second choice. You can crop the picture to the frame border, in which case that's all you get. Or you can leave the rest of the picture intact, unseen, with the frame acting as a window on it.

If you choose the latter option,

the hand tool on the picture icon palette will allow you to scroll the graphic "behind" the frame. The advantage of cropping the picture is that it saves disk space. Since graphics tend to eat up large amounts of bytes, those with limited disk storage might prefer this option. It would be nice to be able to both scale and crop the same picture, as this is a common need in layout.

If you choose the scale option, be prepared to do a lot of waiting on the printer, particularly with a LaserWriter. Scaled graphics look great, they just take a long time.

Ragtime's word processor is full-featured, if a bit slow. It rates a slight notch above MacWrite in terms of functionality.

Which raises the subject of printing. While there is a lot of flexibility in defining paper and page size in *Ragtime*, if you don't heed the warnings to resize when you switch from one type of printer to another, you'll be sorry. I scaled a fullsized *MacPaint* image to a 1.5- x 2.25-inch frame and printed it, first on the ImageWriter, then on the LaserWriter. The problem is that the printable area on a LaserWriter is slightly smaller than on an ImageWriter. The result is that *Ragtime* graciously creates extra pages to handle the overflow. This is a good feature — but even though the extra pages had nothing on them, each of them took as long to print as the original single page. Total time: 15 minutes to get one small graphic and three blank pages. Still, when you get it right . . .

MUSICAL FORMS

The final feature of *Ragtime* that deserves mention is its "forms generation" capability. You might suspect that this is about business forms, but *Ragtime* is not really the ideal tool for that purpose. "Forms" in *Ragtime* are a kind of layout boilerplate, or stationery pad. You can create a set of standard elements on a page — masthead, page numbers, placement of text frames and pipelines between them, and so on — and save this as a form rather than as a document.

Later, when you want to use a blank form, you choose the TEAR OFF option from the open file dialog box. This works almost exactly like opening a document file. The only difference is that you get a copy of the original, into which you can then pour your text and other layout elements. This is a very well thought out feature, and those who have struggled with accomplishing this feat in other layout programs will welcome it.

CODA — REPEAT TO THE MANUAL

Ragtime's manual is good. The tutorial is thorough, the reference section is clear. It has only a couple of minor problems. First, there isn't sufficient warning about certain snafus, such as the leading issue discussed above. Second, the index needs work. It's not very thorough, and when you're stuck with a program the index is the most important part of the manual. Orange Micro's technical support telephone was consistently helpful, though.

THE COPY PROTECTION RAG

Now comes a rant and rave about the evils of copy protection. *Ragtime*'s is about the worst there is. The program requires the insertion of a key disk at random intervals so you never know when the program is going to ask you for it. Worse yet, the key disk is the system disk, not the program disk. How many System disks do you like to carry around on the off chance that a computer is going to demand to see it?

FINALE

Integration simplifies the task of combining several functions. The argument against it is that each of the functions in an integrated package is typically less powerful than some of its stand alone counterparts. Besides, according to *Inside Macintosh*, integration on the Mac should be done through the Clipboard. The questions that need to be asked before plunging headlong into an integrated package like *Ragtime* are these:

1. Are the features and functions in *Ragtime* ones that people typically use together?
2. Does each function provide all the power that is needed?
3. Are the functions smoothly integrated?

If you're hungry for the maximum power that other word processors, spreadsheets and page layout programs offer, you may find that *Ragtime* comes up short. But if you need a software package that will let you integrate words, spreadsheets and graphics on a page, and if you don't care about all the bells and whistles, *Ragtime* may strike just the right chord. *Ragtime* does what it does extremely well.

Even using *Switcher* on a Mac Plus, you couldn't easily get all the functionality of *Ragtime* on-line simultaneously, and the integration among them would fall short of what *Ragtime* provides. Despite a few quirks — and no matter what, every program has them — *Ragtime* is a solid product.

HENRY BORTMAN IS A SAN FRANCISCO-BASED FREELANCE WRITER AND AN ENGINEER FOR US SPRINT.

Ragtime

Overall Rating	★★★½
Follows Mac Interface	★★★★
Printed Documentation	★★★
On-screen Help	None
Performance	★★★
Support	★★★
Consumer Value	★★★

Comments: Integrated word processing, spreadsheet, page layout in one package. **Best Feature:** Integration is very well done, easy to learn and use. **Worst Feature:** Quirks in flowing text between frames in page layout mode. **List Price:** $395. Published by Orange Micro, Inc., 1400 N. Lakeview Ave., Anaheim, CA 92807. (714) 779-2772. Version 1.0 reviewed. Copy protected.

Peripheral Land, the SCSI Experts

*RANKED #1 IN SEPT. ISSUE OF *MacUser*

*' THE PERIPHERAL LAND DISK SATIFIES BOTH THE PRICE-CONSCIOUS AND THE SECURITY -CONSCIOUS USER'

Macworld **Sept. Issue.**

* BACK-UP PROGRAM TO BACKUP THE HARD DISK TO FLOPPIES BY FILE, FOLDER, VOLUME, OR INCREMENTAL FILES.
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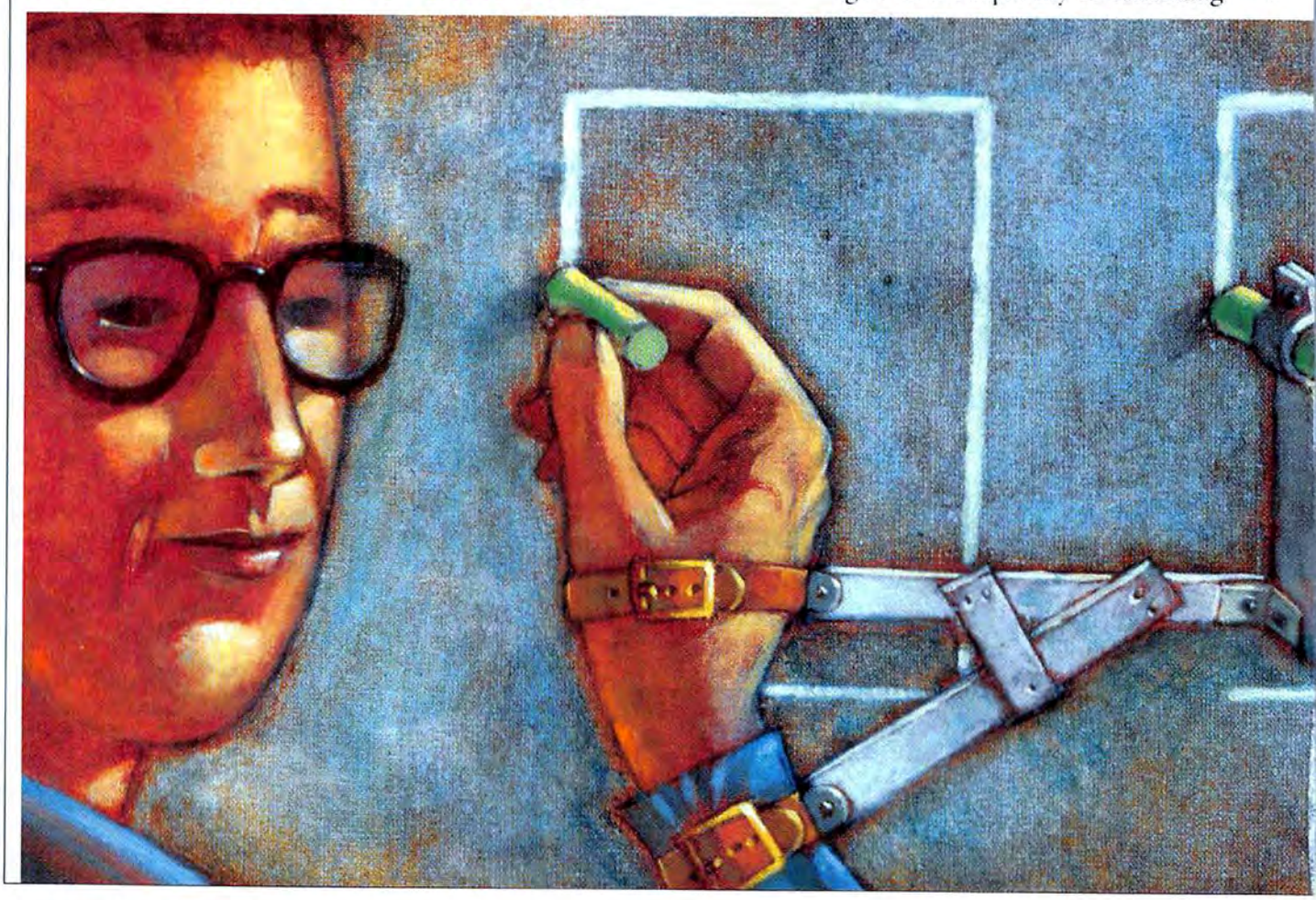
PUTTING IT IN CONTEXT

BY R. MICHAEL O'BANNON

Guide unlocks the mysteries of hypertext and we unlock the mysteries of Guide.

MOST OF US THINK OF BOOKS OR articles as documents to be read straight through from start to finish. This viewpoint was challenged in the late 1970s by a self-proclaimed visionary named Ted Nelson, who realized that text in electronic form could be much more fluid than printed matter. The computer, he said, could give us the capability to control the access and display of information in new ways. We need not be bound by the linear or sequential appearance of the written word. Instead the computer could give us the capability of connecting



BART GOLDMAN

remote passages of a document and calling up one passage from another. These electronic links could also be used to bridge from one document to another to create new networks of knowledge. Nelson called his new concept hypertext.

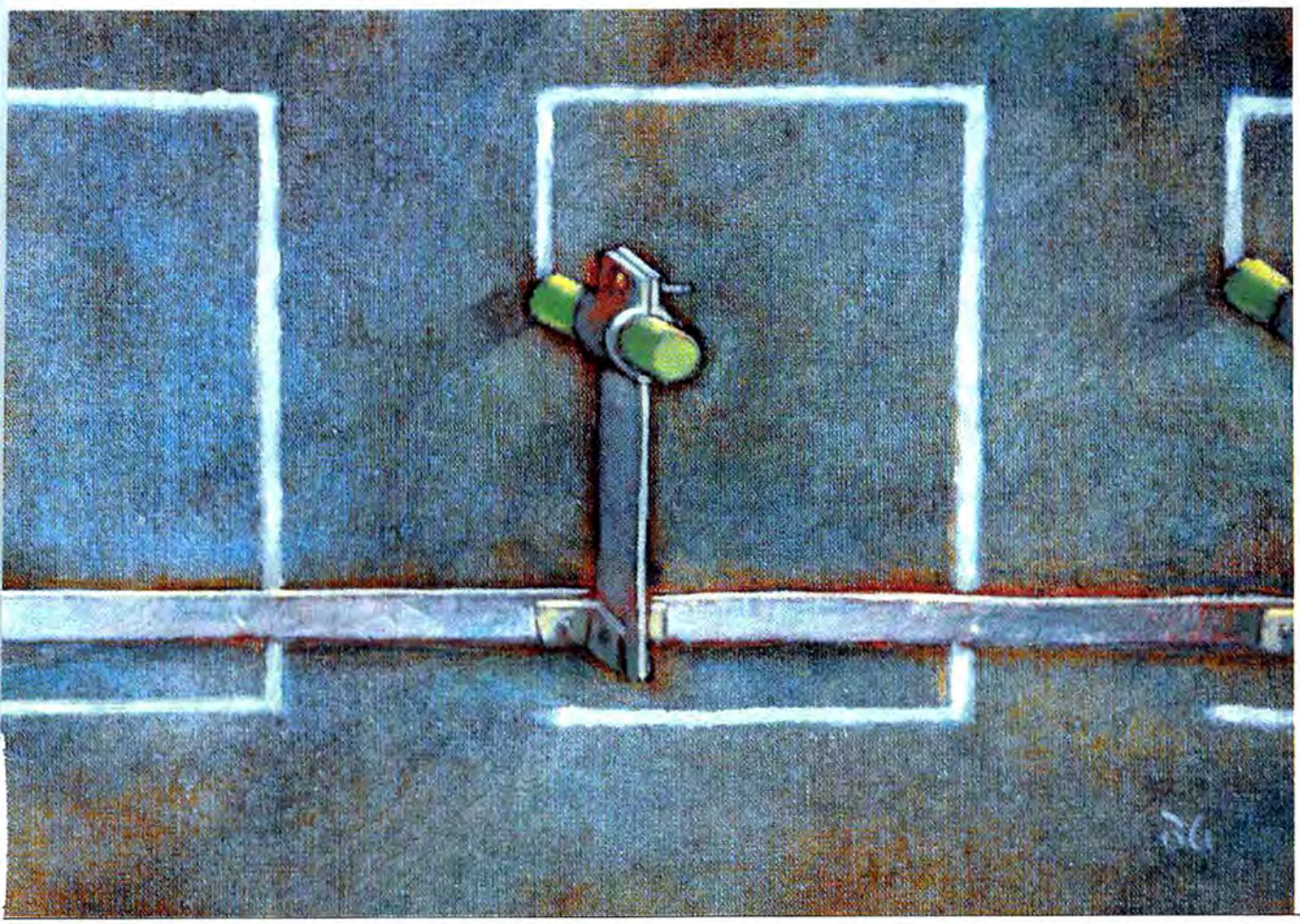
The idea of hypertext is not as strange as it might seem at first. When we write a report or look up information, we often find ourselves glancing from one book to another or flipping back and forth through the pages of a reference. We form mental linkages between the various passages we need. When we purchase a new piece of software, few of us read the manual from cover to cover before we double-click its icon. Instead, we read enough to get started and begin to thumb the pages when we get into trouble. We often need to dip into the middle of a book for a single piece of information rather than reading all it has to offer. Hypertext allows an author to build in this capability of finding new information which is related in some way to what has already been seen or read.

Imagine being able to point out an unfamiliar word in a scientific report and immediately call up an expanded definition. Imagine reading a literary classic on your computer's screen and finding that a click of the mouse on the character's name retrieves other works in which he or she appears. Consider a map of the United States that presents you with extensive descriptions of major cities as you touch them with the pointer. Either of these examples can readily be created in hypertext on the Macintosh, as well as many more exotic applications.

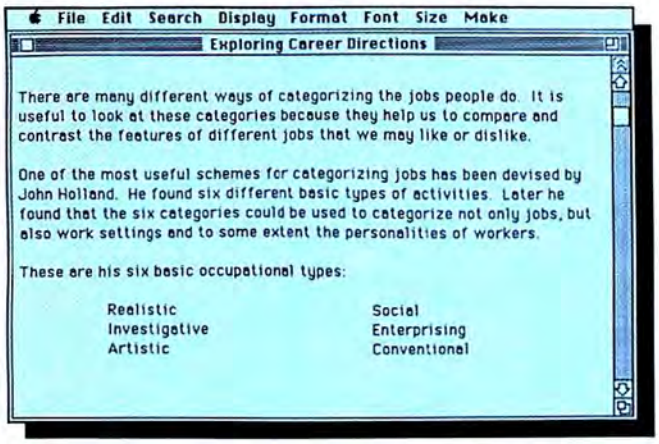
Until quite recently, hypertext has been available for only a few mainframe and minicomputer systems. Actual installations have been rare and often beyond the budget of the casual user or small business. *Guide* is the first commercially available hypertext tool for the Macintosh. It provides a text and graphics environment for creating hypertext documents and for turning existing electronic text into hypertext. It also supplies the support necessary to view completed hypertext documents. For the first time, hypertext can be generated and distributed easily and relatively inexpensively.

The *Guide* program weighs in at a relatively large 128K, which can only be accommodated by Macs with at least 512K of RAM. A smaller 51K version of the program, called *MiniGuide*, is also supplied as a desk accessory. This program provides a read-only version of *Guide* which can be called from the Apple menu while other applications are in use. *MiniGuide* will run on machines with any memory capacity. However, users of *MiniGuide* are not able to author their own hypertext documents.

Guide's special talent is its ability to create "hot spots" in a document that trigger a display of additional



PUTTING IT IN CONTEXT



Authoring a *Guide* document begins with plain text.

A button can be created with a single menu selection.

information when activated. These "hot spots" may be sections of text or graphic elements. In the language of *Guide* they are called buttons.The buttons of a *Guide* document can be recognized in two ways. If the button consists of text, the passage appears in a format different from surrounding text, usually underlined, italicized, or in bold face. The type of format informs the reader of the type of action the button can activate. Buttons can also be identified by their effect on the mouse pointer. When it contacts a button, the pointer changes shape to indicate the type of button it is touching.

The essence of the program lies in the ability of its user to create buttons, so let's consider each type in detail to give you a better understanding of what *Guide* has to offer.

The note button lets the *Guide* author create a hidden footnote which appears at the reader's command. In a typical *Guide* document, presence of a note button is signaled by underlined text. When the cursor is placed on this text, it changes to an asterisk. The reader can recall the footnote by clicking anywhere on the underlined text. The note pops up in a box at the upper right-hand corner of the screen, disappearing as soon as the mouse button is released. (This capability is similar to the electronic notes that are created by other standalone programs.)

A different effect is available using reference buttons that let the author move the reader rapidly from the current point in the text to a new part of the document. This function is a kind of electronic jump which can be used to link related information appearing in different parts of a document or even in different documents. The presence of a reference button is indicated by italicized text and by a change in the cursor to a large, hollow arrow which points to the right. Clicking on the button takes the reader to a new passage. *Guide* automatically holds the reader's place and provides a backtracking function to return to the original passage.

So far the hypertext operations provided by *Guide* have relatively straightforward functions. The Note function allows you to create short explanatory notes which you can "look up" with the click of the mouse. The Reference function allows you to "flip the pages" of the document in order to follow a particular theme or thread through the document. The next two functions provide more sophisticated ways of manipulating text which have no ready analogs to a book or hard copy document.

Using the Replacement function, you are able to control the exposure of text. When a replacement button is activated, the button disappears and in its place another segment of text or graphic appears. Imagine, for instance, a list of components making up a personal computer. Structuring each component name as a replacement button would allow you to create the capability of calling up a picture of each component with the click of a button, or perhaps of replacing the label with a list of alternative products which have the same function. A replacement button can be recognized by its boldface format and by a change of the cursor to a crosshair icon. The reader can restore the original button simply by clicking on the new text.

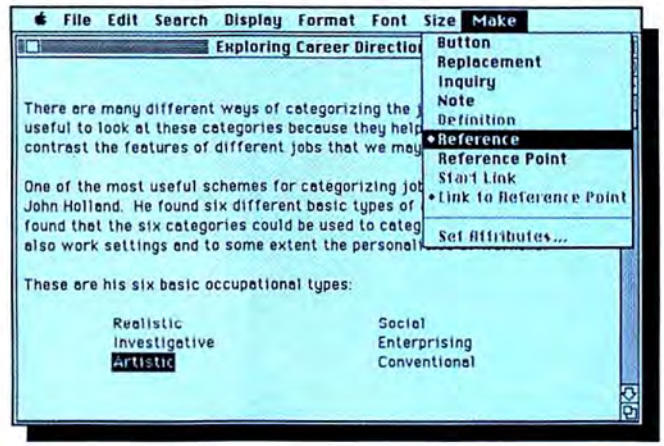
INQUIRIES

Unlike the above functions, inquiries are not actually a method of connecting one piece of information to another. Instead, inquiries provide a useful way to structure existing connections in the text.

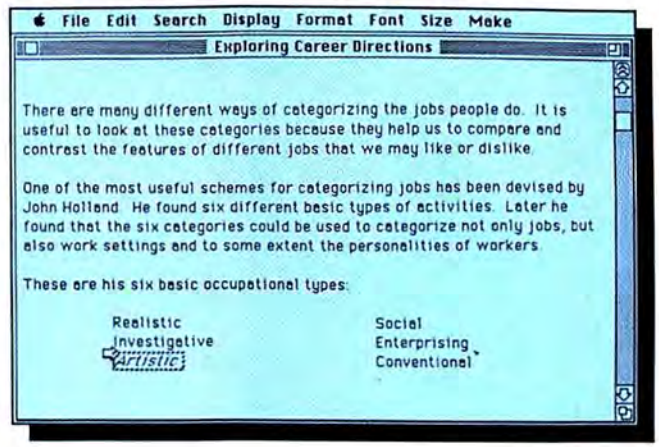
While we have illustrated the basic hypertext functions with text, each of the functions can also be performed on graphics in exactly the same manner. Using these four basic functions the *Guide* author can shape conventional information into a document which alters its form as it responds to the reader. For example, the Inquiry function could be used to present a multiple choice question about the interests of the reader. Those pieces of information that

meet the reader's needs will be made more accessible and those unlikely to be of interest are screened out. It is possible to build up very complex structures in *Guide* by embedding buttons within buttons. A replacement button does not necessarily have to call up a simple graphic or text element. It may expose an entire *Guide* structure which itself has multiple levels. The editing functions provided by the program support this kind of structuring within a document. Entire sections of the document, including all the electronic links, can be cut or copied and pasted from one point in the text to another.

A *Guide* document must be experienced to be fully appreciated. In contrast to the passive nature of printed pages, the dynamic qualities of the *Guide* document make it a fascinating opportunity to interact with words and images. The document appears to tailor itself to the reader's needs. For the reader who wishes a quick overview, the *Guide* document can offer a brief synopsis or an outline of the information it contains. For the inquisitive browser, a *Guide* document can be a rich treasure trove of details and commentary which are revealed on command as interest develops. The adventurous reader will find the use of a *Guide* document an experience in discovery.



A second menu selection links the button to another passage in the document.



Clicking on the new button will instantly call up the text it references.

EXAMPLE APPLICATION

Creating a *Guide* document is an easy process. On startup, the user is presented with a menu bar containing many of the same labels found in popular word processors for the Mac. The screen responds to basic text entry and editing operations in much the same way *MacWrite* does. Text-only files prepared with other word processors can be imported directly through use of the OPEN command from the File menu or by use of the Clipboard.

All of *Guide*'s hypertext functions are controlled by two of the pull-down menus. The Make menu provides all the functions for creating buttons and linking the button to other passages of text or graphics. For instance, to create a reference link first select the destination text by dragging the cursor across it. Next pull down the Make menu and select REFERENCE POINT. Then select the reference button text and pull down the Make menu to select REFERENCE. The link is established and immediately available for testing. Creating other types of buttons is just as easy.

The other menu unique to *Guide* is Display. The selections on this menu allow you to control a number of aspects of the screen display. The default method of emphasizing various types of buttons can be altered and even eliminated if desired.

One of *Guide*'s greatest limitations lies in its lack of sophisticated word processing features. Users will miss being able to center text, set tabs and determine margins. Most *Guide* authors will probably choose to create complex text documents in their favorite word processor and import the text rather than write in *Guide*'s sparse environment. While all the standard formatting functions such as underline, boldface and outline can be selected by a menu, these cannot be used with the same flexibility available in a standard word processor. *Guide* demands that a format change be in effect for the entire contents of any button created. Although there is a workaround for this problem, allowing sections of text to assume different characteristics, its use is more cumbersome and time-consuming than it should be.

Graphics may also be imported to *Guide* from the Scrapbook or the Clipboard. Since *Guide* provides no graphics creation commands, most of the graphics work must be done outside of the program.

Some graphics manipulation commands are available within the program. These allow resizing, positioning and cropping of an image. Complex graphics are possible by importing several images and overlaying them within one graphics box.

PUTTING IT IN CONTEXT

Hidden notes can be linked to text and recalled with a click of the mouse.

***Guide*'s hypertext buttons can reveal graphics as well as words.**

EASE OF USE

While lacking many of the finer points of mature word and graphic processors, *Guide*'s ability to connect and annotate the words and pictures of a document enhances and amplifies its usefulness.

The *Guide* program disk is accompanied by a well-written users' manual and an accessory disk filled with examples. The manual devotes nearly half of its 198 pages to tutorials. Commands are clearly explained and on-line help is available in the form of a *Guide* document which explains most of the major features of the program. While it lacks the detail of the manual, the Help function is usually sufficient to answer most questions. Since this function is itself a *Guide* document, users may expand and revise it.

The sample programs supplied on the accessory disk are good examples of *Guide* creation in practice. Of special interest is the Calendar Construction Set. This *Guide* document quickly demonstrates the power of the program and serves as a useful application as well.

WHAT ARE YOU GOING TO DO WITH IT?

When you first sit down to use *Guide*, you may find yourself facing the dilemma encountered by so many writers and artists. A blank sheet of paper is all potential and no structure. *Guide* offers such interesting opportunities that there is almost too much that can be done. Let us take some guidance from the Zen masters: simplicity in all things.

While it is difficult to make a list of possible applications, a few straightforward ones which come readily to mind are the ability to create concordances to annotate existing literature, any application which would benefit from cross referencing or dynamic indexing, the creation of CAI (computer-aided instruction) documents, small data bases which lend themselves to sequential linking of data, outlining, and so on.

How about using *Guide* to create boilerplate documents? Each of the alternatives could be structured as a replacement button, with additional use of the Inquiry function. Since *Guide* prints only those parts of the document that have been exposed by the reader, each document would be tailored to the particular situation.

Computer-aided instruction is another possible use of the program. The Reference and Note functions make it easy to create comments and links throughout the document. Tests questions can easily be created using the Replacement function, and the student can be routed to different parts of the text depending on whether the answer was correct or incorrect.

The program's ability to use graphics and text suggest that it would have considerable use for storyboarding, with the ability to show detailed expanded sequences or compact summary sequences. The ability to create alternate paths would allow different approaches to be contrasted easily. *Guide*'s potential is limited only by the author's ability to conceptualize the applications.

MICHAEL O'BANNON IS A PSYCHOLOGIST AND SENIOR RESEARCH SCIENTIST AT THE GEORGIA TECH RESEARCH INSTITUTE. HE IS CURRENTLY INVOLVED IN KNOWLEDGE ENGINEERING AND EXPERT SYSTEMS RESEARCH.

Guide

Overall Rating	★★★★½
Follows Mac Interface	★★★★★
Printed Documentation	★★★★★
On-Screen Help	None
Support	★★★★★
Consumer Value	★★★★★

Comments: A unique program for creating dynamic electronic documents. **Best Features:** A flexible and easily used set of basic hypertext functions provided within a standard Macintosh interface. **Worst Features:** Limited word processing functions and document formatting. **List Price:** $135. Published by OWL International, Inc., 14218 NE 21st Street, Bellevue, WA 98007. (206) 747-3203. Not copy protected.

Strength in Numbers.

1 Customize delivered reports
2 Create your own reports
3 Extract report data from up to 10 files
4 Create calculated fields on reports
5 Mask record selection with your own criteria
6 Create your own data files
7 Use the File Editor to edit any file including your own
8 Work on multiple files in multiple windows
9 Print any report to screen, printer, or text file
10 Text files can be read into most Mac applications
11 Data records can be physically or logically deleted
12 Make a mass change to any selected group of records
13 Make a mass change from another data file
14 Move data from one file to another
15 Print a description of any data file
16 Optional password protection
17 Fiscal year can be defined starting with any month
18 Same expression syntax in Mass Change, Report Builder, etc.
19 Expressions encompass full if/and/or logic plus wild carding
20 When prompted for a file, just click and a selection box will appear
21 Up to 50 fields per file
22 Multiple indexes per file
23 File Dump allows for printing of contents of specific fields
24 Date created and last modified tracked for every record
25 All System Manager functions work with your own data files
26 Customize your Financial Statements
27 Create new Financial Statements
28 Print Statements at any time during the month
29 Have as many different statements as you like
30 Both comparative and standard statements
31 Compare against either last year or a budget
32 Have as many different budgets as you wish
33 Print statements for a specific department
34 Or print statements for a range of departments
35 Standard, recurring and accrual-type journals
36 Post journals to previous closed months in same year
37 Post journals to next month even if current month is open
38 Year-end audit adjustments
39 Allocate balance in one account to other accounts automatically
40 Allocate either as a fixed amount or on a percentage basis
41 Complete General Ledger Trial Balance reports
42 Inquire into all transactions for a specific account
43 Inquire into the balances of any account
44 Define multiple profit centers besides multiple departments
45 Inquire into account transaction for entire year
46 No limits on number of accounts, departments, budgets, etc.
47 Accounts can be declared inactive to stop future use
48 Account numbers can be alpha or numeric
49 Delivered with predefined chart of accounts and statements
50 Complete pre-closing month-end reconciliation
51 Customize your own check forms
52 Delivered with predefined check form
53 Unlimited number of check forms allowed
54 Unlimited number of banks and checking accounts allowed
55 Complete bank statement reconciliation
56 Complete processing of stop payments
57 Void a single check or a range of checks
58 Inquire into a specific vendor or range of vendors
59 Complete check generation
60 Also, posting of handwritten checks
61 Miscellaneous cash disbursements
62 Vendor and voucher info available by just pointing and clicking
63 Complete voucher entry
64 Unlimited number of terms codes
65 Complete debit-memo processing
66 Multiple payments allowed
67 Complete discount handling and calculating
68 Both Aging and Past Due Reports
69 Custom aging periods
70 1099 Form Reporting
71 Project Cost Reporting
72 Complete cash requirements reporting
73 Both standard and recurring vouchers allowed
74 Unlimited number of vendors, transactions, etc.
75 Complete month-end processing
76 All modules run under one program
77 Specifically written for the Macintosh
78 All functions operate in separate windows
79 Multiple windows may be on the screen at one time
80 All open windows appear in the windows menu
81 Works with all standard desk accessories
82 All modules and functions are separate icons on disk
83 Full cut, copy and paste capabilities
84 Data from your own files may be transferred into General Ledger
85 Defaults can be set up in a parameter file
86 All screens are clear and easy to understand
87 All functions follow consistent formats
88 All customizable features are delivered predefined for easy startup
89 Customizing instructions in documentation
90 Supports both ImageWriters and LaserWriter
91 All modules sold separately, so you only buy what you need
92 All modules run independently with the System Manager or integrated
93 Runs on Macintosh 512k, Macintosh XL and Macintosh Plus
94 Hard disk required (Unless running on two 800k drives)
95 Version 2.1 now shipping
96 Available Soon: Accounts Receivable and Inventory Control
97 Available in either single-sided or double-sided formats
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99 For a limited time, only $99 per module
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Company/Title _____

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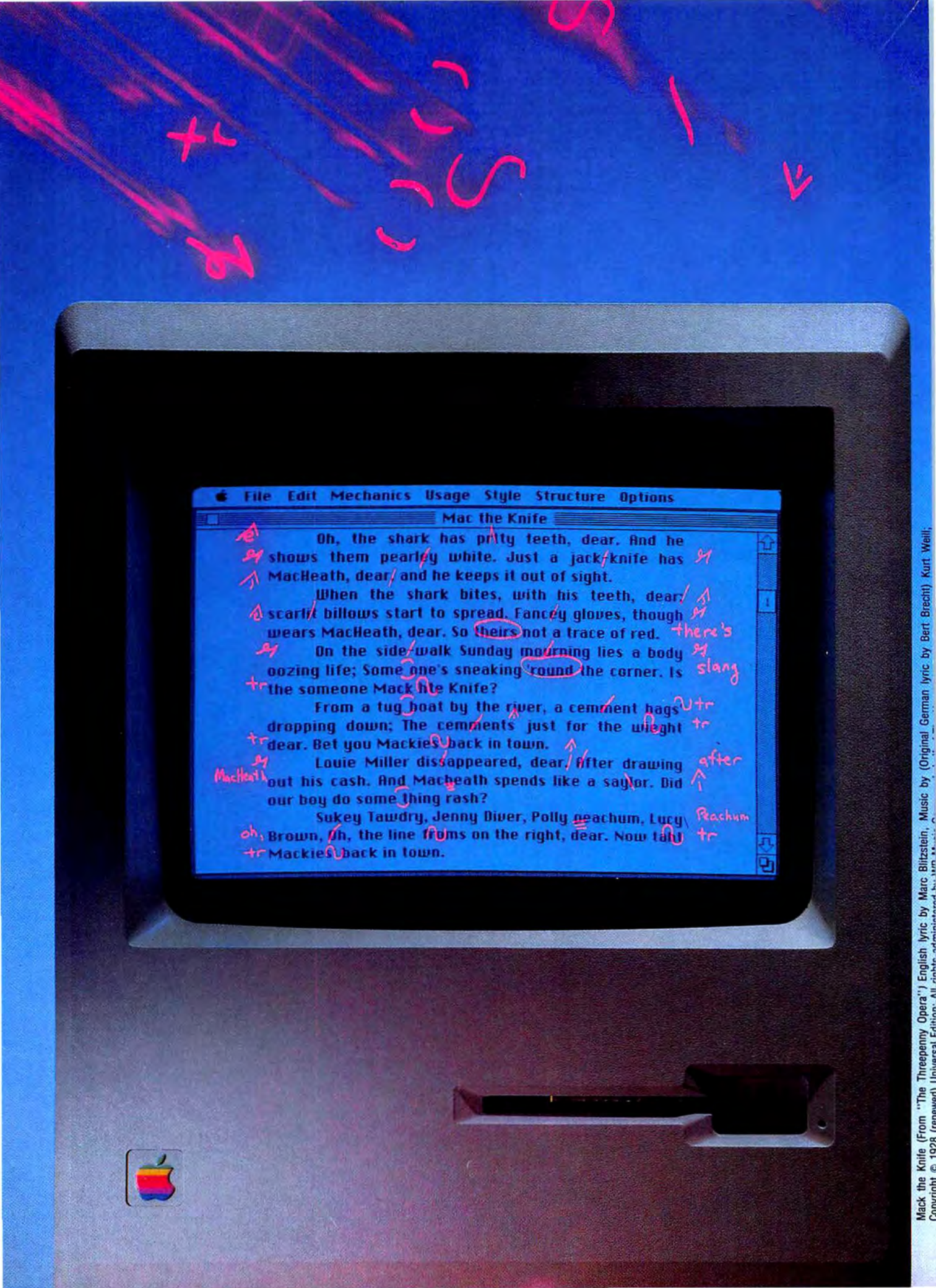
City, State, Zip _____

Signature _____ *Phone* _____



Mack the Knife (From "The Threepenny Opera") English lyric by Marc Blitzstein, Music by (Original German lyric by Bert Brecht) Kurt Weill;

PROOF OR CONSEQUENCES

The best writing aid is your own personal copy editor. MacProof puts that sort of professional editing just a double-click away.

WRITING *SHOULD* BE A PLEASURable activity. After all, all it really is is putting your thoughts and ideas on paper or magnetic media in some kind of order. But for many people writing is an onerous chore. One of the main reasons that so many people don't write, or even like to write, is that there are *so* many rules that must be followed, so many things that don't have anything to do with your facts and ideas, that must be gotten just right. Miss on a few and you may be criticized, not for your bad ideas, research or organization (you're not guilty of any of that anyway), but for your bad writing. Who needs that?

Even after you've made your writing as perfect as possible, some person [known as a copy editor (or a teacher)] expert in this sort of thing will read it and make more corrections than you would believe possible. Happens all the time.

Now there's a way to avoid such scenes. You can have your own personal copy editor. *MacProof* will take on that thankless chore, and if you pay attention to what the program reports, it will measurably improve your writing. You won't have to worry about insignificant (to you) things like where to put a comma or how to spell a word.

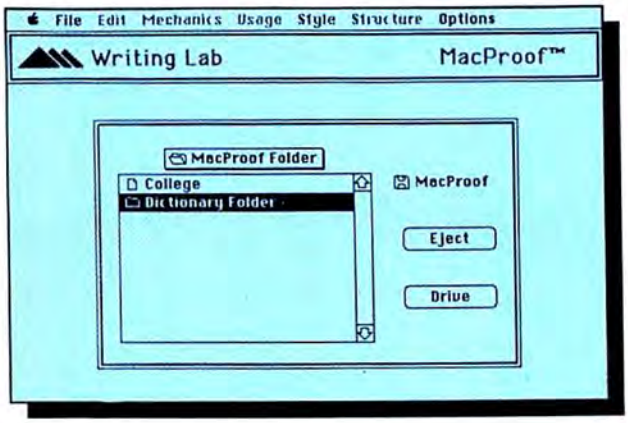
Some of what *MacProof* does can be done by a spelling checker, but most of the reports are unique. For example, spelling checkers don't know whether to put the comma before or after the quotation mark. *MacProof* does. *MacProof* knows the comma rules, checks spelling, and can even help you improve your style.

MacProof began as an educational tool — as the *Writing Lab* of its title bar indicates — for university writing classes. It is perfect for class use since it does not make revisions, but only suggests them. When *MacProof* checks your writing, it produces lists of potential problems. You must use your word processor to actually

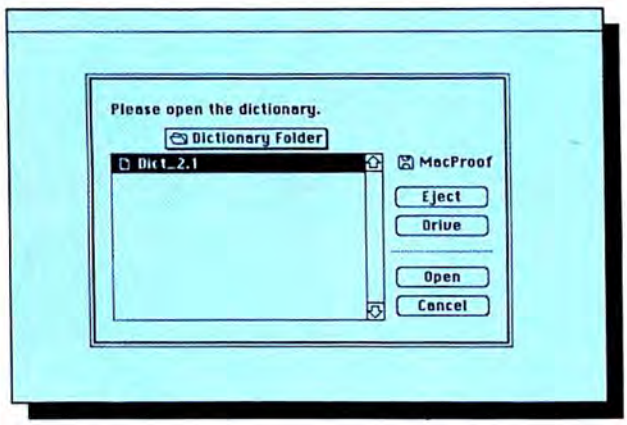
BY FRED TERRY

JOOK LEUNG

PROOF OR CONSEQUENCES



***MacProof*'s opening screen, with evidence of its academic origins.**



The open-the-dictionary dialog box. Once you've selected the dictionary, you can start checking your document.

make corrections. That feature is at once its greatest strength and most glaring drawback.

MacProof and its dictionary come on an 800K diskette. The program requires a 512E or Mac Plus and is HFS compatible. It is not copy protected, so you can make a work copy or copy it to your hard disk. It reads formatted *MacWrite* or *Word* files and text files. If you're using one of the new word processors, you have to convert your work to text format before *MacProof* can help you.

When you launch *MacProof*, you are prompted to open the dictionary. Once the dictionary is loaded, you can select the document you want to check.

Whenever a new document is opened, *MacProof* automatically checks its spelling. When it finishes that chore, you can choose the LIST or HIGHLIGHT command from the Option menu and see what words have been misspelled. Selecting LIST provides a list of the words in alphabetical order. HIGHLIGHT displays the document with the suspect words highlighted. And, as always, the INTERPRETATION command gives you an explanation of what the program is checking for. These three commands (LIST, HIGHLIGHT and INTERPRETATION) are available for all review items. Besides getting lists of the misspelled words in a document, you can type COMMAND-D at any point and look up a word.

The dictionary recognizes approximately 93,000 correct spellings, though it does not contain that many separate entries, and can conjugate regular verbs like "bake" and "look." *MacProof*'s spelling checker works as well as any other checker currently on the market, though it is not as fast as some. This checker does have some problems spotting words that have been incorrectly hyphenated. If the two parts of a compound like "under-ground" have been spelled correctly, it will not mark the word as incorrect, no matter how the hyphenation falls.

You can add words to the dictionary, though they will not be in the same compressed format as the main dictionary and will take up more space on the disk. When you add a word to the dictionary with the Update command, you can specify the part of speech and any usage settings. However, you should avoid choosing too many of the different parts of speech boxes for a word. The program is more accurate when a word is classified as it is most frequently used.

You can also delete words from the dictionary by selecting DICTIONARY from the Files menu and entering the word you want to delete. When the Dictionary dialog box appears, you deselect all of the classification and usage boxes and click the Update button.

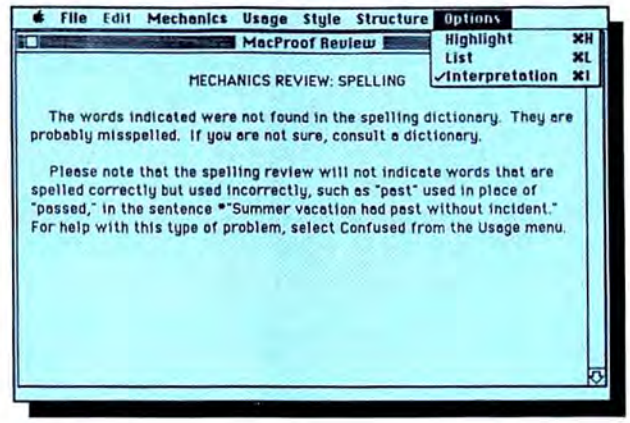
Choosing the Punctuation option under the Mechanics menu will mark possible punctuation errors in a document. This review option is less precise than the spelling checks, because punctuation relies on the meaning of the sentence. *MacProof* looks for punctuation at the end of every sentence, but it does not know whether the sentence should end with a period rather than a question mark.

Like the other review options, Punctuation flags commas, semicolons, colons and quotation marks that might have been used incorrectly. The manual provides the major usage rules for these points of punctuation and makes it very easy to determine if that comma or semicolon is in the right place. One drawback of this section is that not everyone accepts the same punctuation rules as fact. For example, *MacUser* (and many others) use nonserial commas. That is, the comma before the connective in a series of three or more adjectives is omitted. Many others, including *MacProof*, only accept and use serial commas, where that comma does appear before the connective. Unfortunately there's no provision for modifying the rules (here or anywhere in the program) to *your* standards. (And wars have been fought over the placement of commas.)

When *MacProof* checks the spelling in your document, it also identi-

fies words that are commonly misused. If you select SEXIST or RACIST from the Usage menu, it will highlight words that may be used in a sexist or racist way. For example, it will mark your use of "gal" or "woman lawyer." The CONFUSED check highlights words that often are confused. This command functions like a homonym check since it flags sound alike words like "to," "too" and "two"; "there," "their" and "they're"; or "your" and "you're." The Vague option identifies words that are not specific, like "not bad" or "ok." And the Overworked option identifies phrases that have been overused, "be that as it may" for example. Discouraged marks, slang words and jargon.

Under the Style menu there are "To Be" verb and Nominalization options. Use these options to achieve tighter, more exact prose. If your sentences contain a large percentage of "to be" verbs, your prose will be flat. The program will produce a list of occurrences of "to be" in all its many forms in your document, so you can substitute action verbs.



The Options menu lets you choose the way *MacProof* presents its information. LIST, HIGHLIGHT and INTERPRETATION are available for all review items.

The Dictionary dialog box allows you to add words to the dictionary and specify parts of speech and usage. It's best to specify just the way the word is most often used.

Nominalizations, which are a cornerstone of bureaucratic prose, invariably lead to awkward sentence constructions. Once the program identifies the nominalizations, you can reduce them to their original verb form to make your writing stronger.

You can print out any of the lists or highlighted versions of your document. You can also select ABRIDGEMENT or EXPANSION from the Structure menu and print the whole document. The ABRIDGEMENT command directs attention to the structure of the paragraph. When you select ABRIDGEMENT, *MacProof* prints only the first and last sentence of each paragraph in the document. Since the last sentence in a paragraph should mention the main idea of the first sentence or refer to it in some fashion, this option will alert you if your paragraph has strayed from the topic.

When you select EXPANSION, *MacProof* prints and numbers each sentence in your document separately. With your sentences printed in this format, you can see if they are too long or short and if you have begun a number of sentences with the same word or phrase. This format also helps you spot sentence fragments, sentences joined by a comma only (comma splice) and run-on sentences.

MANUAL PROOF

MacProof's manual is partly a program operation manual and partly a handbook of English usage. The first half of the manual takes you through a normal *MacProof* session, step by step. It has the typical reference section that explains each option of each menu on the menu bar. The first part of the manual also incorporates a sample essay which demonstrates how to use *MacProof* to get from first to final draft.

The reference section doesn't have the screen dumps of extended menus that are typical of other Macintosh manuals. The discussions of the menus are very clear, but screen dumps have become *de rigeur* in manuals and are missed. Otherwise the manual is very clear, as you would expect any manual written by a group of language specialists.

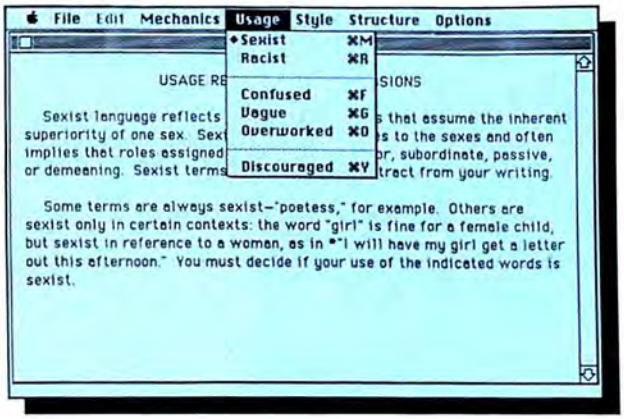
The second half of the manual explains the problems that *MacProof* looks for. Since *MacProof* only suggests possible problems in your writing, you can decide to ignore what *MacProof* has highlighted. The handbook portion of the manual is meant to help you decide in ambiguous or unfamiliar cases. It is particularly good because it condenses the usual tedious lists of rules to those that are the most pertinent for a specific document.

An appendix lists the error codes and their English explanations. The list is by no means definitive, but it provides a starting point whenever there are system errors. The appendix also explains how to transfer files from PC-compatible formats like *WordStar* to a format the Macintosh can read.

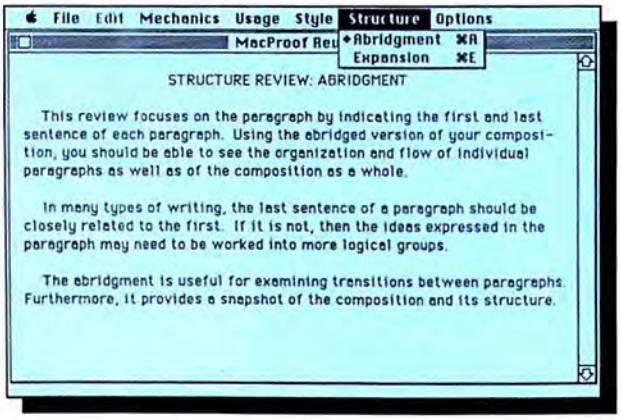
LESS THAN PERFECT?

The program, as useful as it is, is far from perfect. For one thing, it

PROOF OR CONSEQUENCES



The Usage menu lets you check for usage — or over-usage — mistakes in your writing.



***MacProof*'s Structure menu offers two print options to help you check the structure of your document.**

takes a lot of time (and effort) to make all the many checks (and then make the corrections in another program). Provision of a scripting arrangement, where you could request say, a series of six or seven different checks, say go, have them all done and the results stored, would really help.

And a lot of users are going to want a program that will do more than highlight or list the mistakes in their writing; they want a program that will correct those mistakes. *MacProof* cannot do that; then again, no current program for the Macintosh can. On the other hand, this can be a virtue if you and *MacProof* don't exactly see eye to eye on grammar or punctuation.

Another somewhat annoying flaw is the limit on the size of documents that can be checked. It's rather small. If you are writing the great American novel, you will need to break it into 15- to 20-page chunks because *MacProof* cannot open documents larger than that.

If you have a Macintosh Plus, you can run *MacProof* in *Switcher* with *MacWrite* or *Word*, but at the first you must configure *MacProof* for 512K. If your *System* file is large, you may have trouble getting *MacProof* and your word processor to run in *Switcher*. I didn't have any trouble loading a *MacProof*/*Word*/*Switcher* combination off floppies, but did get a memory full message when I tried to load the same configuration from my hard disk. The source of the trouble was my 510K *System*. However, with 2 or 3 megs of RAM, *MacProof* and *Word* should run under *Switcher* flawlessly. *MacProof* will run under *TurboCharger* 2.0 provided it is customized to a 512K allocation.

Even though you can modify *MacProof*'s dictionary, you cannot reconfigure or customize its punctuation settings. *MacProof* will always suggest that a comma should go before an "and" that joins two sentences, no matter how brief the sentences are. And *MacProof* does not churn out statistics about a document, something not hard to do, and a serious omission here. If it did provide word counts and sentence length averages, it would be much closer to the writer's dream.

THE ULTIMATE PROOF

Will *MacProof* improve your writing? That depends on how you use it. The program gives advice based on the conventions of good writing. If you ignore the advice, your writing probably won't improve. Checking everything that *MacProof* highlights takes work, particularly if you don't remember very much about grammar and have to refer to the manual frequently. But the final result of a long editing session is sure to be a better piece of writing — and probably an easier time of it next time.

Even though *MacProof* is intended for the classroom and writers, it is just as helpful for the typical end-user or business. Checking a business proposal for nominalizations and structure and revising it based on *MacProof*'s suggestions will make the proposal clearer. And if you use it regularly, it will make you a better writer.

FRED TERRY IS A MARKETING ASSOCIATE AND WRITER FOR BEHAVIOR TECH, A LAWRENCE, KANSAS-BASED CBT DEVELOPER.

MacProof

Overall Rating	★★★★½
Follows Mac Interface	★★★★★
Printed Documentation	★★★★
On-Screen Help	★★★★★
Performance	★★★★★
Support	★★★★
Consumer Value	★★★★★

Comments: The first grammar, style and spelling checker for the Macintosh. **Best Feature:** It checks word usage as well as spelling. **Worst Feature:** With a long document, the checking can be slow. **List Price:** $195 for the standalone version; $2500 for the networked version (includes file server). Requires 512E+. Published by Automated Language Processing Systems, 190 West 800 North, Provo, UT 84604. (801) 375-0090. Not copy protected.

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

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A rather revolutionary Bering 20 mb Bernoulli compact disk drive system for Macintosh computers. And, the first truly *portable* 5¼" system. One that lets you tote around 10,000 pages of data on a sleek cartridge about the size of a piece of bread.

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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.

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Tired of adventure games that don't always give you the best of all possible worlds? World Builder gives you the chance to improve things.

CAMERON WASSON

ACCORDING TO J.R.R. TOLKIEN (*Lord of the Rings*), in his essay "On Fairy Stories," the writer of a work of fantasy takes part in the actual process of creation. Unlike the writer of a "mainstream" novel, the fantasy writer must establish, must *build*, an entirely new world from the ground up. This new world has to be, in its own way, as believable as our own.

I think that Tolkien would have been intrigued by Silicon Beach Software's new *World Builder*.

This new program lets anyone with enough imagination to power the effort design and program a fantasy adventure game. If ever you have thought that you too could become what Tolkien called a "subcreator," that you might enjoy building your own world, then you'll want to get your hands on this package immediately.

CREATING A WORLD

Like the recipe for chicken soup which begins, "First you catch a chicken," the recipe for using *World Builder* begins by first catching a world. Before you begin adding the other ingredients, adding details and characters, you must have the most basic of all ingredients: the idea for the world itself.

Do you want an environment of castles and magical forests? Will your world be peopled by technological super-beings from the inner galaxy? Should there be a lot of slashing and hacking or will the adventurer have to depend more on wits than on a sword or a laser? What's the plot? And what's the background of the world, what are the things that are only hinted at in the game but which the designer must know cold from before the beginning?

The most successful world builders will be those who best understand the world they are about to make real. A true subcreation cannot be made "on the fly."

Once you have your idea, some notes, a map, perhaps even some prewritten prose or poetry, open the *World Builder* program and begin. The program comes on disk with a blank template waiting to be opened and peopled with your own fantasies. The tutorial manual suggests you start out by designing a simple world step-by-step — a process that will only take an hour or so. A small side trip, but one that you shouldn't miss.

MAP THE TERRITORY

When you open the blank template the screen shows four win-

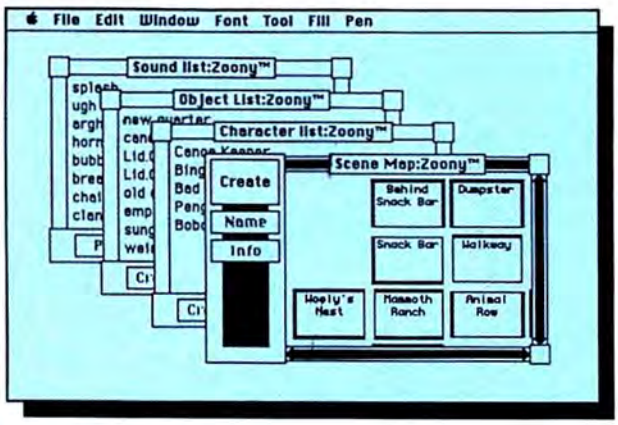
BY NEIL L. SHAPIRO

dows; Sound List, Object List, Character List and Scene Map.

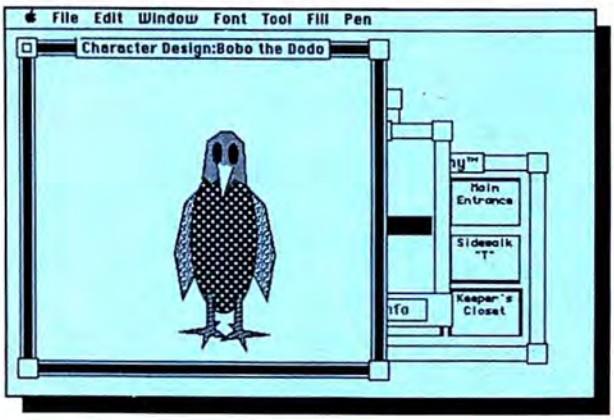
Most people will begin with the Scene Map window. This lets you put up to 2500 locations on a 50 by 50 matrix. Each location rectangle must be named and then dragged into the proper geographic relationship to all other locations.

If a Torture Chamber is to be north of a Dank Dungeon then the Torture Chamber rectangle should be moved above (north of) the Dank Dungeon rectangle. Keep in mind, as you generate this map, that the rectangles represent locations, not rooms. A Forest Clearing rectangle is as easy to do as a Kitchen rectangle. Once you have the map set up it's time to place the characters and plot devices.

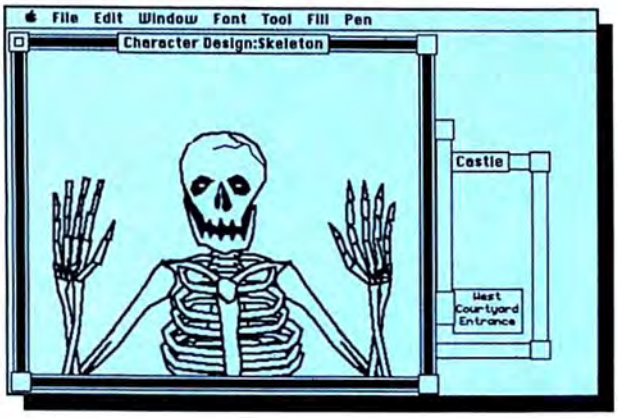
Start by selecting the OPEN SCENE DATA command for each location. This command activates a dialog box that lets you define various aspects of the location. The North, South, East and West exits can be defined as open or blocked. Each exit may have a comment associated with it so that when the exit is chosen during the game, the comment will come up on screen. (Up and Down are special events that will be programmed later.) Sound may also be added to the location here, but more on that when we get to the built-in sound routines.



The Scene Map from *Zoony* shows the geographic relationships of the various locations. Other windows include the Character List, the Object List and the Sound List. (See the sidebar for information on how to obtain the *Radical Castle* and *Zoony* games.)



Bobo the Dodo is one of the denizens of the *Zoony* program. The graphic design window is where such creatures are born.



A skeleton from *Radical Castle* can be a haunting friend — or fiend. The *MacDraw*-style interface allows it to be made up of various building-block shapes.

WINDOWS ON YOUR WORLD

Each location's visual presentation and textual explanation define its look. Designing these two steps goes hand in hand. Double-clicking on a location rectangle in the Scene Map window will bring up a Scene Design window. This window can be resized and moved anywhere onscreen. The size and location you choose will be the same when the game is played. Using a graphics editor somewhat similar to *MacDraw*, you draw the location. Obviously, at this point, some artistic ability is better than none, but you don't have to be Rembrandt.

The various drawing tools available in the pull-down menu will be familiar to most Mac artists. Ovals and rectangles, polygons — all are mouse-generated onscreen. You can move the shapes like building blocks to build up a picture. And you have the option to bring shapes to the front (as in *MacDraw*) and place them atop other shapes without destroying the integrity of the shape beneath.

Luckily for the non-artists amongst us (me, for example), *World Builder* fully supports the import and export of graphics via the usual Macintosh Clipboard routines. Clip art as well as any art work generated by *MacPaint* or *MacDraw* can be pasted into a Design window.

However, this can result in a tremendously large program file. The *MacDraw* method of storing shapes stores each shape as a few points. But a shape taken from a *MacPaint*-like environment is composed of literally thousands of points.

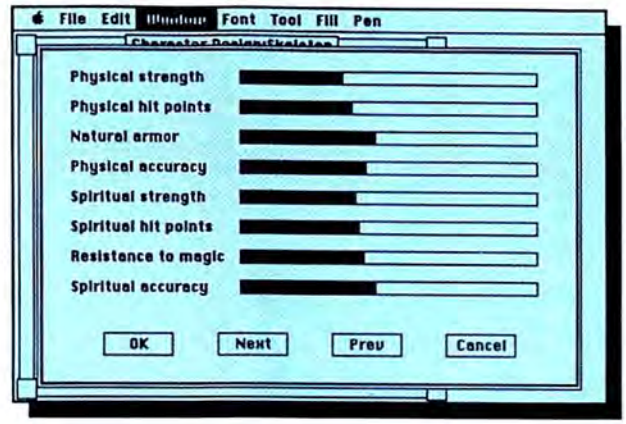
The *MacPaint*-style of graphics is called "bit-map graphics." *World Builder* will allow you to use bit-map graphics. It will even allow you to zoom in on them in an interesting adaptation of FatBits. But don't think that you will be able to have 2500 scenes all containing bit-

mapped graphics; the resulting game would never fit onto a disk.

Used with moderation, however, the ability to utilize bit-mapped graphics in conjunction with simple images generated within the program will allow modest success to even the artistically devoid.

Once you have the scene designed it's time to write the text that accompanies the picture. This provides the scene description and gives you the chance to be witty. The canny subcreator will use this opportunity to give maddening clues and breathtaking descriptions — and it doesn't hurt to throw in a few mind-boggling puns every so often.

As a final step, the text window and the scene window are both sized and positioned relative to each other. Should the text be below the graphic, or off to one side and vertical? It's up to you, you're the one in charge.



The attributes of a *Radical Castle* skeleton are set in this first of six dialog boxes. The bar graphs are decreased or increased under mouse control.

PEOPLE, THINGS AND MONSTERS

Once your map is designed and all of the exits lead to where they should, you've designed some beautiful scenery and prose that will live down the ages, it's time to populate your world and to scatter a few interesting items around.

Characters are defined in the Character List window. Once more a Create button is pressed and this time a character is named. That character is then defined through a series of six dialog boxes which appear when you select the Open Character Data.

Character box one sets the initial scene in which the character will appear. The scene may be a random choice or it can be in "STORAGE@" which is a sort of limbo where the character hangs out until needed.

The subcreator then assigns a gender (he, she or it) and decides if the character's name is a proper noun (is it "Orrful the Orc" or just a generic orc?) and how many objects, if any, the character can hold.

Only one character will be defined as the player character. The player character is the on-screen alter-ego controlled by the player. This is the one who is usually never seen but whose eyes see the action, whose hands and weapons do the fighting.

The second box allows you to determine various attributes. Bar graphs are reduced or enlarged via mouse control and allow for ratios of from 0 to 255 to be set for each character's attributes. Attributes include such things as physical strength and resistance to magic.

Box three contains other attributes including sound attributes. Here the subcreator inserts the name of the sound which the creature will utter when it scores a hit, receives a hit, and when it dies.

The fourth box in this series concerns the weapons the character has available. Each weapon is defined in name, sound it makes, and the verb used to describe its action as well as a bar graph on possible damage given by each.

The fifth box determines a character's response to trouble. For example, it might run away, resort to magic or stoop to bribery.

The final dialog box allows the designer to insert the text which the game will show the player when that character first appears, when it scores or receives a hit, what is said during offers, and when (if?) it dies.

Once the character's soul and psyche have been defined, it's time to return to the Graphics Editor and draw the fellow (creature) involved. The same tools and techniques are used as in the scene design.

Objects that can be used in this new world are defined just as characters are defined, through a series of dialog boxes and a drawing session. A variety of objects can be stipulated including weapons, which may be regular or throwable; apparel such as helmets and armor; portable objects

Welcome to New Worlds!

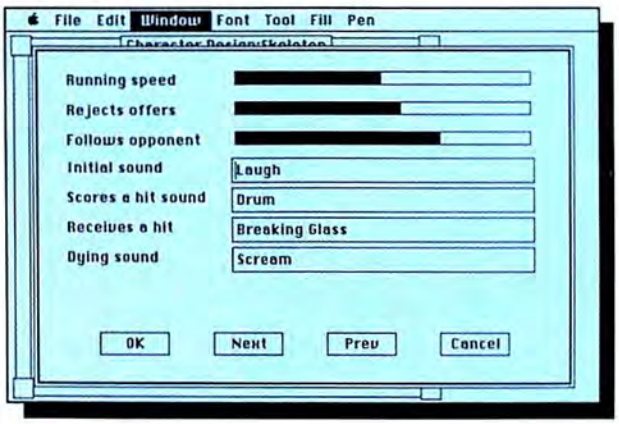
It wasn't long after *World Builder* appeared that the first of the shareware games based on the system debuted. *Zoony* and *Radical Castle* were designed in *World Builder* and demonstrate that program's ability to allow authors to design commercial-quality adventure games.

Because you do not need *World Builder* to play a game designed with it, many authors see *World Builder* as a perfect tool with which to program for a wide audience. Some of the results have been little short of fabulous.

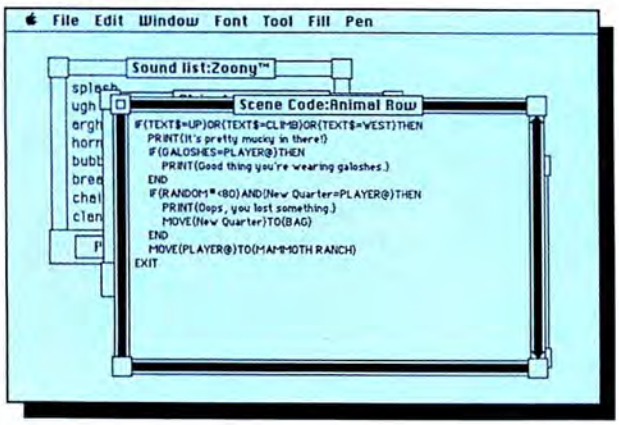
If you'd like to play *Zoony* and try to recover a lost ring for a strange zookeeper, or if you'd like to enter the magical world of *Radical Castle*, it's easy to do. Both programs are published as shareware. They are available on national telecommunications networks, as well as on user group disks from organizations such as Berkeley Mac Users Group (BMUG) and Washington Apple Pi (WAP). Please be absolutely certain that if you enjoy these games (and you will) that you mail the authors their requested shareware fees.

Or, if you prefer, you can order directly from the authors. Each game is shareware licensed at $5. So if you order please be sure that you include the $5 fee as well as a disk (important!) and a self-addressed, stamped envelope. *Zoony* is available from Brad Pettit, E. 4212 10th St., Spokane, WA 99202. *Radical Castle* is available from Christopher Kent Wigginton, 462 Dewayne Dr., El Cajon, CA 02020.

CUSTOM BUILT



More attributes of a *Radical Castle* skeleton include some pretty eerie sound effects. The sound effects may also be called by special BASIC-like statements in the designer-written program.



Scene code is written in a BASIC-like environment. This example from the *Zoony* program shows that even a complex series of tasks can be translated into relatively simple and easy to understand program statements.

other than weapons; and immobile objects that can't be picked up.

BASICALLY WHAT HAPPENS

Now comes the part that you may have been dreading: The writing of the additional program code that will define how the game works. Much of the code is already taken care of for you, and the rest is pretty easy to do thanks to a programming language that is like a simple BASIC in both syntax and technique.

The easiest way to describe this language is by example. Let's say that if a character has a magic wand, a bridge will appear in a certain scene. (Where have I heard that before?) The code to do this would be placed in the Code window of the selected scene and would read:

```
IF{wand=PLAYER@}THEN
MOVE{BRIDGE}TO{SCENE@}
PRINT{A bridge has magically appeared!}
```

If you have ever programmed in BASIC this subset of that language will take you 10 minutes to learn. If you have never programmed at all, you'll still find that most of the concepts are easy to understand and you should be creating scene code after only a few hours of try-and-see effort.

The programming language will enable you to set up mouse events — so, for example, if someone mouse-clicks on a closed door "object" it can instantly be replaced with an open door "object."

Other fillips to the language include nested IF-THEN clauses, variables and counters. But don't let the technical-sounding aspects of this confuse the issue: *World Builder* really can be learned by anyone in the course of one day, to the extent of doing a simple but full adventure.

SOUNDS LIKE FUN

As mentioned earlier, sound effects may be included in your games. These sound effects may be set up using the previously discussed dialog boxes, or they can be included in the code using the SOUND statement.

A whole library of sound effects comes on the disk. And sounds from the game *Enchanted Scepters* can be used if the designer has that game. Sounds are moved to the Clipboard and then pasted into the Sound List. The manual details some advanced techniques using hardware devices for capturing and using new sounds.

ADVENTURE AWAITS

The program and documentation for *World Builder* are superb. If you have the imagination and the drive to create your own adventure game, then this is the package for you. The only caveat is that Silicon Beach has packaged a warning with the game that they will not be offering telephone or other support on writing actual scene code. I feel that some such support should be offered as it is by most manufacturers of programming languages — and *World Builder* is really such a language. For this reason, this otherwise five-mouse program loses a half mouse.

On the other hand, the *World Builder* program will allow you to not only go where no one has gone before — but to take a couple of friends along with you!

NEIL SHAPIRO IS MACUSER'S EDITOR-AT-LARGE, AND FOUNDER AND CHIEF SYSOP OF COMPUSERVE'S HUGE AND POPULAR MICRONETWORKED APPLE USERS' GROUP (MAUG).

World Builder

Overall Rating	★★★★½
Follows Mac Interface	★★★★★
Printed Documentation	★★★★★
On-Screen Help	★★★★★
Performance	★★★★★
Support	★★★★
Consumer Value	★★★★★

Comments: An adventure game "construction set" that can produce commercial-quality games with a modicum of effort. **Best Feature:** Everything works together logically from scene design to character creation. **Worst Feature:** No support of the programming language is offered, which would be useful even though the language is easily learned. **List Price:** $79.95. Requires 512K. Published by Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. (619) 695-6956. Not copy protected.

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TO TOPPLE THE THRONE

Dark Castle is action, adventure and total excitement. We dare you to stop playing (and tell you how to play better).

THE BATS ARE BAD ENOUGH, BUT when some of the nasties start giving you a Bronx cheer, it gives immediate meaning to the phrase, "adding insult to injury." A more high-minded adventurer might refuse to continue, but *Dark Castle* isn't just rude, it's also challenging and addictive.

Silicon Beach's superior sound, graphics and animation combine to form an arcade game adventure of epic proportions. *Dark Castle* is about as near to playing one of those big, coin-operated arcade games as you can get. And like the best of them, playing *Dark Castle* usually leads to increased agility, addiction, better coordination and finely tuned reflexes.

On-screen movement is controlled through the use of seven keyboard commands and the mouse or a trackball is used for aiming and firing weapons. I can attest to the fact that a sedentary middle-aged person (me) with no prior experience in arcade gaming of any kind, home or away, can complete this game. That is, as long as you spend the necessary time and practice a lot.

In this article you'll learn many of the tricks and strategies I learned in the process. The tricks help, but they won't make the learning process that much shorter. You're going to have to take this up as a full-time hobby — at least for a while.

IT GETS HARDER AS IT GETS BETTER

Dark Castle has four levels of play: beginner, intermediate, advanced and the secret fourth level. The fourth level can only be reached by completing the advanced level; it has never been played and never been tested. While we won't be discussing any of the levels beyond beginner here, I have attempted the intermediate level and have found that no special tips are necessary there. If you can master the beginner level, the chances are that you can operate on the higher levels. However, if you are going to attempt higher levels, begin them immediately after completing the lower level. That way you can take some of the "possessions" you have accumulated with you. All you need is time. You can't save this game during play; that's its most serious drawback.

MERE DETAILS

Nuances of keyboard pressure and key combinations control direction and velocity in your attempts to make your way through the game's 14 rooms in order to reach the Black Knight and topple his throne. Each room has more complexity and challenge than some entire games.

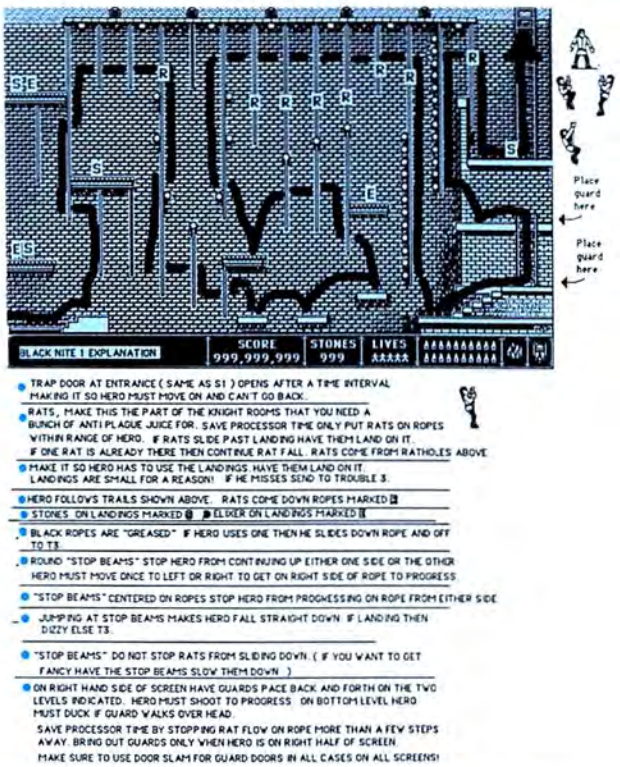
Each time you start a game, you are seeded with five lives, 60 rocks and no elixir. During play you can pick up to 89 rocks and what seems like an unlimited number of lives and elixirs. Each elixir will prevent death from one bite of a bat or rat. Always keep this basic rule in mind: You can't have too many elixirs.

Your aims can be stated fairly easily: You must have gotten the strength of the fireball at the end of Fireball 4, the defense of the shield at the end of Shield 4, and you must get out of Trouble, (rather often, as

BY LINDA JOAN KAPLAN

JENNY ADAMS

TO TOPPLE THE THRONE



Original art for Black Knight 1, providing route and instructions.

a matter of fact), before you'll be strong enough to tackle the Black Knight.

Whenever you're in the Main Hall (you'll wind up there several times), you'll have a few options as to where to proceed. The Main Hall always offers the option (through keyboard selection) of the next room you wish to enter. Keys 1 and 2 alternate randomly between Trouble 1 and Fireball 1. During any single game, if Trouble is in the "key 1" position, Fireball 1 is always in the "key 2" position. And vice versa. Key 4 leads only to Shield 1 and key 3 to Black Knight 1. There is no way to begin in the second, third or fourth room of any scenario.

Although most players begin by attempting to complete Trouble and Fireball, through extensive trial and error (mostly error), I've discovered a better sequence. There's a devious way to determine the location of Fireball 1 during each game. After doing this, you begin play in Shield 1. At the start, always choose key 1 or key 2. If you have entered Fireball 1, you can immediately exit by walking left, returning to the Main Hall without having effected your score. If you entered Trouble 1, you can COMMAND-Q, stop and restart. At this point (the very beginning of a game) you lose nothing if you opt to restart. Repeat this process until you find Fireball 1. Then, remembering the location of Fireball 1, obtain the shield, by completing the four Shields. This will put you in the best possible shape to begin the Fireball sequence. By the end of Fireball 4 you will have obtained the fireball, and can attempt the Black Knight. Don't worry about missing Trouble. You'll end up there when you have accidents in other rooms.

Trouble is the place where you can reconstitute lives, elixirs and rocks. You'll usually emerge stronger from Trouble, just like you're supposed to do in real life. Once armed with lots of elixirs and rocks you can attack the Black Knight with greater success.

You might get a shock (or lose a life) discovering that the fireball will knock enemies out of commission for a longer period of time than ordinary rocks, but it doesn't kill

Get Your Castle Guide Here!

TROUBLE 1 (GOING)

First kill both bats. Kill any rats and guards whose territory you are about to enter. Jump off the low ledge on the bottom level. If you don't, you'll fall on your face, and probably be killed by the guard or the rats. You can jump or up-jump or side-jump to the rope and then proceed as if walking, both to avoid the rats and to reach the exit.

TROUBLE 2 (GOING)

First kill both bats. Carefully observe the rhythm of "windshield wiper" poles. For the second pole-jump, keep an eye on either your own abdomen to thigh movement or the proximity of the second pole. At the bottom level, you must run left and run-jump up the stair-edge, down the stairs and out.

TROUBLE 3 (GOING)

Run left until you are positioned approximately under the first bat to shoot it. Stand near the body of that bat to shoot the bat below you. Position yourself with your feet hanging over the ledge. Then shoot the guard and the last bat, which should be either hanging on the ceiling or beginning to fly toward you.

Alternatively, you can swiftly race past the guard and down to the next level, shooting each bat on the fly. You must have mastered the running jump in order to span the second gap.

Using the action key, take the mace or morningstar. When holding this weapon, you can't throw rocks. Once you drop the mace, you can't pick it up again (until your next life).

Approach the whip henchman carefully, they strike twice. Stand at a distance from him and zap him before he gets you, or wait until his second strike before you use your mace. Quickly jump over him after having struck.

When you approach first key, watch the faces of the prisoners. If you are about to take the wrong key (the one that will release a 10-ton weight on your head) the prisoners will motion you away.

Once you have a key you must jump back over the whip henchman. Even if you trip now, you can usually escape by getting up and running left as quickly as possible.

TROUBLE 3 (RETURNING)

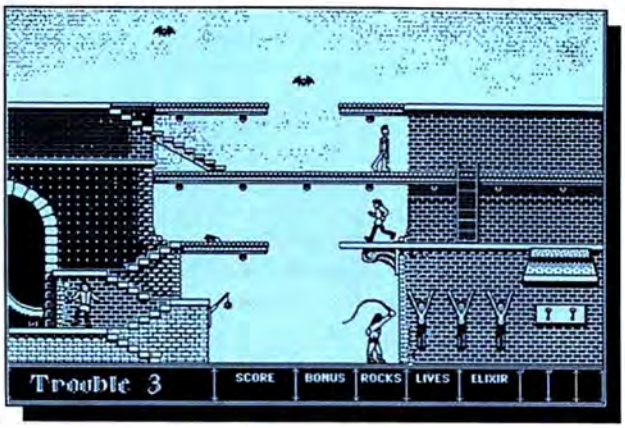
Kill the bats first and proceed as in Trouble 3 (going).

TROUBLE 2 (RETURNING)

When you need supplies, it is possible to enter the room, go up the stairs, make three running jumps, grab the elixir, make three running jumps back, descend the stairs and then return to Trouble 3. You can repeat this sequence, obtaining unlimited supplies of elixirs without killing bats or guards, until you are ready to leave Trouble. When you are finished collecting elixirs in Trouble 2, when you enter from Trouble 3, you can either shoot the bats first, or can run immediately to the top level, escaping both guards. Then you must shoot the bats before jumping to the swinging poles.

TROUBLE 1 (RETURNING)

Initially turn quickly, shooting the first rat you see. Jump to the rope and



Trouble 3 with hero both going and coming.

Replica of Fireball 2. All of the sets are exciting. This is one of the most beautiful.

everything. The shield, which can't be used in conjunction with other actions, won't work against everything, and there's a definite time limit on its protection.

Despite the difficulty of *Dark Castle*, you'll actually make progress if you stick with it. The beauty and sophistication of the game make the effort worthwhile. But the novice should start slowly. Each room is confusing and elaborate, and at first hard to take in. As the cacophony of sound, activity and danger increase the longer you remain within a room. So a good tip to remember is not to linger. Another is to remember the Tab key. The first time you enter a new room use the Tab key to freeze the action while you get your bearings. Try to calm your racing heart. Guess where the exit lies and the possible route to it. Try to determine where the dangers might come from. Some are hidden and will only be found through trial and error. And more will be generated during the play. The drawback in using the Tab key is that you lose your momentum.

With practice, there is an inevitable increase in skill, score, speed and courage. Eventually it will dawn on you that a low score is superior to a high score, as long as you topple the Black Knight.

Playing it safe at first means to knock out all guards immediately prior to approaching them. That leaves some additional time for fumbling. Later, you can watch their rhythm and run past many while their backs are turned. A similar strategy is useful in regard to the vultures. Learn the pattern of vulture attacks. Utilizing proper timing you can often complete Fireball 1 and Shield 2 without killing vultures.

Always kill the bats first in Trouble 1, but you can complete Shield 3 without killing any. In some cases it is possible to kill the bats *en passant*, without delaying your progress. And on the return trip through Trouble

travel down taking two steps to the left. On landing, travel quickly left, positioning yourself just before the ledge to shoot the bats and the guard as he emerges. Alternatively, if you descended quickly enough, you can run directly up the stairs, avoiding the guard. Shoot the bats on the safe first landing up. To open the door, stand just beyond it and hit the action key.

FIREBALL 1

First shoot all the vultures and run to the edge of the ledge. Then shoot all the mutants. Jump off ledge (otherwise you'll fall on your face and probably die of vulture or mutant attack while you are regaining your equilibrium). When the way looks clear of the mutants climbing down ropes and the attacking vultures, jump up onto the rope and climb above the first ledge so you can drop onto it (by walking left). Take the rocks and elixir on the ledge and face left, near the rope, killing any attacking vultures. When the way is again clear, jump up the rope and climb to the top (by walking up). At the top of the rope, "walk" right. That will drop you onto the ledge leading to the opening of the hollow tree.

FIREBALL 2

Here, you can either shoot the bats first or in passing. After picking up the rocks, position yourself near the edge for the first jump. Stand-jump to the first rock-cloud that approaches you and then down-jump, standing near the edge, to all the others except for the ledge, which is a standing or side-jump. Observe only the rhythm between your own rock and the next at each jump.

FIREBALL 3 (WITH SHIELD)

First shoot the bat. Walk a few steps to the right and jump on the first log, positioning yourself in the middle-rear. Use the action key (activating the shield) to protect from falling boulders. Ignore the island with the rocks. Just before you jump right, shoot the mutant. Others will appear if you delay. Take a running jump to the ledge and keep running.

FIREBALL 3 (WITHOUT SHIELD)

You must run-jump from the second log to the first log to avoid boulders. Alternatively, after a boulder lands in the water just ahead of you, you can walk forward one step off the log. The log will catch up.

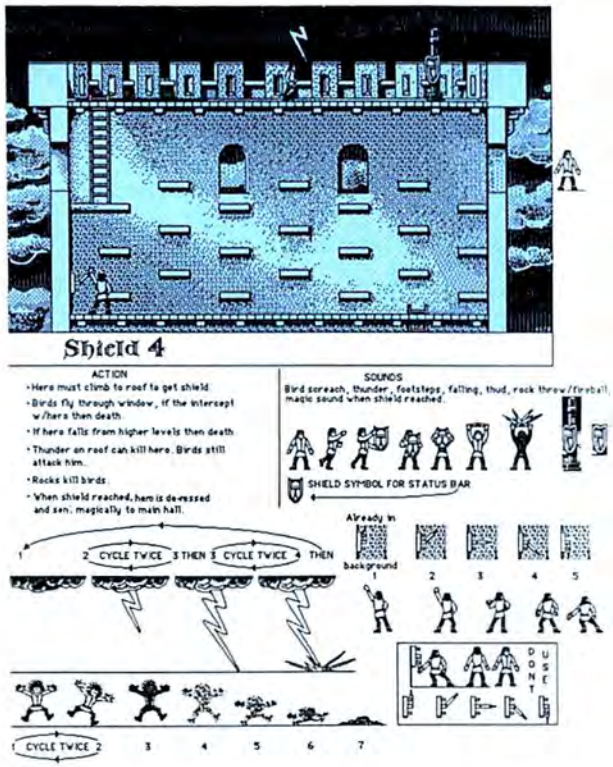
FIREBALL 4

Bring rocks. Immediately descend the stairs and approach the broom. Shoot the broom when it is about an inch or less away. Without waiting to determine the results of your action, jump or run-jump past the multiplying brooms. Don't worry. They will be doing it. Then run to the right and just before the trapdoor, up-jump to the rope. The eye must be shot immediately, frequently, and usually prior to taking any new action. Shooting the eye more than once will keep it quiet longer.

Pulling the three chains in the correct sequence, which changes each time, will open the magic barrier between you and the wizard. The correct chain of sequences are always in "threes." You must complete a maximum of six sequences before the barrier will open. Tempting as it is, do not shoot the wizard. If you stand passively he will bestow the gift of the fireball.

TO TOPPLE THE THRONE

Original art for Shield 4 with the addition of two heroes.



1, you have to zap the bats midway or last. If you kill them first, you're going to die of rat bites as you descend the ropes.

Some people have found it helpful to change the keyboard configuration to favor their stronger fingers. For example, you might change the "action key" to an "F" and the "duck key" to a "C" or "V". Sometimes I use my right hand on the space bar for running jumps. You can't run and shoot at the same time anyway.

There are many successful ways to complete rooms and win the game. Here are some of the strategies which worked for me.

- Duck immediately after shooting all guards. They often get off an arrow before they die.
- The shield, because it is activated by the action key, is immobilized when you're standing near a switch or at the site of booty. Quickly move away from such objects if you think you will need your shield.
- Supplies are set up anew each time you enter a room. For example, on the return from Trouble, after completing Trouble 3 and entering Trouble 2, you can pick up all supplies in Trouble 2, exit back to Trouble 3, secure the supplies near the top of Trouble 3 and return to Trouble 2, which has been replenished with rocks and elixir. You can also simply exit Trouble 2 to Trouble 3, re-entering Trouble 2 to pick up the replenished elixir and rocks as many times as you wish.
- If you are out of elixir in a room with rats or bats and a trapdoor, rather than repeatedly dying, jump down the chute to get to Trouble 3.
- Some ledges are longer than they seem. Extra foot room is available on the rock-clouds of Fireball 3 and on the edifices of the Troubles. However, it is a mistake to assume this cushion exists elsewhere. It isn't on the ledges of the Black Knights or the skeletons of Black Knight 2. In the latter case, the available space is actually smaller than it appears.
- The area at the far right of the screen is generally safe from vultures,

(continued on page 172)

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SHIELD 1

Speed is the key word here. Don't dawdle on entry or you'll fall through the trapdoor. The density of the boulders increases the longer you dally. You should be able to pick up as many as three elixirs here. Don't kill any mutants if they are loitering out of range.

SHIELD 2

You're safe from vultures on the far right. Jump over the trap only if it has opened. The traditional route is to go to the uppermost level, drench the dragon, knocking him out just long enough to race down and past him.

You might try this, though: You can safely pass the dragon without ever ascending to the top level while he is either regaining his breath or withdrawing into his lair to get his fire lit.

SHIELD 3

It's often possible to complete this room without using any elixirs, but it's best to enter holding at least three. If you side-jump at the first, you can avoid four poles. There is no reason to kill the bats here. Be quick.

SHIELD 4

Kill the bats first. Pulling the switch will show you which ledges are safe for landing. You must remember the layout of the safe ledges, though you can pull the switch again. It's safe to follow the clouds and jump past them at the right. To avoid incineration and to obtain the power of the shield, you must first take the shield with the action key. Hold the shield over your head (again the action key) just prior to being struck with lightning.

BLACK KNIGHT 1

Until you are expert, don't enter without a minimum of five elixirs. The route is difficult to discern and dangerous. Go up the left and down the left-middle, standing on one of the three narrow white ledges prior to the approach of the first gargoyle. The gargoyle always cries three times. He can be killed only with fireballs. You must start shooting before you see him. He will appear from the opposite side of the screen from you. The more time you spend in this room, the more often you'll have to face him. He will bring you, without harming you, to Trouble 3. The white knobs on the poles are obstacles which can be overcome by simply shifting your body to the opposite side of the pole. Do that as if walking one step in the direction you wish to travel. The important thing is to get out by climbing up the ladder on the right.

BLACK KNIGHT 2

Up-jump from the upper level skeleton to the middle ledge in order to pull the chain which will kill the rock henchman. Side-jump from that ledge to the next skeleton. Kill the rats prior to ascending to the highest level. Use the shield (action key) to protect against the boulders. Beware of the gargoyle. It's possible to exit without confronting the gargoyle.

BLACK KNIGHT 3

The two switches on the bottom level activate a ledge on which you will eventually have to stand. You must pull all the chains in order to topple the throne. Beware the beer steins and the gargoyle.

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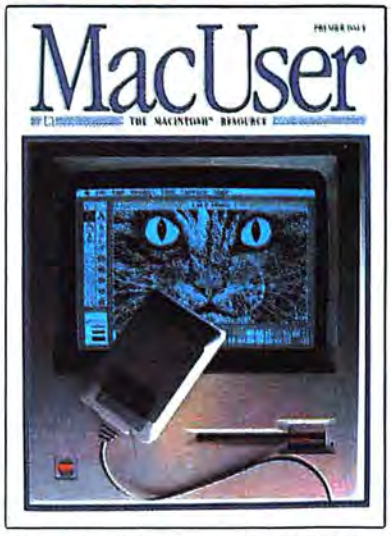

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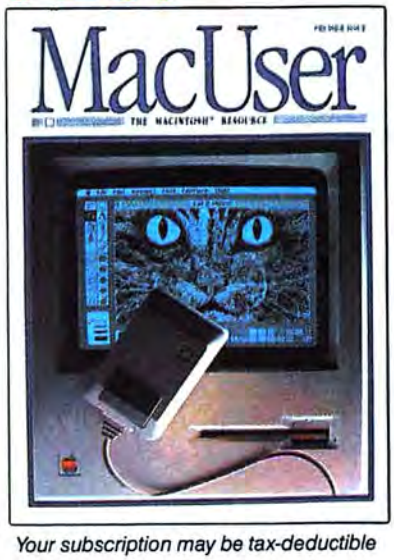

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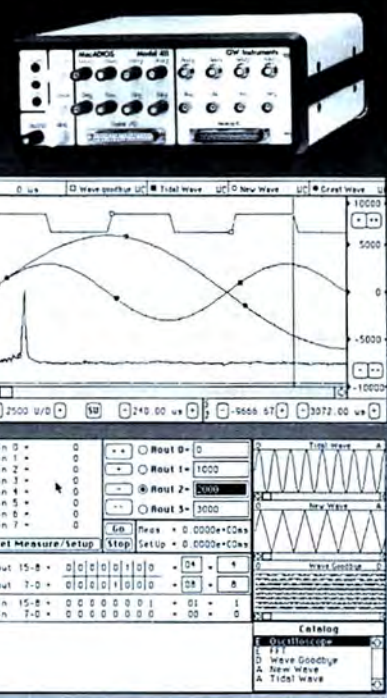

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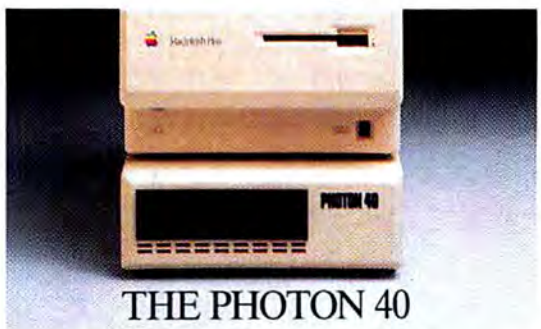

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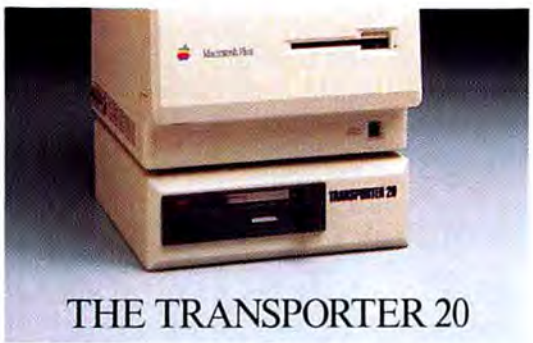

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ONE DA AT A TIME

If you want more than the legal 15 DAs, here's how to modify Font/DA Mover to get your way.

BY BILLY STEINBERG

SO, 15 DESK ACCESSORIES AREN'T enough? You want more? No sweat!

You'll have to make a one-time, one-byte code patch to Apple's *Font/DA Mover,* and you'll have to use *ResEdit* to make a one-time addition to your *System* file. Once you've done that though, you can continue to use *Font/DA Mover* as you always have, only now you can install up to 36 DAs instead of 15. (Oh yeah, you'll have to read this article too.)

Before we start, a couple of warnings are in order. First, the changes and patches only work on machines with the new, 128K ROMs. They work differently from the old ROMs. Second, be sure you're working on backup copies. The tools you'll be using (*ResEdit* and *Fedit Plus*) have the power to totally trash your files if you make a mistake.

WHYS AND WHERES

Whenever you start up your Mac, something called a Device Table is created. It has room for 48 entries or "slots," each of which can hold a DA or a driver. (A driver is a special file that tells the Mac how to communicate with some external device, like a printer, a modem or AppleTalk.)

Some of the 48 slots have been reserved by Apple, some are assigned to I/O devices such as your disk drive(s), modem port and printer port, and some (15) are available for DAs. The "official" list of assignments (from *Inside Macintosh,* volume IV, page 215) is shown in Table 1. The only way to fit in more DAs is to use slots you're not supposed to use for DAs. The question is: Which slots do you use?

Slots 0 to 11 are pretty well taken up already, and since *Font/DA Mover* automatically starts renumbering with a resource ID of 12, we'll leave slots 0 to 11 alone.

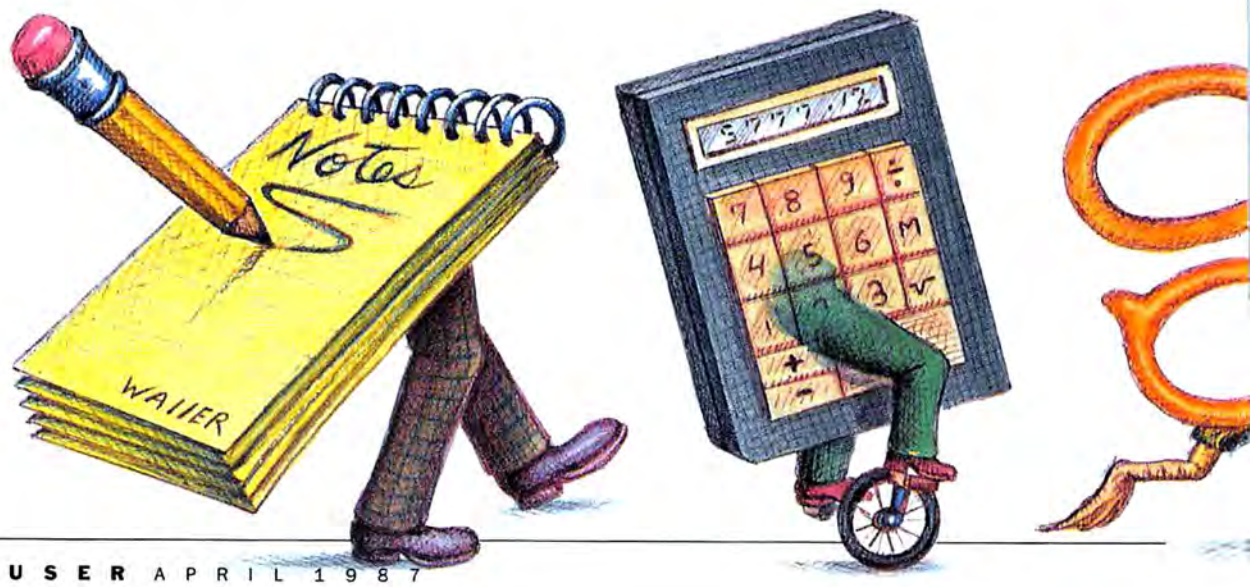
Slots 12 to 26 are the 15 standard slots for DAs. A stock *Font/DA Mover* installs DAs into these slots.

Slots 27 to 31 are for desk accessories built into applications. Most DAs are installed in the *System* file, and are available in all applications (that support DAs), because the *System* file is always open (well, almost always).

But DAs can be installed in applications too. Any DA that you install into an application will be available only while you're in that application. Having a DA in the *System* file with the same ID# as a DA in a running application can cause problems though, so Apple assigned slots 27 to 31 for DAs in applications.

If a DA in the *System* file and a DA in the current application have the same number, both will show up in the DA menu, and you can choose either DA, but there are problems if both DAs have owned resources of the same type and number. If the DA in the *System* file with an ID of, say, 31, has a Dialog with a (local) ID of 1, and your application has a DA that's also numbered 31 and also has a Dialog with a (local) ID of 1, you'll get a confused *System* DA. The DA in the application will work fine,

CHARLES WALLER

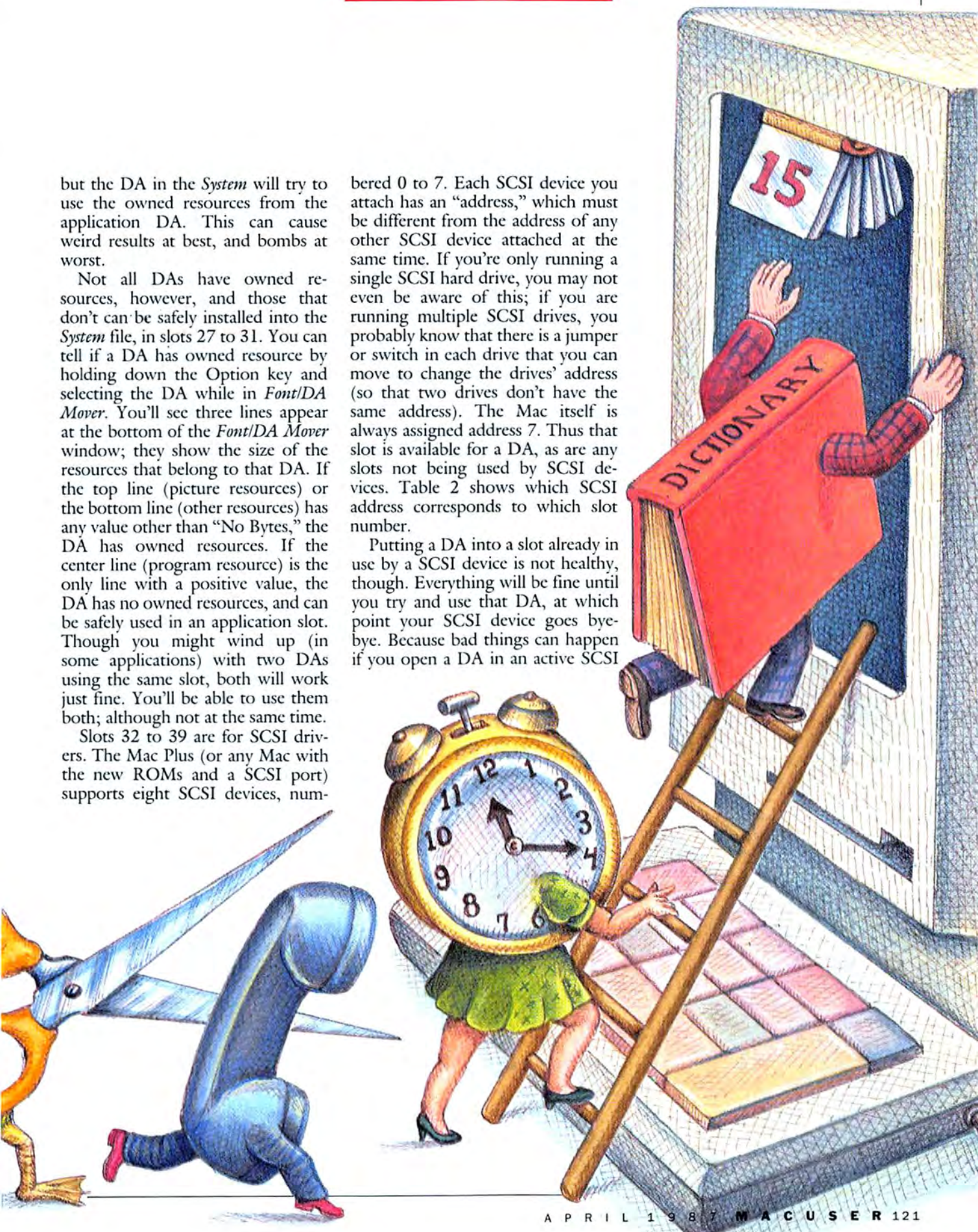


but the DA in the *System* will try to use the owned resources from the application DA. This can cause weird results at best, and bombs at worst.

Not all DAs have owned resources, however, and those that don't can be safely installed into the *System* file, in slots 27 to 31. You can tell if a DA has owned resource by holding down the Option key and selecting the DA while in *Font/DA Mover*. You'll see three lines appear at the bottom of the *Font/DA Mover* window; they show the size of the resources that belong to that DA. If the top line (picture resources) or the bottom line (other resources) has any value other than "No Bytes," the DA has owned resources. If the center line (program resource) is the only line with a positive value, the DA has no owned resources, and can be safely used in an application slot. Though you might wind up (in some applications) with two DAs using the same slot, both will work just fine. You'll be able to use them both; although not at the same time.

Slots 32 to 39 are for SCSI drivers. The Mac Plus (or any Mac with the new ROMs and a SCSI port) supports eight SCSI devices, numbered 0 to 7. Each SCSI device you attach has an "address," which must be different from the address of any other SCSI device attached at the same time. If you're only running a single SCSI hard drive, you may not even be aware of this; if you are running multiple SCSI drives, you probably know that there is a jumper or switch in each drive that you can move to change the drives' address (so that two drives don't have the same address). The Mac itself is always assigned address 7. Thus that slot is available for a DA, as are any slots not being used by SCSI devices. Table 2 shows which SCSI address corresponds to which slot number.

Putting a DA into a slot already in use by a SCSI device is not healthy, though. Everything will be fine until you try and use that DA, at which point your SCSI device goes bye-bye. Because bad things can happen if you open a DA in an active SCSI



device slot, you should generally avoid using any of these slots, except slot 39. If you can't use the application slots, or you want to install more than 28 DAs, you can use some or all of these slots; but pay attention to what you're doing.

Slots 40 to 47 are reserved by Apple, but seem to work just fine as DA slots. There may be hidden reasons for not using them, but I haven't heard of any. And I've had no problems using any of them.

Because of this bug it is of questionable value to have more than 31 DAs installed.

Why 28 and not 30? That's because the Apple menu typically has an "About..." as the first item, and a nonselectable line as its second item.

So although there are 36 slots that can be filled with DAs, the Menu Manager bug will usually limit the total number to 31. Since we already know where we're going to put the first 24, that only leave seven more

Table 1

Unit #	Device
0	Reserved
1	Hard disk driver: Macintosh XL internal or Hard Disk 20 external
2	.Print driver
3	.Sound driver
4	.Sony driver
5	Modem port asynchronous driver input (.AIn)
6	Modem port asynchronous driver output (.AOut)
7	Printer port asynchronous driver input (.BIn)
8	Printer port asynchronous driver output (.BOut)
9	AppleTalk .MPP driver
10	AppleTalk .ATP driver
11	Reserved
12-26	Desk accessories in the *System* file
27-31	Desk accessories in application files
32-39	SCSI drivers 0—7
40-47	Reserved

SLOTTING IT TOGETHER

Now we can intelligently start to pack in the DAs. Here's how we'll install the first 24. We'll use slots 12 to 26 first (that's 15). Then we'll use slots 40 to 47 (8 more, 23 total). Finally we can use slot 39 (1 more, 24 total).

If you try to add more DAs, you're soon going to run into a bug in the Menu Manager that limits the number of items in a menu. Menus can handle up to 32 items (including the title) correctly. If there are more than 32 items, those past number 32 will not behave as they should, but will mirror the behavior of the first 32 items. Since the Apple menu standardly has an About... item and a line as the second and third items (the Apple is the first), there are 29 items before mirroring starts, then one for the title, one for the About... and one for the line. Thus, the 32nd DA installed will not be selectable.

to find slots for. If there are no SCSI devices (hard disks, tape back-up units, etc.) attached (and none planned), use the slots in the SCSI group (32 to 38). If there are some SCSI devices installed, some slots can still come from the SCSI group, but you'll have to know which addresses are in use, and make sure you don't use these slots. You might also have to use some of the application slots (27 to 31). Since you can't know in advance what slots a given application may use for its DAs, you'll be taking a chance here. However, applications with DAs are rare (I know of only two). And you should always install DAs with no owned resources in these slots.

PUTTING IN DAS

Font/DA Mover is designed to install DAs (in any file) starting with an ID number of 12, renumbering the original number of the DA (and any resources that go along with the DA) as necessary. It will continue to install DAs until it gets to about 65 thousand DAs; each DA it installs will get the lowest number available in that file, starting with 12.

If the file you are installing DAs into is named *System*, however, *Font/DA Mover* will stop installing DAs when all the slots between 12 and 26 are filled. (*Font/DA Mover* will not allow you to remove all DAs either). The patched version of *Font/DA Mover* we're going to create does exactly the same except it won't stop until all slots between 12 and 47 are used. We'll also change an error message and the title on the menu bar to indicate that we have patched things, and, while we're at it, we can change one of the *Font/DA Mover* defaults so that it opens in the DA mode instead of the font mode.

Font/DA Mover doesn't know what slots we don't want to use though, and will just install within a given range, putting DAs into slots that are not occupied. We need to put something into the *System* file to take up the slots we don't want DAs put in, so those slots will be skipped.

We'll do that using *ResEdit* to create special dummy drivers that don't show up as DAs. All the conflicts discussed above apply only if there are two DAs, or a DA and a SCSI driver, vying for the same slot. There is *no* conflict if a dummy driver is taking up a slot that a real driver (or DA) wants.

Since drivers don't show up in the DA menu, they can't be "selected." When you boot up and your SCSI driver wants to load into a slot, it will replace the dummy driver that's in the slot it wants. Since you can't select the dummy driver, the SCSI driver will remain active all the time. The same holds true for a DA in an application; it will replace the dummy driver, and will be available on the DA menu, but since you can't select the dummy driver, no conflicts can occur.

NUTS AND BOLTS

Let's patch *Font/DA Mover* now. Get a nice clean copy of *Font/DA Mover*, version 3.2. These patches only work on version 3.2. Be sure

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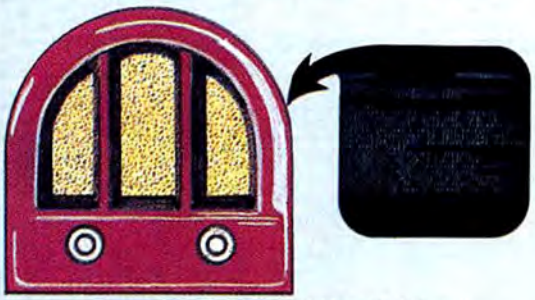

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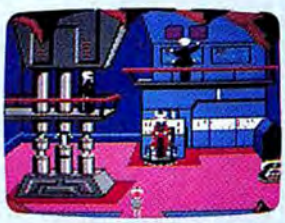

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that you make all the changes, including those to the error message and the menu bar. If you don't and then give your patched copy to a friend, you'll cause a lot of problems.

Start by making a copy of *Font/DA Mover* and rename it *Patched Font/DA Mover* or something similar; don't work with your master copy of *Font/DA Mover*.

Launch *ResEdit* (I used version 1.0.1), and open *Patched Font/DA Mover*. If necessary scroll down the list of resource types until you see resource type STR#. Open it. You'll see one resource of type STR#, with an ID number of 256. Open it. This string list contains most of the messages that *Font/DA Mover* uses. If you scroll down to the 25th string, you'll see it says: "Sorry, you can't have more than 15 desk accessories in this file." Edit this string to say "Sorry, you can't install a DA with an ID# higher than 47 in this file." Scroll down to the 41st item (the second to last), which is the string "V3.2". Add 5 to 10 spaces and the string "Warning! Patched to add DAs up to ID# 47!" Close the windows you opened, and Save *Patched Font/DA Mover* when asked. Exit *ResEdit*.

Now launch *Fedit Plus* (or any program that can edit raw bytes in a file), and open *Patched Font/DA Mover*. There are two patches: the first will allow *Font/DA Mover* to install DAs up to ID number 47, the second will change the default open mode for *Font/DA Mover* so that it comes up displaying DAs instead of fonts. You need not make the second patch unless you want to.

Here's the first patch: search for 001A 5EC0. When you locate it, replace it with 002F 5EC0. Now for the second patch: Search for 6708 3B7C (This occurs twice, you need to patch both places.) Replace it with 6608 3B7C in both places. Save everything. It's that simple.

BUILDING THE DUMMIES

Use *ResEdit* to create dummy drivers with IDs from 27 to 38, and move them into the *System* file. This will give you room for 24 DAs, and you'll never have to do anything special again when you want to add or remove DAs, as long as you use the *Patched Font/DA Mover*. If you want more than 24 DAs, make your decision about possible conflicts, and remove the appropriate dummy drivers (or just don't install them in the first place).

Start by launching *ResEdit* again, and make sure the window containing *Patched Font/DA Mover* is on top. Select NEW from the File menu, and enter a filename of "Resource Holder."

With the open file window on top (Resource Holder), select NEW again. You'll get a dialog box full of different resource types; scroll down the list until you see DRVR, and double-click it. Select NEW yet again, and you'll get an arbitrarily numbered driver resource, with a window full of Text Edit items to fill in; ignore them and just close the window.

The window on top should now have your arbitrarily numbered DRVR resource in it. Select the DRVR resource, and instead of opening it, pull down the File menu and choose GET INFO. You'll get a new dialog box; select the radio button that says Driver (as opposed to DA), and then change the ID number (which will be a random number) to 27 and the name (which will be blank) to "Dummy #27." Then close the dialog box.

You have just created your first dummy driver resource. If it's not currently selected, select it, and then use the Duplicate command from the Edit menu. This will create an identical duplicate resource in your file, with the ID number changed to some unused random value. Select GET INFO from the File menu again, and edit the new resource so that its ID number is 28 (one more than the last one), and its name reflects its new resource number. Then close the dialog box.

Keep repeating the Duplicate/Edit procedure until you have dummy drivers numbered from 27 to 38, inclusive. Then close all the open windows, confirming when you are asked if you want to save the file. You now have a file with all the dummy DRVR resources you could want, and you can move whichever ones you want into the *System* file. Here's how.

Table 2

Driver Slot#	SCSI address	
32	0	
33	1	
34	2	
35	3	
36	4	
37	5	
38	6	
39	7	Always available

You'll have to make a one-time, one-byte code patch to the Font/DA Mover, and use ResEdit to make a one-time addition to your System file.

You should still be in *ResEdit*. Open up the dummy driver file. Select the resources you've decided upon, and use the Copy command from the Edit menu. Whatever dummy resources you move in will prevent *Font/DA Mover* from using that slot, so you are choosing slots you *don't* want used. Select multiple items by shift-clicking. Close the dummy file holder, and open up the *System* file. Once the *System* file is open, PASTE, and then close the *System* file, saving as you go. Now whenever you want to add a DA, just use your modified *Font/DA Mover* to install it as you always did. That wasn't hard, was it?

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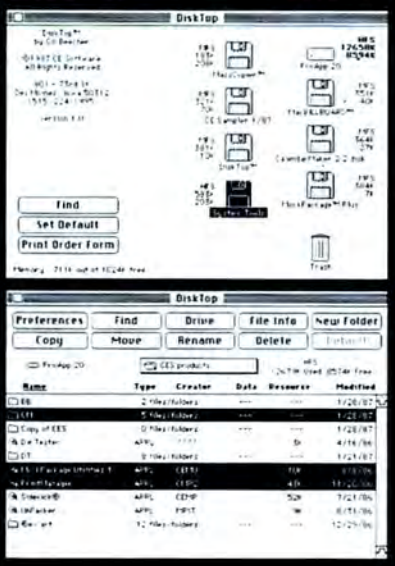

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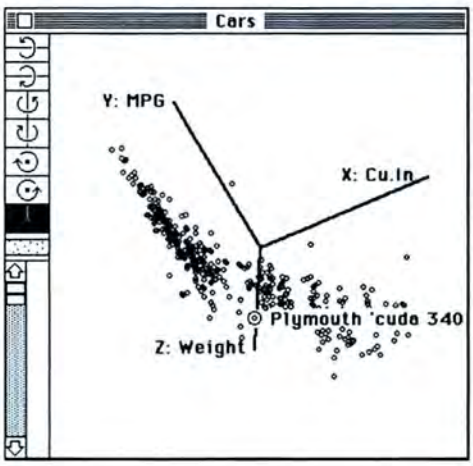

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FROM C TO SHINING C

Lightspeed C is fast, efficient and almost exciting. This state-of-the-art compiler will make you stand up and salute.

BY FRITZ ANDERSON

NO GROUP OF SELF-SUPPORTING adults in the world was more loaded with Pascal programmers than the Mac developers of early 1985. That was one conclusion of an Apple Computer survey of its certified developers. Apple had always assumed (and recommended) that everybody should develop Macintosh software the way Apple did — with the *Lisa Pascal* compiler. But when it asked the certified developers what language they preferred to work in, 28 percent said they liked Pascal, while 30 percent wanted to work in C.

The combination of an eager market and the fact that C compilers are, as compilers go, easy to write, has meant that the Mac world has always been well-supplied with C compilers, though ill-supplied with programming environments. The whole idea of the Macintosh is to increase your creative leverage by giving you better ways to "play" with a problem. It worked for word processors, graphics programs, even spreadsheets; it didn't happen, at first, with developers' tools. Most Mac compilers work the way every compiler has always worked: Like an augur of ancient times, the programmer feeds a petition into the front end of the beast, and hopes to find favorable auspices in the dump that emerges. What happens in between is part of the mystery.

Although it bodes ill for the rest of this review, let's face an obvious fact: Compilers are not exciting things. They ingest (conveniently or inconveniently). They compute (well or badly). They dump (object code or errors). Cold spaghetti scintillates, drying paint takes on a festival air by comparison.

Not even the usual journalistic ploy of setting up a horse race will help. The competition has come to a point where in terms of speed of compilation, or size and quality of generated code, I doubt there's more than 10 percent difference separating the top two or three major C compilers. For 25 or 30 percent you get excited. At 10 percent, there's no point.

Now let me tell you about *Lightspeed C*, the most exciting thing that has ever happened to a compiler, on a Mac or anywhere else. *Lightspeed C* is a great product because it is based on the understanding that compilers are not exciting things. Programs are written by programmers, not compilers; if you want to make a programmer's life easier, there is only so much you can accomplish by pouring effort into the compiler. When all the compilers are good enough, a compiler that produces better code (alone) won't produce better programs; when all the compilers are fast enough, a faster compiler (alone) won't get more code written. If the Macintosh is to be used as a lever for programmers, the fulcrum for the lever is not a "better" compiler. It is a better environment for programmers to work with. *Lightspeed C* includes a very good C compiler; but, mainly, it is a better way to write programs.

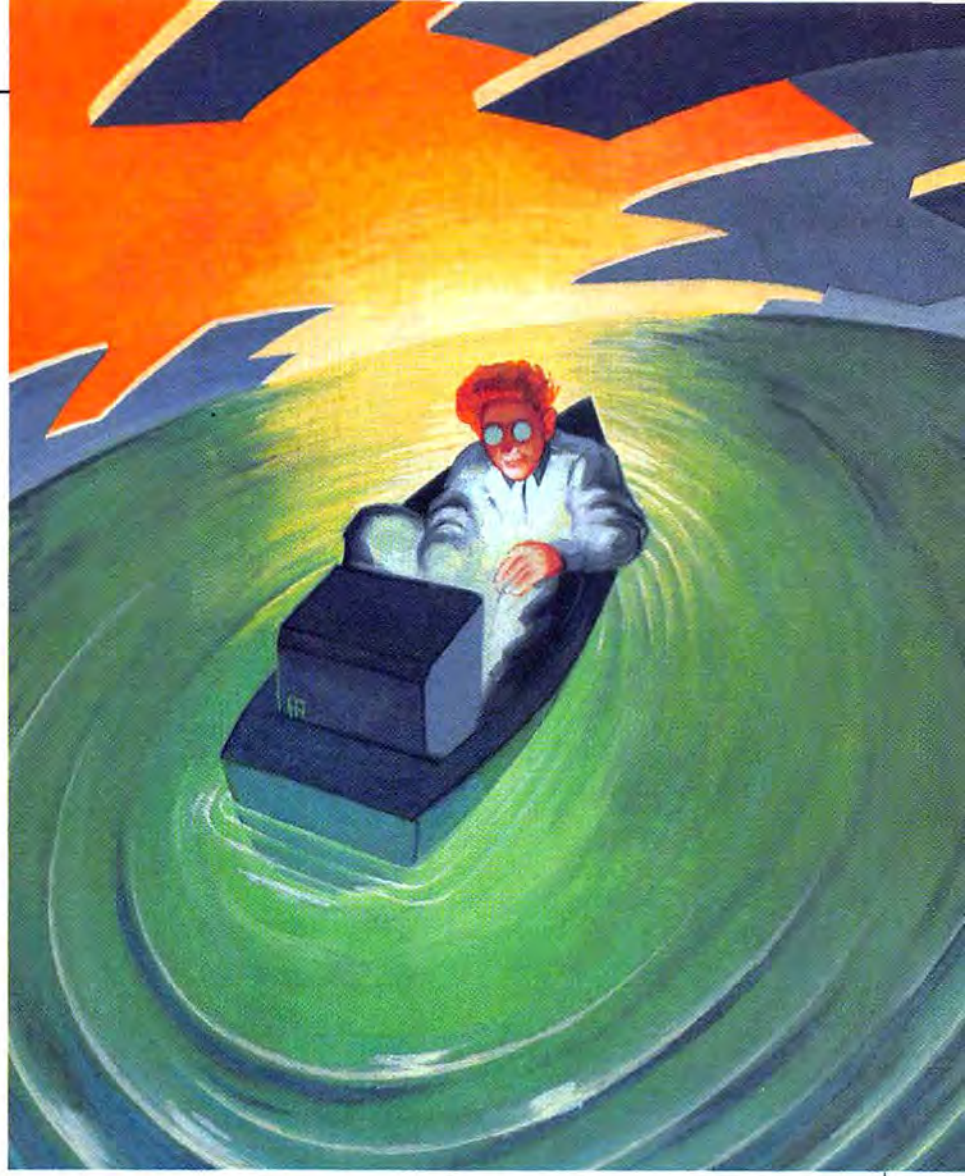
GENERIC C PROGRAMMING

Before examining *LSC* in detail, let's review how a C programmer's day is spent. Your first thought might be that C programmers make their livings by writing programs in C. Generally, that is true; but as a description of where the effort goes, it isn't so. I can write a largeish C program, consisting, say, of 20,000 lines of code, divided into 20 or 30 source files and half-a-dozen header files, in about 3 weeks.

I didn't say it would *work*. Just that 3 weeks is time enough to write 20,000 lines of C code that plausibly address whatever problem they are supposed to solve. Getting the program to work? Add 6 months; maybe 10. And how will I spend those months? Doing the same thing, two, three, four times an hour: Fix a line, or add a function; compile one file, relink and run; go on to the next small change.

THIS C COMPILER

The first principle that went into designing *Lightspeed C* was that the



edit- compile- link- run- crash- edit- again cycle (or development loop) had to be made as quick as possible. You get your work done by editing your program's code, and studying its misbehavior; the less time spent on the intermediate processes, the better.

THINK (*Lightspeed C*'s publisher) has done two main things to reduce the wait. First, they made *LSC* an integrated program, incorporating the functions of an editor, compiler and linker — with all three already in RAM, there's no wait for them to load. Second, they made the basic document in *LSC* the "project," which includes all the object code (including libraries) that is to go into a finished program. The project file is kept (at least mostly) in RAM while the *Lightspeed* system is running. The combination of these strategies drastically reduces the time you have to spend in the development loop.

Lightspeed C is built around a "project document." The project document organizes all the information relating to an entire programming project — a double-clickable application, a desk accessory or a device driver. The project appears in the *Finder* as a single document; when opened, it is displayed in its own window on the *LSC* desktop. The Project window shows a list of all the source files and all the libraries to be used in building an application, along with their sizes in bytes. More source files or libraries may be added to the project by selecting the ADD command in the Project menu.

Double-clicking on the name of a source file opens an Editor window containing that file. The correct HFS directory address for each file is kept as part of the project. If the source file has moved, or if it is new to the project, *Lightspeed C* uses a simple search strategy: Just keep your *LSC* library headers with *LSC,* or in folders below it, and all your project-related files with or below the project file; *Lightspeed* will find them.

The *Lightspeed C* editor looks, at first glance, like a close cousin of Apple's *MDS Edit* editor. It has selectable fonts and sizes (one per file), automatic indentation, variable tab stops, and multiple (not just four) windows. As with *MDS Edit,* you can select a file name in the text you are editing, and by pressing COMMAND-D, open an Editor window for that file. Unlike *Edit,* the *LSC* editor keeps entire text files in RAM at all times.

The editor's features go well beyond where *MDS Edit* leaves off. The least of these is a BALANCE command to help you make sure all your parentheses, braces and brackets (but not comment symbols) match up.

Here's an example. Hold down the Command or Option key and press the mouse button in the title bar of a file's Editor window; a menu pops up, listing all the header files used (even indirectly) by that file. Selecting from that menu opens a window on the selected header.

Search and replace can be used in the same easy way as in *MDS Edit,* but *Lightspeed C* has added an option to carry a search to all (or some) of the files in a project, as well as a grep option. Grep is UNIX-ese for "general regular-expression parser." It is a more powerful way to do text searches that allows you to use carefully tailored wildcard characters.

Once you've edited a file or two, you'll want to compile them. Not every file in the project will need to be recompiled — the object code for the files you didn't change is still good. So, you want to compile only those two files you just edited... and... did you just look at that header file, or did you make that change you thought of? Changing a header file potentially changes any source file that uses it, so *those* ought to be recompiled... if you can remember exactly which ones include that header, and which ones include other headers that include the changed header, and....

You see the difficulty.

TONY LIMUACO

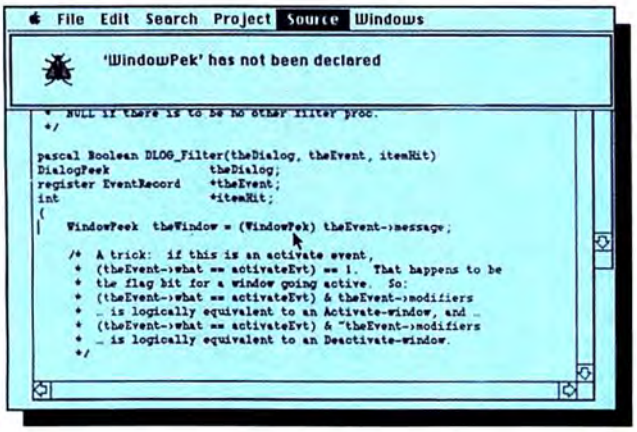
FROM C TO SHINING C

Deciding which files to recompile is an old problem; it is solved in conventional development systems by a utility program that is almost always called *Make*. You give *Make* a command file that tells it how to turn source files into object files, object files into libraries, and libraries and object files into programs. You also tell it the names of files that go into your program, and which target files would be affected by changes in other files. Then, whenever you run *Make*, it looks for "ingredient" files that have been changed since the target files were created (indicating that the targets ought to be rebuilt). When it finds such a combination, *Make* issues the proper commands to compile, link or otherwise create the target files.

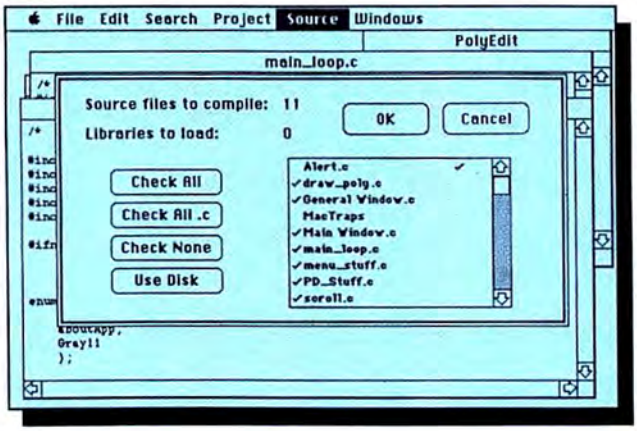
By insisting that all the components of an application be listed in the project file, *Lightspeed C* eliminates these administrative problems. Whenever a file is compiled, *LSC* notes what headers that file uses; because *LSC* is also the program editor, it also knows when headers and source files have been changed. Selecting the Make menu command brings up a dialog box that contains a list of source and library files; check marks appear next to the names of files that have been changed, or that rely on headers that have been changed. You can force or prevent recompilation of any of the files on the list by clicking on their names.

EXCUSES AND ERRORS

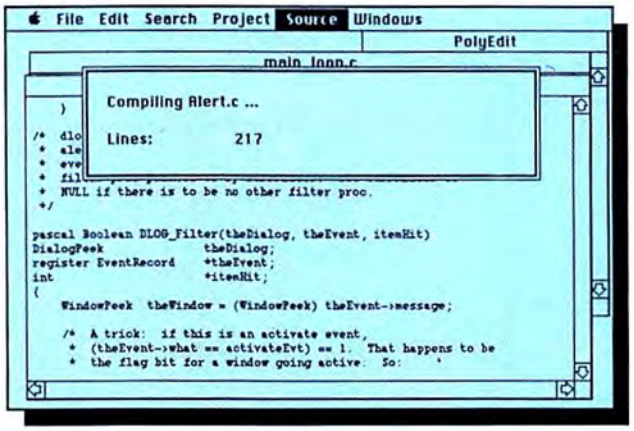
Compilation is the time when the compiler looks for excuses not to translate your program (which it calls errors), and tells you about them. Traditional compilers work on the theory that it takes time and effort to reload first the editor, then the compiler, for each error in your program; so the more errors the compiler can identify at each pass, the better. Such compilers do not stop when they find the first error in a program, but attempt to scan for more. This is a fairly tricky thing to do, because with each error, the compiler loses information it needs to make sense of the rest of the program. A compiler that can report



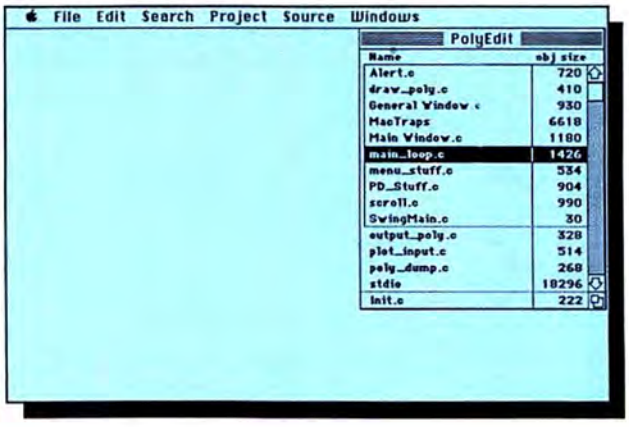
Compiler error messages are generally accurate as to content and location error. I placed the arrow cursor so as to point out the misspelled word in the program text; *LSC* itself placed the insertion point at the left end of the line containing the error. (To clarify: the arrow cursor is there for illustration, and has nothing to do with *LSC*'s error checking.)



The Make dialog. The checked files have been changed, or affected by a header change, since they were last compiled. You can designate individual files to be compiled with the check-shaped cursor (right of Alert.c), or en masse with the buttons.



Compilation takes place without leaving the *LSC* environment.



Double-clicking on a file's name in the Project window opens the file (see first screen in "Command-double-click")

multiple errors must therefore be smarter and larger — and slower — than a compiler that gives up on the first error.

Because *Lightspeed C* is integrated, and moves between editor and compiler instantly, it can afford to use a compiler that reports errors one at a time — and is, incidentally, very fast. When an error is found in one of your source files, *LSC* opens an Editor window for the offending file, and places the cursor at the beginning of the line in which the error was detected. A dialog box at the top of the screen describes the error.

Like most publishers, THINK includes a listing of error mesages in the *Lightspeed C* manual; unlike most publishers, THINK *bothered to explain what most of them mean.* It is an elementary gesture, but so rare that THINK deserves some sort of medal for making it.

I haven't mentioned *Lightspeed C*'s linker; for all practical purposes, it doesn't have one. Since the *LSC* project contains all the object code and libraries you intend to use, by the time you've compiled all the code in the project, there are no unknown names. The "linkage" step, such as it is, consists in checking to make sure that every function and variable is defined exactly once; THINK claims this process took 5 seconds to "link" *Lightspeed C* itself. If there are problems, *LSC*'s Check Link function will tell you which files to look at.

C YOUR APPLICATIONS

Lightspeed C will generate complete, double-clickable Macintosh applications within seconds after you select the BUILD APPLICATION command. The build process includes winnowing out any source or library modules you haven't actually used, and merging in a resource file, if you provided one for the project. But you don't have to build an application in order to run an *LSC* program; *Lightspeed* provides a RUN command, which will launch your program directly from the project file. When you run a program from *LSC, LSC* patches itself into the Mac operating system, so that when your program finishes running, it will return control to *Lightspeed C,* instead of to the *Finder.*

DIALECTICS

In the excitement over the *Lightspeed* environment, it's almost possible to forget that it's a C compiler we are talking about here. What dialect has THINK designed for *Lightspeed?*

All Cs on the market today start from the description of the language found in *The C Programming Language* by Brian Kernighan and Dennis Ritchie, known universally as "K&R." Every feature of K&R C — including the seldom-seen bit fields — is implemented in *Lightspeed C.* But K&R C is approaching its ninth birthday, and a lot can happen to a programming language in 9 years. The American National Standards Institute (ANSI) has published a proposed national standard defining what features an acceptable C compiler ought to support. *Lightspeed C* includes many of the advances in the standard over K&R, supporting enumerated data types; structure assignment, passing and return; strict pointer type-checking; and function prototyping.

Let's face an obvious fact: Compilers are not exciting things. Cold spaghetti scintillates, drying paint takes on a festival air by comparison.

Prototyping, a borrowing from Pascal, is the most radical departure in the ANSI proposal, and *Lightspeed C* is one of the first compilers to implement it. Before Pascal will translate a program, it checks every function call to make sure the type and number of arguments match the arguments in the function's declaration. Experienced C programmers have a public reaction to this scheme ("It is the monstrous diktat of power-mad academics"), and a private one ("The hardest bugs I've ever had to track down would have been prevented by that kind of checking"). Function prototyping walks a middle line: If you want argument checking for a particular function, then write a special prototype declaration. If you don't want a function checked, don't write a prototype.

Lightspeed C includes all the extensions you expect in a first-rate Macintosh C compiler. There's a unique in-line assembler. THINK includes assembly in their C via an "asm" statement. Anywhere a statement is legal, you may use the word "asm," followed by your assembly code in braces. Because the asm statement is regarded as a part of the *Lightspeed C* language, all your #defined macros and constants are available; C variables can be accessed by name; and control can pass from assembly to C labels, and from C to assembly labels, with strict impartiality.

Handy as this feature is, it is not a substitute for a separate assembler if you want to do much programming in assembly. Because "asm" is a statement, all assembler code must appear inside a C function. Some experienced C/assembly programmers will miss being able to assemble entire functions in their C programs. Most users won't even notice the restriction.

THINK's choices in designing *Lightspeed C* have made possible the closest fit to the Macintosh ROM of any C on the market. The *LSC* manual includes a list of calling protocols for the Toolbox and Operating System routines. It is almost unnecessary: The calling formats are as close as C can be to the formats in *Inside Macintosh.* The type, field and constant names are identical (with one exception) to the ones listed in *Inside Macintosh.* Even Points, the downfall of most Cs' Toolbox interfaces, are to be passed directly, by value — the same way that *IM* asks for them. *LSC*'s Toolbox support includes the HFS functions, and extends through all of *IM* through Volume IV. You even get all the

routines that *IM* lists as [Not in ROM].

AND IT'S VERSATILE, TOO

Lightspeed C's usefulness does not end with writing applications. A simple selection in a dialog box can set up a project to generate device drivers, desk accessories or stand-alone code resources. THINK's driver builder automatically sets up the special header information that drivers and desk accessories must have, thus eliminating most of the spadework that has to be done to write drivers and DAs. The driver library is intelligent enough to take care of an arcane bug in the 64K ROMs that garbled the process of closing drivers and desk accessories — you write your close function, and the *Lightspeed* library does the rest.

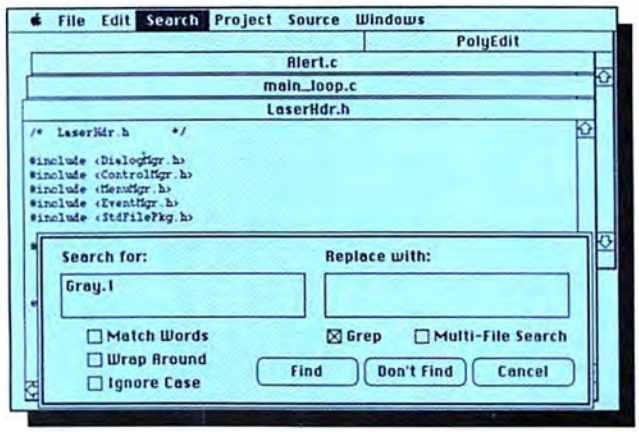
MIXED BLESSINGS

Lightspeed C is not, however, a garden of unalloyed blessings. The comprehensive ROM-support and run-time libraries make life easy for applications developers, but they are not small, and can add a significant amount of baggage to projects like desk accessories and code resources, which ought to be compact.

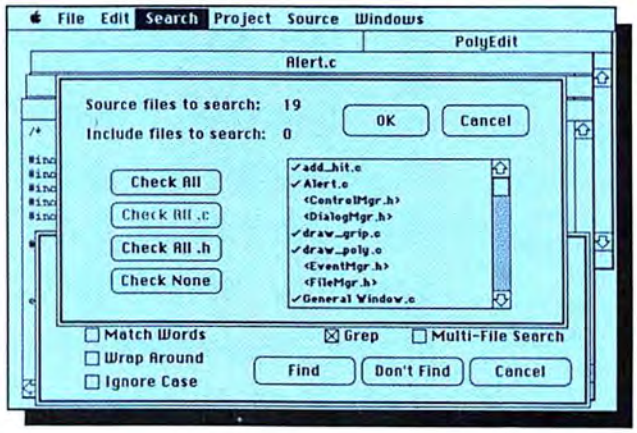
The project file itself, which keeps all the compiled code (and all those tables) in RAM for quick access, starts out life large, and rapidly becomes huge, as entire libraries are copied into each project document.

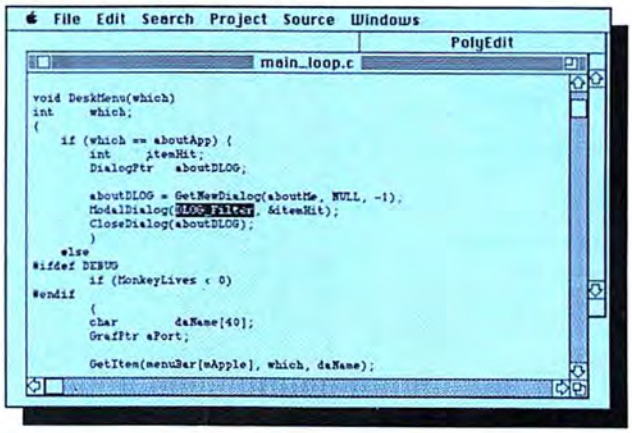
If you are one of those ambitious souls who write desk accessories large enough to need segmentation, you will find that the project model breaks down entirely. Each DA segment must be written as a separate project. To debug a DA segment, you would have to open the main project, run the DA (*LSC* can automatically load desk accessories into a shell program for testing), return to the main project, close it, and open the segment project. Opening and closing projects is the one part of *LSC* that feels slow. And you get library overhead with each segment.

Lightspeed C's performance bogs down to mediocrity when you want to use tools that the project document can't see — which means every Mac development tool other than

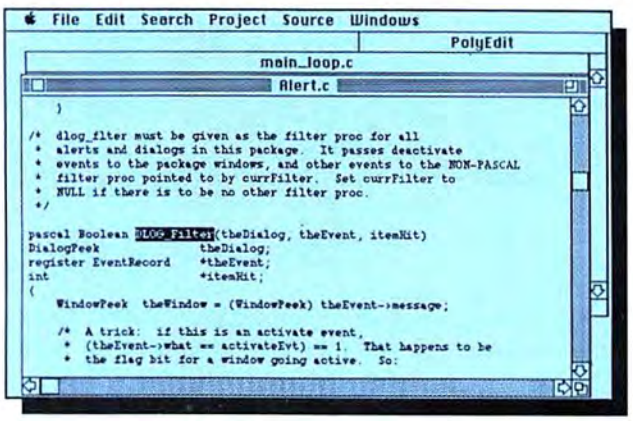


The search & replace dialog, illustrating a GREP search string (matching Gray [and char]1). Checking the multi-file box brings up a selector box for all the project's source files; the header files are automatically included in this list.





Command-double-clicking on a function name opens the file containing its definition and searches for the first instance of the name.



LSC. If you prefer a different text editor, not only will you lose the automatic search mechanisms, but you will have to set the *Make* facility manually whenever you return to the project. *LSC* accepts .Rel files generated by Apple's *MDS* assembler and Consulair's *Mac C* compiler/assembler, but only after the files have been run through a conversion utility. *Lightspeed C* offers no facilities at all for exporting *LSC* object code to other development systems; the only intermediate code it generates is in the form of projects, or a proprietary library format. These are usable only by *Lightspeed C*.

THE FACTS AND THE FUTURE

THINK apparently intends to be generous in supporting *Lightspeed C;* it can afford to be. The first release of a compiler tends to be so full of bugs that it is useful mainly as a statement of what the publisher hopes to accomplish in version 1.1. The original release — 1.02 — of *LSC* was nearly trouble-free: In the first few weeks after *LSC* 1.02 was released, members of the MAUG Apple Developers' Forum on CompuServe found only a handful of bugs, for all of which THINK cheerfully provided patches. Other companies might have seen the broadcasting of patches as bad publicity; evidently THINK prefers getting its publicity from a working product.

Late last year, THINK produced a new version of *LSC* with a better editor (it added parenthesis-matching, automatic symbol-searching, and quick access to header files), a more-powerful compiler (better code generation, 128K ROM and HFS support, and in-line assembly), and other enhancements. Smaller upgrades than these have moved other companies to demand $50 to $75 for updates. The latest version (as of when this review was prepared) of *LSC* was distributed free of charge to all registered owners of the original. The version number was bumped up to 1.50; if all those improvements merited only half a version number, what must 2.0 be like? [*Editor's Note: Just as we went to press, version 2.01 was released; we'll have a full update report as soon as possible; possibly next month.*]

THINK supplies a number of libraries with *Lightspeed C*, including standard I/O functions, UNIX-compatibility functions, the MacTraps ROM glue and Not in ROM library, and a library to support a code profiler. Source code is provided for every library except MacTraps. The standard input/output library matches the one found in K&R and the proposed ANSI standard, including terminal I/O.

Compilation is the time when the compiler looks for excuses not to translate your program (which it calls errors), and tells you about them.

Lightspeed C is supplied on three single-sided diskettes containing the compiler, the libraries and most of their sources, a file comparison utility, a .Rel-file conversion utility — and, from Apple, *Font/DA Mover*, the *RMAKER* resource compiler, and *ResEdit*, the resource editor. It is not copy protected.

The package includes a well-indexed, 300-page, large-format manual. Most of the manual is devoted to descriptions of *Lightspeed C* 's non-Macintosh libraries, but all the useful technical information about the compiler is included. As is the custom with C compilers, the manual makes no attempt to teach either Macintosh programming or C.

Lightspeed C is *Switcher*-compatible, but needs 512K of RAM, so there is little point in using *Switcher* with *LSC* on a Macintosh 512. THINK says it is possible to run *LSC* with a single 400K drive, but recommends having at least 800K of storage available to do useful work. And bigger, faster storage (such as hard disks) never hurt any development environment. 128K ROMs and the *System* 3.2 extensions (such as window zoom boxes) are supported, but *LSC* runs fine on a 64K ROM System.

SO, IS IT EXCITING?

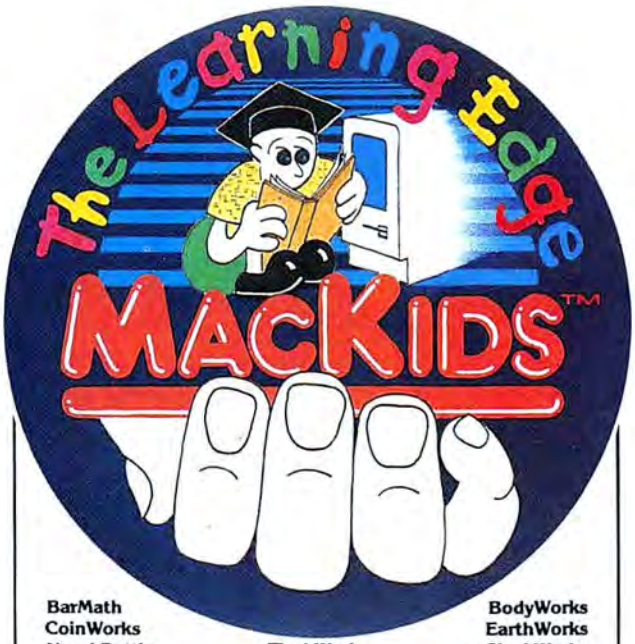
Is *Lightspeed C* a fast compiler? Yes, exceptionally so — but who cares? When I first showed *LSC* to my coworkers (all C veterans), I always led off by compiling something. The compiled-lineage counts raced across the screen at an amazing rate, and my audience shrugged. Compilers are not exciting things. Now, when I want to show *Lightspeed* off to an experienced C programmer, I bring up an editor window, show that pop-up menu of header files, and summon a header. My record, in three attempts: Two lustful moans. One scream. A better way to get your work done is exciting.

FRITZ ANDERSON IS A PROGRAMMER FROM ZIONSVILLE, INDIANA, CURRENTLY WRITING MAC AND VAX SOFTWARE. HE WAS A PRACTICING LAWYER UNTIL HE DECIDED THAT PROGRAMMING MACS WOULD BETTER SERVE THE CAUSE OF JUSTICE.

Lightspeed C

Overall Rating	★★★★½
Follows Mac Interface	★★★★★
Printed Documentation	★★★★★
On-Screen Help	None
Performance	★★★★★
Support	★★★★★
Consumer Value	★★★★★

Comments: An integrated development environment that takes most of the drudge work out of developing applications, desk accessories, or code recourses. **Best Feature:** An editor that uses information gleaned by the compiler to help with searches and file management. **Worst Feature:** Things get cumbersome if you want something (a different editor, a complete assembler, multiple code resources) the environment isn't equipped to handle. **List Price:** $175. Published by THINK Technologies, Inc., 420 Bedford Street, Lexington, MA 02173. (617) 863-5595. Not copy protected.



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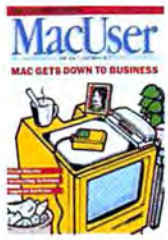

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TIP SHEET

BY DAVID SCHARGEL

Found a trick, shortcut or smarter way to get something done with a program? Share your hints (and maybe make a few bucks) by sending them to The Tip Sheet, c/o MacUser, 25 West 39th St., New York, NY 10018. We pay at least $25 for every hint we publish, plus we'll print your name and hometown (so you get all local bragging rights).

MICROSOFT BASIC

If you stop a program that has its own menus, you can restore *Microsoft BASIC's* menu bar by typing MENU RESET.

BENJAMIN KUO
SALT LAKE CITY, UT

DISKS

Pen ink on most disk labels has a tendency to smear as the disks are handled. This problem can be prevented by applying a quick coat of clear nail polish to your labels.

RICHARD CLONEY
SEATTLE, WA

MICROSOFT WORKS

Even though the spreadsheet has no font changing capabilities, you can move a block of cells from a spreadsheet to a word processing document via the Clipboard and then change the fonts, sizes or styles in the new word processing document. The only problem is that you lose the display grid if you had one. *Works'* drawing functions allow you to easily reintroduce one.

ROBERT MORGAN
JULIAN, CA

The spreadsheet in *Microsoft Works* can sort rows, but there is no direct way to sort columns. A column sort can be performed by first selecting and copying the range of columns you want to sort. Then paste this selection into a new spreadsheet using PASTE WITH OPTIONS instead of the standard PASTE. Choose BOTH FORMULAS AND VALUES and TRANSPOSE and click OK. Then reselect the range (that is now in a row) and use the SORT command from the Edit menu. Once the sort is completed, cut the data and then paste it back into the original range, once more, using the PASTE WITH OPTIONS command with BOTH FORMULAS AND VALUES and TRANSPOSE options selected.

CHARLES CALDWELL
CORTEZ, CO

If you are using the 400K version of *Microsoft Works*, you will notice that you have to do many swaps between your data disk and the program disk while loading a data file. An easy cure for this is to create a RAMdisk for the *Finder*, *ImageWriter* and a stripped down *System* files (with one DA and few fonts). Load this RAMdisk and place your program disk in one drive and your data disk in the other, and, *voila*, no swaps. Try to keep the RAMdisk under 180K for greater memory availability.

JOHN GADDIS
HOLBROOK, NY

MOUSE

A quick and easy fix to the problem of worn mouse feet (the two plastic "bumps" on the underside of a mouse) is to use BBs (as in air gun ammunition). Simply place a tiny dollop of Crazy Glue on the slanted edge of the mouse directly above the original mouse foot and glue a BB there. The BBs will work better than the original mouse feet (because they're round) and they will never wear off.

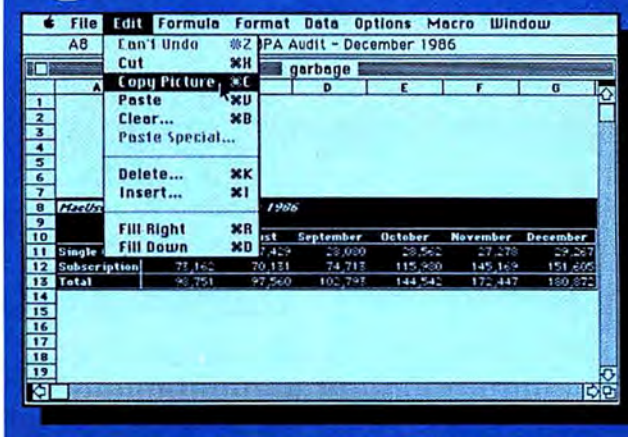
AL MCANESPY
HOUSTON, TX

EXCEL

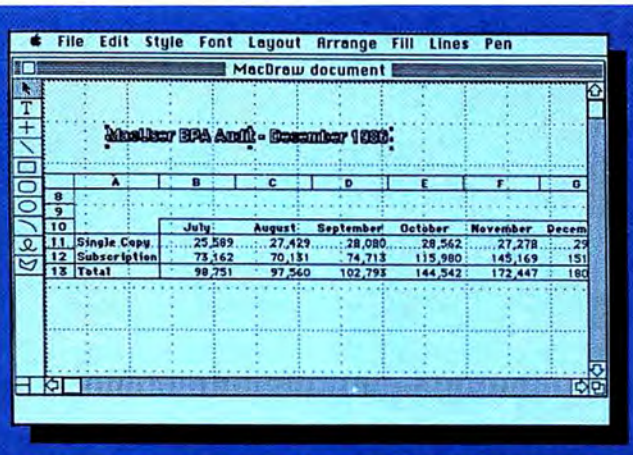
Some zip codes have leading zeros (e.g., Woodstock, VT 05091). If you always want *Excel* to display/print these zeros, select the row/column in question and select NUMBER... from the Format menu. Type in five zeros at the bottom of the dialog and click OK. The selected area will allow for zip codes with leading zeros.

ROBERT MORGAN
JULIAN, CA

EXCEL



1 While working with a spreadsheet in *Excel*, hold down the Shift key before dragging down the Edit menu, and COPY PICTURE will appear as a menu option. Choose COPY PICTURE to copy a PICT representation of your data to the Clipboard.



2 When you enter *MacDraw* or other object-oriented drawing program, and paste the PICT data taken from *Excel*, you will have full editing control over every portion of the picture. Each item, text and lines, can be individually edited.

Excel has an interesting feature that allows you to copy a portion of a spreadsheet as a moveable graphic, instead of just the numbers. Select the area of the spreadsheet and choose COPY PICTURE under the Edit menu. In order to get the COPY PICTURE option to appear, you must hold down the Shift key before clicking on the Edit menu. The selection, along with the row/column headings, will now be in the Clipboard where you can later place it in a word processor, page layout or graphic program. The item is copied to the Clipboard in PICT format, so you can place it in *MacDraw* and manipulate every portion of it, text and lines. This also allows you to resize and reshape it proportionately (for LaserWriter output) if you are using an application that gives you the ability to stretch a picture (e.g., *PageMaker*).

JOSEPH P. GREEN
GAYS MILLS, WI

Excel provides command key combinations for almost all of the choices in the standard ImageWriter or LaserWriter Page Setup... and Print... dialog boxes. For both of the dialogs, COMMAND-C or COMMAND-PERIOD chooses Cancel, while COMMAND-O or pressing Return/Enter selects OK.

OLIVER RADFORD
SOMERVILLE, MA

FULLPAINT

Using *FullPaint* it is very easy to get a drawn graphic to expand proportionally to fit the entire page. First select the graphic (preferably with the lasso) and select COPY. Then, in a new document, triple-click the selection marqee and select PASTE. The pasted graphic will expand to fill the entire page. You might wish to touch up the new full-page graphic for cleaner results.

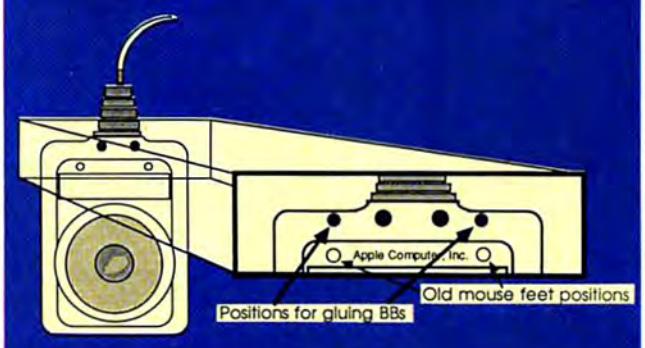
DAVID CONDIT
WARRENTON, VA

MINIFINDER

On disks that have the *MiniFinder* installed, you can hold down the Option key while quitting an application (or upon booting a disk) to bypass the *MiniFinder* and go directly to the *Finder*.

SCOTT ARMITAGE
GOLDEN VALLEY, MN

MOUSE



BBs provide a wonderful solution to worn out mouse feet. The exploded view of the underside of the mouse shows the proper positioning for BBs.

KEY CAPS

With *Finder* 5.3 and *System* 3.2 there is a catch to taking screen dumps of the special (Option and Shift-Option) characters that can be displayed in the *Key Caps* DA. The dumps should be done in the *Finder* with no windows open.

To get a dump of the characters shown when only the Option key is down, press the Option key, then hold down the mouse button while the cursor is not over the active window. While still holding down the mouse button, press COMMAND-SHIFT-3 and then press the Option key again before releasing the mouse button.

To get a dump of the characters displayed with Shift-Option, use basically the same procedure as above except instead of the two times that you must press the Option key, use Shift-Option.

R. L. APP
ALVINSTON, ONT

EXCEL

FOR THE IMAGEWRITER PAGE SETUP... DIALOG:	FOR THE IMAGEWRITER PRINT... DIALOG:	FOR THE LASERWRITER PAGE SETUP...DIALOG:	FOR THE LASERWRITER PRINT... DIALOG:
COMMAND-U activates "US Letter"	COMMAND-B activates "Best"	COMMAND-U activates "US Letter"	COMMAND-A activates "All"
COMMAND-A activates "A4 Letter"	COMMAND-F activaies "Faster"	COMMAND-A activates "A4 Letter"	COMMAND-F activates "From...To"
COMMAND-I activates "International Fanfold"	COMMAND-D activates "Draft"	COMMAND-B activates "B5 Letter"	COMMAND-M activates "Manual Feed"
COMMAND-T activates "Tall Adjusted"	COMMAND-A activates "All"	COMMAND-A marks "Font Substitution"	COMMAND-P activates "Paper Cassette"
COMMAND-5 marks "50% reduction"	COMMAND-H activates "Hand Feed"	COMMAND-S marks "Smoothing"	COMMAND-N activates "No" (for cover page)
COMMAND-N marks "No Gaps Between Pages"	COMMAND-P marks "Preview"	COMMAND-P marks "Print Row and Column Headings"	COMMAND-L activates "Last Page" (for cover page)
COMMAND-P marks "Print Row and Column Headings"			COMMAND-H activates "Help"

***Excel* provides command key combinations for virtually every item in the Page Setup... and Print... dialogs. Shown are the command key combinations for both the ImageWriter and LaserWriter printers.**

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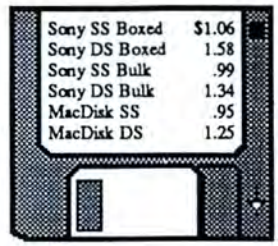

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SOFTWARE SAMPLER

MacPaint and *MacDraw* are present on the Software Sampler disk that comes with each new Macintosh, however the Print and Save options have been disabled on these programs. If you are unable to part with your graphic creation, you can cut your artwork, open the *Scrapbook* DA and paste the graphic into the *Scrapbook*. Later, you can either purchase the particular program and move the graphic back into the program, or if you are using a word processor, you can move the *Scrapbook* file onto the word processing disk and then paste the graphic into a document.

BILL DUGAN
HUNTINGTON BEACH, CA

IMAGEWRITER

When using a text processing application or DA that prints in the standard ImageWriter character set, it is possible to get some style changes by inserting control characters directly into your text. The two most useful are bold and underline. The ImageWriter manual lists others including superscript, subscript and changing character size. For each "on" control code, you must use one that turns the effect off.

For using other control sequences, typing Option-n, o (ō) is the control code for ESCAPE , or ASCII 27.

BOB FRONABARGER
SAN DIEGO, CA

HAYES COMPATIBLE MODEMS

Using any communications program and a modem that supports the full Hayes command set, you can repeat the last command sent to the modem (whatever it may have been) by typing "A/". There is no need to press Return; the modem will automatically perform the last command. This is very helpful for redialing a number that you were not able to connect with.

ADAM GLASS
NEWTON, MA

RADIUS FPD

If you have the *Radius FPD* installed in your Mac, but you have the Radius screen turned off, the automatic screen blanking will not work unless you have at least one custom feature turned on.

DAVID DUNHAM
GOLETA, CA

IMAGEWRITER

	WHAT YOU TYPE	WHAT YOU SEE
Bold on	Option-n o !	ō!
Bold off	Option-n o "	ō"
Underline on	Option-n o X	ōX
Underline off	Option-n o Y	ōY

You can add styles to your ImageWriter printing when printing in draft quality or using a text editor DA. Shown are two examples of what you type on the keyboard and what you see on the screen when using these control codes. Be sure to have an ending code for every beginning one.

[Editors Note: The following tips were discovered by the MindWorks Software staff and MindWrite users after the manual was printed. We'd like to thank MindWorks Software for sending the tips to us, so that we could share them with you.]

MINDWRITE

It is possible to sort text within *MindWrite*. With the arrow cursor, click to the left of the paragraph you want to appear first. Then click to the left of the other paragraphs in the order you want them to appear. Position the cursor to the left of a selected paragraph until a pointing hand appears. Hold down the mouse button until the pinching hand cursor appears, then drag that hand to where you want the items to appear and release the mouse button. The items will appear in the order you selected them.

It is possible to save the contents of the Clipboard as a document. Simply open the Clipboard window and choose the SAVE command from the File menu. *MindWrite* will then prompt you for a name for the document. This saves the entire Clipboard, including the dotted lines that separate selections. You can restore the Clipboard by opening the document, selecting all (COMMAND-A) and copying it (COMMAND-C).

It is easy to keep count of the number of illustrations in a *MindWrite* document. Just label all of your graphics with a special word such as "Figure." You can later count the number of times the word occurs by doing a Find All for that word, then using Word Count on the resulting search document. As long as none of the illustrations have subordinates, the number of paragraphs in the Word Count box tells how many times the word "Figure" appears. You can use the same method to count the occurrences of any special word.

MindWrite allows you to produce a document up to 15-½ inches on a wide carriage ImageWriter. *MindWrite* windows automatically zoom to the size of the screen so you will not see more than 6-½ inches of *MindWrite*'s rulers unless you have a large external monitor or drag the document window to the left and then resize it, larger, to the right.

Remember that in *MindWrite* you can choose to wrap text to fit either the window or the ruler. This means you can edit text conveniently in a window the size of your screen without the distracting movement of horizontal scrolling, and then later select WRAP TO FIT RULER to review line and page breaks.

FULLPAINT

Pasting a graphic from the Clipboard after triple-clicking the Marquee tool will expand the graphic to the full page.

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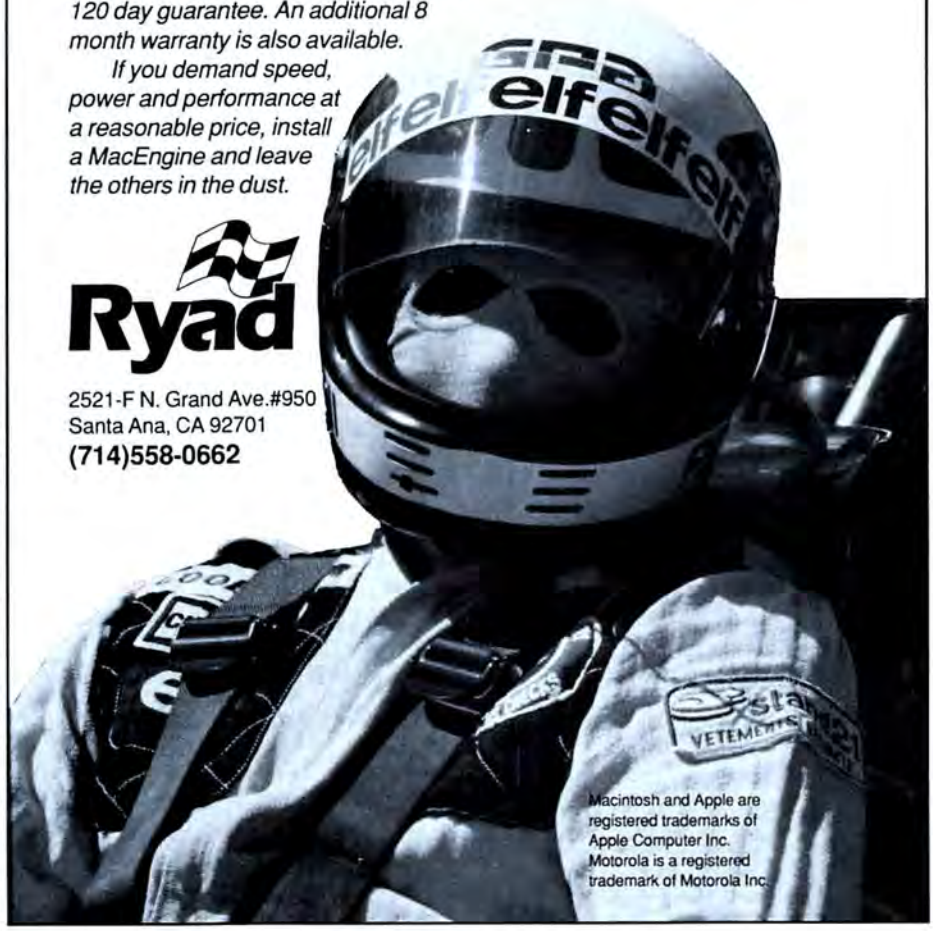

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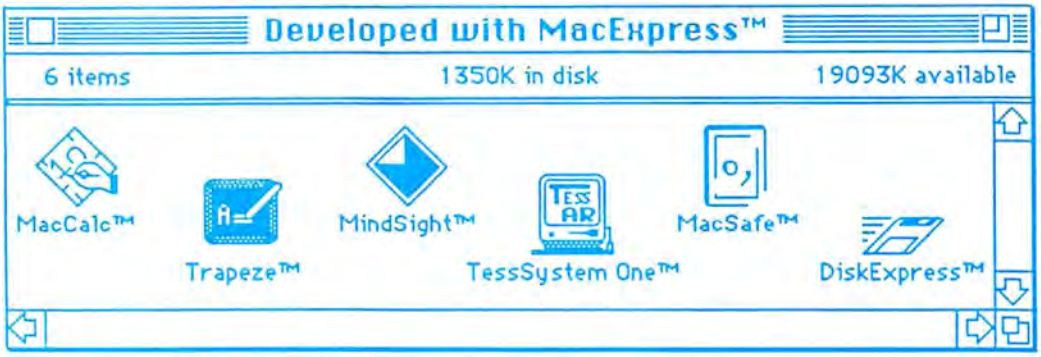

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by Dan Cochran

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 City, NY 10018. Dan will read all of your questions, but, unfortunately, he may not be able to answer individual queries.*

CATCHING UP ON CACHES

Q. Can you please describe the operation and advantages of the RAM Cache utility that is part of the control panel on the 3.2 Macintosh *System*? We received this new system with our Mac upgrades, but don't quite understand how to best use it.

In fact the technical department of one software company advised us to "turn it off and leave it off — it's dangerous." They said file damage can occur with the RAM cache on because even though you've given the Save command, the computer doesn't really save to disk until later moments of inactivity. Is that true?

What settings would you recommend for programs such as *MacWrite*, *ReadySetGo*, and *MacDraw*?

Frankly I doubt if Apple would include this feature if it were truly dangerous, but we did not receive any instructions about it or description as part of our upgrade package.

STANTON J. BOND
GLEN ELLYN, IL

A. *RAM caching isn't anything really new. Even before we included the user-definable RAM cache utility with the 3.2 System, many third-party and shareware authors had been offering RAMdisk-type products for the Macintosh. The idea behind caching is really quite simple. In the never-ending quest for improved system performance, why not fool the system into thinking that a defined quantity of RAM is actually a floppy disk? After all, if I have a 1-megabyte machine and I'm using* MacWrite, *a lot of that memory is going to waste. And it takes only a fraction of the time to write and read data to and from RAM than it does to and from a floppy disk.*

There are actually three types of caching that take place on the Macintosh:

1. Volume Info Caching — Under MFS and HFS each mounted volume has a small amount of RAM allocated to maintain file and volume data. This type of caching prevents the file system from having to do a separate disk access just to find the location of a file or its extent. This type of caching can't be set by the user, and except for the performance benefits derived, should be invisible to most users.

2. Track Caching — With systems that incorporate the new 800K Sony drivers (both RAM-based HFS for the HD-20 and the Macintosh Plus 128K ROMs), track caching will cache the current diskette track — up to twelve blocks — so that any subsequent reads to the cached track will go to RAM instead of disk. Track caching, however, is "write-through" — that is, all writes will go to the RAM cache as well as the disk. Like Volume Info Caching, this is invisible to as well as untouchable by the user.

3. User-Controlled Cache — The heart of your question. With the new 3.2 System *the user can set, via the control panel, a designated amount of memory to be used for file cache operations. The Macintosh File System will then set up the desired cache to accommodate the number of blocks designated by the user. If the user sets caching ON, the cache installation code will also take back the space used by the Volume Info caching routines described above and store that information in the new cache.*

As many as 36 different files can be buffered by this new cache. And the cache maintains a cache queue for each file buffered. This queue contains information about the file blocks, such as their "age," the order in which they appear in the file, and which blocks have been least recently used. When it comes time to handle a new cache request, the blocks that have been least recently used will be released from cache and written back to disk. The file's block order information is useful for writing the entire file back to disk efficiently when the application terminates. If the user has enabled caching, then all files which are either read or written to by HFS are then candidates for caching. This cache is not "write-through." That is, when a file write is done (such as from a Save command in MacWrite), *some blocks of that file will most likely be cached in RAM and not written to disk. Only if the block is released (because of age), the application terminates or a complete volume-flush is performed, will that information be written back to disk. So yes, there is some danger in losing data if an application terminates abnormally, or in the event of a system crash. But even if caching isn't on, an application or system crash can still result in data loss. There are acts of God and acts of programmers that you can never fully defend yourself against.*

I don't use RAM caching because I'm quite satisfied with the performance of my Macintosh Plus without it. On the other hand, some people swear by it. I don't know what guidelines to offer you as to how much to use, other than to use as much as you can get away with. Just make certain that the application itself has enough memory to run.

Also remember that RAM caching takes away available memory from applications

that would otherwise use it. Try using Excel *with your RAM cache set to 768K and you'll see what I mean. And you can't turn off RAM caching in the middle of an application in an attempt to recover memory. If you want to turn off caching you'll need to quit the application, return to the* Finder *and then turn it off. I'd even recommend rebooting after you turn caching off.*

Many thanks to Rick Blair in Tech Support for researching this issue. For a more technical description of caching and its implications to the programmer pick up a copy of Macintosh Technical Note #81. *Cache you later.*

EARPHONE, WHAT EARPHONE?

Q. While cleaning my computer desk I found a small earphone which came with my Mac. It fits right into the sound jack. When inserting a disk at start-up, I can hear many beeps through the earphone. When my Macintosh reaches the *Finder* the beeps stop. Why are they there? I've put off this letter for some time, but the curiosity is killing me. Please explain the Mac's start-up song.

ERIC POULIN
FOREST GROVE, OR

A. *Hmmm...The earphone came with your Macintosh. I can see the Customer Service desks at Apple swamped with calls from people wondering why they didn't get theirs. Anyway, I dug out the earphone that came with my state-of-the-art Sanyo RP1250 transistor radio, plugged it into the sound port, booted my machine, almost lost my hearing in one ear when the start-up bell rang, and indeed was able to listen to the song you describe. For the life of me I can't decide wheather it's a passage from Bach's Credo in the Mass in B Minor, an aria from an obscure Wagnerian opera, or the Grateful Dead tuning up. There's no accounting for the taste of the engineers who choose our start-up music.*

Actually, it's nothing more than the sound chip in the Macintosh picking up some noise from the disk drive electronics. If you listen really carefully, you'll notice that the beeps are synchronized to the activity of your disk drive. Best question I've had in a long time.

SLOW CURSOR

Q. I Have a new Macintosh Plus and I've noticed that when I move my mouse while the disk is being accessed, the wristwatch seems to be held back. It will move, but at a much slower pace than our older 512K Macintosh. Am I alone with this problem or have any other Mac Plus owners mentioned anything? Any word on this would by appreciated.

HEATH BATZ
FORT COLLINS, CO

A. *Good question...simple answer. Your Macintosh Plus is reading and writing twice the amount of data from and to the 800K Mac Plus drive than it had to handle with the old 400K drive, all in the same period of time. Although we could have chosen to give the cursor more responsiveness during disk I/O, we would have done so at the expense of the data transfer rate. Basically a performance tradeoff.*

MY SCREEN WAVES AT ME

Q. The image on the screen of my 4-month old Mac Plus doesn't seem very stable. Straight lines shimmer like sine waves and the overall image expands and contracts.

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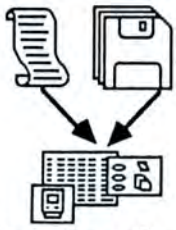

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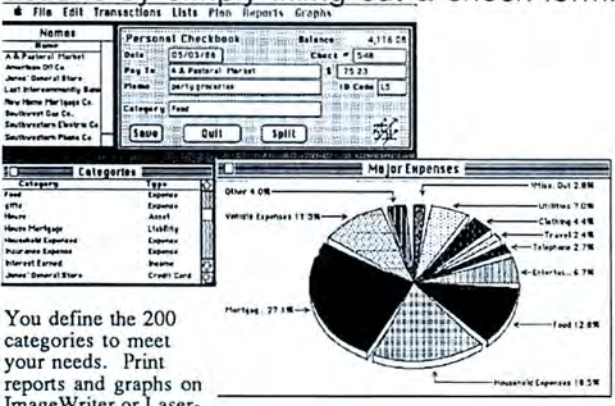

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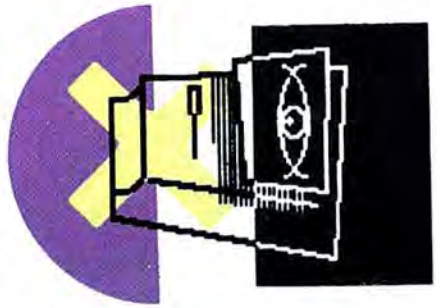
A. *Since you are still under warranty (but won't be by the time you read this reply) get to a dealer ASAP and let them look at it. This problem is often caused by a loose CRT ground wire. It can be fixed by simply screwing the ground wire back in place securely. (DON'T MESS WITH THIS IF YOU DON'T KNOW WHAT YOU ARE DOING!!) If you are out of warranty ask your dealer to check the ground wire connection before they check anything else.*

MORE MAC INFO

Q. I am working with a company that manufactures digitizers of various sorts and I would like to use the SCSI port on the Mac Plus to dump the digitized data into a file that could be later used by either *MacPaint*, *FullPaint* or *MacDraw*. Can you tell me where I can find information on controlling the Mac SCSI port as well as information on *MacPaint* and *MacDraw* file formats? Are there technical notes on those topics that I can have access to? (I don't have a modem.) Another question I have deals with startup screens. I have a utility that enables me to convert a *MacPaint* image into a startup screen document, but how



do I use that document to actually start up with it?

OLIVER PRACHE
ANN ARBOR, MI

A. *Apple has a ton of technical information and most, if not all of it, is available from the Apple Programmer's and Developer's Association (APDA). Lots of people don't have modems, lots of information is too voluminous to download anyway, and dealers aren't equipped to really carry this type of information. You can join APDA for only $20 per year and get a quarterly catalog that lists all of the technical products, tools, utilities, languages and tech notes available. You can think of APDA as the publisher and distributor for Apple's technical information. Anyone who wants to program on Apple products will benefit from APDA membership. We finally have a highly visible, one-stop place where people can get all the information they need easily and inexpensively. The SCSI information you want can be found in two places: (1) Inside Macintosh Volume IV, contains the SCSI manager documentation. You should be able to find this book at any good book store, or you can order it directly from APDA; and (2) APDA has a product called the SCSI Development Package, Version 1.0. This is a starter kit for developers of add-on SCSI products and contains the heavily documented source code for a sample SCSI driver written in assembly language. It's $10 from APDA.*

File format information for MacPaint *can be found in* Macintosh Technical Note #86. MacDraw's *PICT file format is described in Tech Note #21. You can subscribe to* Tech Notes *through APDA for $25 per year.*

Finally, the startup screen. I assume you are using Bill Atkinson's ScreenMover utility to create your start-up screen from a MacPaint *document. You then need only rename the created file "StartupScreen," and place it inside your System folder. Next time you reboot, bingo.*

ANDY MARTIN

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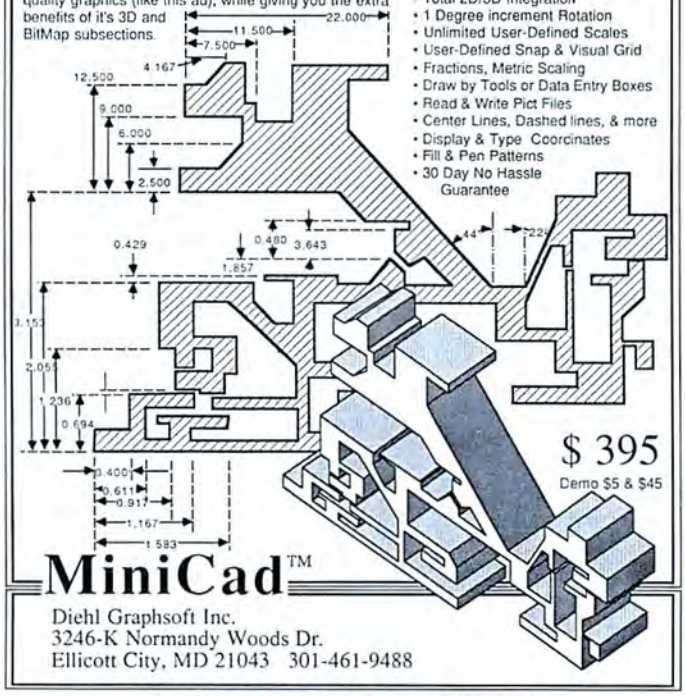

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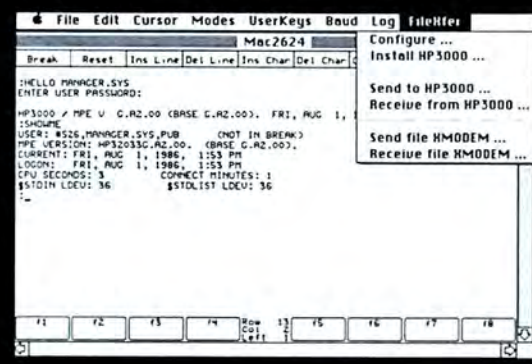

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Have you often wished for a personal assistant to help in picking software? These MiniFinders may not breathe and move, but they do tell you what products are hot and, better, what these products do. Each of these items has been carefully reviewed and selected by the* MacUser *editorial staff. Each has been rated from 1 to 5 mice. 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 database 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 98052-6399. CP (Prem)

Jazz provides well integrated modules for word processing, graphs, ★★★★ worksheets, databases and communications. HotView, is best feature. Requires 512K+ and external drive. Version 1A requires 800K drive. $595. Lotus, 55 Cambridge Parkway, Cambridge, MA 02142. CP (Prem)

Microsoft Works is an integrated application that includes word ★★★★½ processing, database, spreadsheet and telecommunications functions. The telecommunications module includes background uploading and downloading. $295. Microsoft, 16011 NE 36th Way, Redmond, WA 98052. 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 database and provides good quality charts from spreadsheet data. Documentation is adequate, but not too well organized. $199. Haba Systems, 6711 Valjean Ave., Van Nuys, CA 91406. CP

BUSINESS ACCOUNTING

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. $425. Requires 512K+. BPI Systems, 3001 Bee Cave Rd., Austin, TX 78746. NCP (Aug 86)

CheckMark is a Ledger with five preset journals: Cash Disburse- ★★★★ ments, 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

Gallery Finance is a one-write system with General Ledger, Cash ★★★★ Disbursements, Payables and Receivables in a single package. Data entered in a journal is automatically posted to appropriate records. Excellent manual includes tutorial on basic accounting principles. Requires 512K+, printer and external drive. $795. Micromax Systems, 6868 Nancy Ridge Dr., San Diego, CA 92121. CP (Dec 85)

Hardisk is a complex integrated hard disk system that does not ★★★½ use Mac interface. Manual is detailed but complicated, with a few pages that make it Mac-specific. Requires hard disk and printer. $695 per module. Great Plains, Box 9739, Fargo, ND 58109. CP (Dec 85)

Insight is a high-powered accounting program for the small to ★★★★½ medium size business. At present, two modules are available: Accounts Receivable 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 ★★★★½ and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. No detailed or flexible reporting. 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. CP (Dec 85)

Rags to Riches Professional Billing tracks and bills profession- ★★★★ al services. Batches activities for individual timekeepers. Use as standalone, or integrate with *R to R* modules. $399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. 512K+, printer. 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)

Electric Checkbook keeps a running account of checkbook ★★★½ transactions, balances checkbook to bank statements, tracks bills, and prints out checks. Provides detailed financial statements, calculates net worth, lists expenses by category and tracks personal cash flow. $79.95. State of the Art, 3191-C Airport Loop, Costa Mesa, CA 92626. CP

Forecast is a tax estimating and what-if program designed to work ★★★ with and use *Dollars & Sense* files. Straightforward, easy to use program. $69.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP

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 (Mar 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)

DATABASES

Business Filevision is a masterpiece of Macintosh programming, ★★★★ the only true graphic database on any micro. Much more powerful than the original, accepts *MacPaint* graphics. $395. Telos Software, 3420 Ocean Park Blvd, Santa Monica, CA 90405. CP (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 by moving field names around on a blank form. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98052. 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. Mac Plus compatible. $295. Requires 512K+. Forethought, 250 Sobrante Way, Sunnyvale, CA 94086. NCP (Nov 86)

Filevision is a simple database that can change the way you think ★★★ about data and data organization. Records are based around user created graphics screens. Screens and records can be linked in complex ways. $195. Telos Software, 3420 Ocean Park Blvd., Santa Monica, CA 90405. CP

Helix is a relational database 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 database applications, excellent where a relational power is needed. Requires 512K+ and external drive. $395. Odesta, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Mar 86)

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. $99.95. 512K required. Arrays, 6711 Valjean Ave., Van Nuys, CA 91406. NCP (Jan 87)

MegaFiler is a simple file manager. Its limited capabilities have ★★ been far surpassed by cheaper and easier to use programs. Valuable only in conjunction with *MegaForm*. $195. Megahaus, 5703 Oberlin Dr., San Diego, CA 92121. CP

Omnis 3 is a power database, 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, 2655 Campus Dr., San Mateo, CA 94403. CP (Mar 86)

OverVUE is a power-packed relational database that has extensive ★★★★½ 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. Set up is particularly simple and the search features are powerful. $49.95. Software Discoveries, 99 Crestwood Rd., Tolland, CT 06084. NCP (Apr 86)

Reflex For The Mac is a flexible relational database. Excellent ★★★★½ report generator gives full control over appearance, style of output. Requires 512K+, second drive or hard disk, highly recommended. $99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Nov 86)

Writer's Workshop maintains orderly records for writers. It can ★★★½ 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)

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 oscilliscope plots output in real-time. Good for testing basic (and not-so-basic) circuitry without touching a breadboard. $249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP

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. $99.95. 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. $79.95. D2 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+. $195. Execucom Systems, PO Box 9758, Austin, TX 78766. CP

Multiplan, the first Mac product from someone other than Apple is ★★★½ 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. $199.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98052-6399. CP (Mar 86)

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, 3508 Market St., Philadelphia, PA 19104. NCP (May 86)

GRAPHICS & DESIGN

CalendarMaker creates monthly calendars in a variety of formats. ★★★★½ 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.

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 ★★★½ 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 98052-6399. CP

ClickArt Special Effects is a *MacPaint* enhancement desk ★★★½ 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, 2115 Landings Dr., Mountain View, CA 94043. NCP (Apr 86)

ColorPrint facilitates color printing on the standard ImageWriter. ★★★ *MacPaint* files set up as overlays are read into *ColorPrint*, and the program controls proper positioning registration and colored ribbon switching. Good results require lots of hard work, but it's cheaper than an ImageWriter II. $49.95. Esoft Enterprises, PO Box 179, Owasso, OK 74055. NCP (Mar 86)

ComicWorks is a graphics wonder. Manipulate bit mapped graph- ★★★½ ics as independent objects, with up to 64 layers of matting. An airbrush, multiple page capacity, full-screen drawing, and two disks of gorgeous artwork round out this package. Needs better LaserWriter support. $79.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. NCP (Nov 86)

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, 3508 Market St., Philadelphia, PA 19104. 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+. Enabling Technologies, 600 S. Dearborn, Chicago, IL 60605. NCP (May 86)

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. Casady, PO Box 223779, Carmel, CA 93922. NCP

Fontastic is the best font editor now available for the Mac. ★★★★½ 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 ★★★★½ 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, 308½ State St., Ann Arbor, MI 48104. NCP (Jun 86)

GraphicWorks is a powerful bit-mapped graphics program using ★★★½ easels for drawings, balloons for text and panels to contain both. Confusing interface and the manual could be improved. Requires 512K+. $79.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. NCP (Apr 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)

Japanese Clip Art is a two-disk set of extraordinary Japanese clip ★★★★½ 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 Company, 150 W. Acton Rd., Stow, MA 01775. 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. $29.95 each. Century Software, 2306 Cotner Ave., Los Angeles, CA 90064. NCP

LaserWorks is a high-resolution font and graphics editor, produc- ★★★★½ ing LaserWriter-compatible end products. Its numerous well-designed features make it suitable for users of all levels, from beginners to pros. Requires 512K+ and external drive or hard disk. $299. EDO Communications, 63 Arnold Wayh, W. Hartford, CT 06119. CP (Sep 86)

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., 1230 Ave. of the Americas, New York, NY 10020. NCP (Mar 86)

Mac-a-Mug is an Identikit type program for creating faces from ★★★½ facial feature files. Uses scroll bars that are slow and jerky. Lots of creative fun. 512K+ Mac required. $59.95. Shaherazam, PO Box 27731, Milwaukee, WI 53226. CP (Jul 86)

MacDraft is an object-oriented graphics program. It sports ad- ★★★★ vanced 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, 1975 Willow Pass Rd., Concord, CA 94520. CP (Feb 86)

MacDraw is an object-oriented structured graphics program. Can ★★★★½ 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 (Nov 85)

MacPublisher II is the souped-up version of *MacPublisher*. Allows ★★★★ *MacWrite* and *Word* files to be imported and edited; allows up to 96 pages; supports kerning, borders, cropping, and it runs on 128K Macs. $195. Boston Software Publishers, 1260 Boylston St., Boston, MA 02215. CP (Sep 86)

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 graphic powerhouse. $249.95. Challenger Software, 18350 Kedzie Ave., Homewood, IL 40430. NCP (Jan 87)

MapMaker produces maps and analyses of related geographical ★★★★½ data. Additional data disks available. Documentation could be better. Requires 512K; second drive recommended. $295. Select Micro Systems, 2717 Crescent Dr., Yorktown Heights, NY 10598. NCP (Jan 87)

MockPackage+ is a set of extremely powerful DAs. Includes a ★★★★½ 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 is an advanced layout and makeup program. Can ★★★★½ easily create multiple page documents. Output is optimized for LaserWriter. Good documentation. $495. Aldus, 411 First Avenue South, Seattle, WA 98104. CP (Jun 86)

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

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a good selection of shapes. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Oct 86)

PictureBase is a program and accompanying desk accessory for ★★★★★ organizing *MacPaint* and *MacDraw* files. Graphics are organized into libraries, and can be searched for by keywords. $69.95. Symmetry Corporation, 761 E. University, Mesa, AZ 85203. NCP (Jun 86)

The Print Shop makes it easy to create greeting cards, banners, ★ letterhead and signs in minutes. Offers full access to fonts, styles, graphics. Can pull images from *MacPaint* files or off the Clipboard. Don't get near a hard disk. $79.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Dec 86)

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. CP (Apr 87)

ReadySetGo! 3 is a page makeup program for 512K+ Macs. Users ★★★★½ build up pages from blocks of text, graphics and rules. Text and art may be pasted in from another source or created within the program. Good LaserWriter support. $195. Manhattan Graphics, 401 Columbus Avenue, Valhalla, NY 10013. NCP (Apr 86)

Slide Show Magician 1.3 is useful for creating full screen audio-★★★ visual 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)

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 Intelliware, PO Box 6980, Torrance, CA 90504. CP (Nov 86)

Sunshine Graphics Library is a collection of 36 400K disks (to ★★★★ date) with a wide variety of high-quality digitized images stored as *MacPaint* files. Each disk comes with a laser catalog. $20/disk: discounts scale for multiple purchases. SunShine, Box 4351, Austin, TX. NCP (Feb 87)

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)

World-Class Fonts! comes in two volumes of three disks each. ★★★★½ 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

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. Batteries Included, 30 Mural St., Richmond Hill, Ontario L4B 1B5, Canada. NCP (Aug 86)

InTalk comes with its own communications command language ★★★★½ able to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample set up documents and command language files provided. $145. Palantir, 12777 Jones Rd., Houston, TX 77070. CP (Prem)

MacTerminal provides basic telecommunications and terminal ★★½ 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. $99. 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. $74.95. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jun 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 (Jun 86)

Smartcom II balances power and ease of use. Capable of ★★★★½ 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 (Prem)

Telescape 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, 28611B Canwood St., Agoura Hills, CA 91301. NCP (Jun 86)

VersaTerm features include DEC VT100 and VT52, Tektronix 4014 ★★★★½ 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 ★★★★½ 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. The Model Office Company, 49 Wellington Street East, Toronto, Canada M5E 1C9. CP (May 86)

Document Modeler can automate much of a professional office's ★★★★½ correspondence. Comes in two parts: *Template Maker* and *Document Maker.* Initial set-up requires time and is complex. $299.95. The Model Office Co., The Gooderham Flatiron Bldg., 49 Wellington St. E., Toronto, Ontario M5E 1C9, Canada. NCP (Mar 87)

EgWord is a *MacWrite* lookalike that allows full Japanese Kanji ★★★ word processing on the Mac. Does a superlative job of making Japanese text-entry as easy as possible. Great for students of Japanese, may find a place in international business as well. $300. Counterpoint Systems, PO Box 1685, Cambridge, MA 02138. CP (Apr 86)

Just Text is a professional level word processor and page makeup ★★★★½ 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)

Laser Author is a high-powered, technically oriented word proces-★★★½ sor. Good math setting capability. Has style sheets, word count and page layout capability. $199.95. Firebird Licensees, PO Box 49, Ramsey, NJ 07446. NCP (Mar 87)

Liberty Spell Checker is a fast, effective interactive checker. The ★★★½ 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, 410

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Townsend St., San Francisco, CA 94107. CP (Oct 86)

MacIndexer is a good writer's utility that takes much of the ★★★★ mechanical work and time out of preparing an index. Works with *MacWrite* and *Word*. Can generate word frequency counts. $79.95. Boston Software Publishers, 1260 Boylston St., Boston, MA 02215. CP (Jul 86)

MacLightning is an interactive spelling checker in desk accessory ★★★★½ form. 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 ★★★★½ 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, 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. $125. MindWork Software, PO Box 222280, Carmel, CA 93922. NCP (Mar 87)

QuickWord is a word processing accessory that adds sophisticat- ★★★½ ed glossaries to *MacWrite*. Simple to install and use, yet powerful and efficient. $49.95. EnterSet, 410 Townsend St., San Francisco, CA 94107. NCP

The Right Word (ver 3.0)is a standalone spelling checker that can ★★ be used with *Word*, *MacWrite* and *Jazz*. Dictionary scrolling can only be done one word at a time. You have to reload program to check each document. Biggest minus is speed. $89. Assimilation, no longer in business. NCP (Oct 86)

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 ★★★★½ checker. It has many advanced features such as capitalization and homonym checking and comes with a large, well-chosen dictionary. $59.95. Greene, Johnson, 15 Via Chualar, Monterey, CA 93940. NCP (Oct 86)

Thunder! is the best spelling checker currently available. Has a ★★★★★ 50,000-word dictionary. Features Learned Words (a superb glossary) and statistics. A very fast DA, it works interactively and in selection mode. Requires 512K+. $49.95. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5. NCP (Dec 86)

Word is a power word processor for the Mac. It has just about every ★★★★ feature your heart could desire. Supports keyboard commands as well as the mouse. Does mail merge and multicolumn text. Integrates with the rest of the Microsoft line. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98052-6399. CP (May 86)

Word 3.0 is the most feature laden word processor now available. ★★★★½ 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 at least 1200K of external storage. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073. NCP (Mar 87)

Word Handler is a word processor with elements of *MacWrite* and ★★★½ *Word*. Can delete, rename, etc., without quitting. Has case change, flexible printing options and glossary. Slow. $79.95. Advanced Logic Systems, 1283 Reamwood Ave., Sunnyvale, CA 94089. NCP (Oct 86)

WriteNow for the Macintosh has many of the features of ★★★★½ *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)

ORGANIZATIONAL TOOLS

Acta is an outline processor in desk accessory format. It has ★★★★½ 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 text information viewed in hierarchical order. Text files can be created for *MacWrite* editing. $59.95. Innovision, 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 some times complex, but never difficult. $145. SoftStyle, 7192 Kalanianole 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 ★★★★½ 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, however, are limited. $135. OWL International, 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. $125. 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)

MaxThink is an outline and idea processor that focuses on ★★★½ thinking skills. Helps you establish priorities, evaluate ideas, synthesize information. Some unique features and an innovative manual. $89. MaxThink, 230 Crocker Ave., Piedmont, CA 94610. NCP (Oct 86)

Micro Planner Plus is a great project management system with ★★★★½ major enhancement to *Micro Planner*. 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. Uses standard print drivers. HFS compatible. Micro Planning Software USA, 235 Montgomery St., San Francisco, CA 94104. CP (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, 2432 Charleston Rd., Mountain View, CA 94043. NCP (Sep 86)

ThinkTank 512 is a very fast and intuitive organizational tool. Full ★★★½ keyboard control is possible. Can store and paste graphics

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into outlines. Slide show features allows high-quality presentations to be created. Good report formatting and printing capability. $195. Living Videotext, 2432 Charleston Rd., Mountain View, CA 94043. CP (Jan 86)

Volla! 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+, 800K drive or external 400K drive. 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. *Disk Tools* is the best DA currently available. $49.95. Batteries Included, 30 Mural St., Richmond Hill, Ontario, L4B 1B5, Canada. NCP (Dec 85)

Executive Office is a jack of all trades office application. Good data base, word processing, graphics and minispreadsheet. Available on 400 or 800K disks; get the 800 if you can. $249.99. Published by 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. CP (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 makes this program the easiest to use of its type. $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, 410 Townsend St., San Francisco, CA 94107. NCP (Dec 85)

Sidekick is a set of desk organization applications and accessories. Functions include phone dialer and logger, desk accessory terminal, calculator, clock, editor and more. When resource files are included modules take up a lot of disk space. $84.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 85)

Smart Alarms is the best reminder system for the Mac. Easy to use, versatile, and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advance warning options. $49.95. Imagine Software, 2000 Center St., Berkeley, CA 94704. NCP (Oct 86)

Top Desk is a set of 7 self-installing (and self-removing) DAs. Menu Key adds Command key sequences to programs, View allows looking at and moving data between up to 8 *MacWrite* documents, BackPrint, Shorthand, 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 216430, 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)

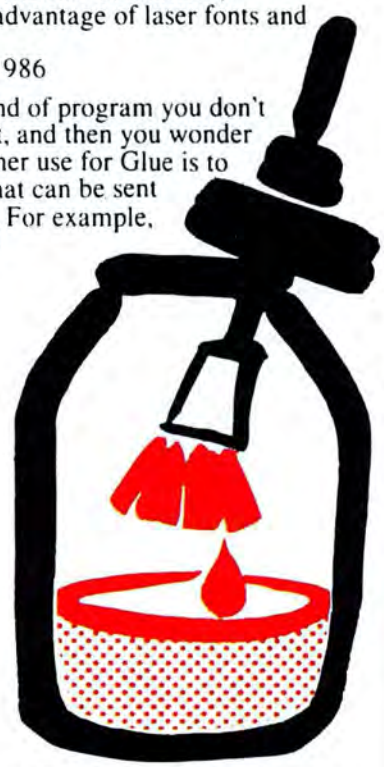
IMAGE SHARING ESSENTIAL FOR DESKTOP PUBLISHING AND FOR THE REST OF US

★**MacWorld** says: "*Glue* also provides an easy way to capture graphics from applications like *MacDraw*, *Jazz*, or *Excel* and paste them into others, including page-layout programs like *PageMaker*. *Glue* captures graphics as large as a full page. One of *Glue's* most impressive features is its ability to store QuickDraw commands, allowing you to take advantage of laser fonts and smoothing . . ." -Erfert Nielson, December 1986

★**MacInTouch** says: "It is the kind of program you don't realize you need until you have it, and then you wonder how you did without it . . . Another use for Glue is to create finished graphic images that can be sent by modem to other Macintoshes. For example, you can create a newsletter with ReadySetGo, and then send the finished work to a colleague, who can then view it even though he doesn't have ReadySetGo himself . . . The operation of Glue is amazingly simple." - Jan Eugenides, November 1986

★**MACazine** says: "Glue effectively frees the end user from having to maintain a large and costly software library in order to use documents created by others . . . Glue is a utility which belongs in every Macintosh user's software library." -C.J. Weigand, November 1986

★**MacUser** says: "Desktop publishers will find this a useful addition to their software library." -DB, December 1986



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★**INFOWORLD** says: "For those who have been longing for a method of transfering full page graphics, *GLUE* will seem a necessity. The utility opens up new possibilities for sharing electronic documents — whether by disk, file server or telecommunications." -K. Thompson, November 24, 1986

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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+. $29.95. ALSoft, Box 927, Spring, TX 77383. NCP (Feb 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, 28611B Canwood St., Agoura Hills, CA 91301. NCP (Mar 86)

Dubl-Click Calculator Construction Set lets users design per- ★★★★½ sonalized 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, 939 E. El Camino Real, #122, 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, 28611B Canwood St., Agoura Hills, CA 91301. NCP (Nov 86)

Glue adds a print-to-disk capability to many programs. *ImageSaver* ★★★★½ installs as printer driver, *Viewer* allows copying and printing of *Glue* files. Handy utility for desktop publishers. $59.95. Solutions, Box 989, Montpelier, VT 05602. NCP (Dec 86)

Hard Disk Util uses patch files to allow users to mount and run ★★★★½ 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 ★★★★½ 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. $34.95. PBI Software, 1111 Triton Dr., Foster City, CA 94404. NCP (Sep 86)

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. $125 per node. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. NCP (Feb 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 ★★★½ 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 ★★★½ 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. CP (Prem)

MacLink lets users transfer data between Macs and PCs. Can do ★★★½ special format transfers such as *1-2-3* to *Multiplan* and *WordStar* to *MacWrite*. Contains both Mac and PC disks, interface cable is optional. Has Mac and MS-DOS disks. $125, $155 with 8-ft interface cable. DataViz, 16 Winfield St., Norwalk, CT 06855. NCP

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. $85. 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. Runs AppleWorks (Apple II integrated software). 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. $69.95. Ken 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 ★★★★½ 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, analyze disk structure and make back-up copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan 86)

myDiskLabeler is an excellent label making program. It can read ★★★★ directories, or use large or small icons, or anything else the user desires. Comes with 54 precut labels on pinfeed paper. HFS compatible. $44.95; with color printing ability (on the ImageWriter II), $54.95. Williams and Macias, PO Box 19206, Spokane, WA 99219. NCP (Aug 86)

'Ncryptor is a simple, safe program that lets users password their ★★★★ files. The same program is used for encoding and decoding. This is the best product in its category. $39.95. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301. NCP

Packer is a simple utility that compresses files. It can be used to ★★★★ save disk space and also protect files. Typical space savings range from 20 to 50% depending on the original file type and size. This is the best program of its type so far. $29. Bobbing Software, 67 Country Oaks Dr., Buda, TX 78610. NCP (Jun 86)

PackIt III is an essential utility. Primarily used to temporarily ★★★★½ "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)

PC to MAC and BACK has both Mac and MS-DOS disks. This ★★★ program efficiently transfers text and other data between PCs and Macs. The documentation is excellent. Does special format transfers such as *WordStar* to *MacWrite*. Includes a cable for direct Mac to PC connections. $149.95. dilithium Press, 8285 SW Nimbus, Beaverton, OR 97005. NCP

Quick & Dirty Utilities, Volume One is a disk chock full of the ★★★★½ handiest programs you have ever bought. Included are a super disk cataloguer, a desk accessory mover and more. Several desk accessories including a menu bar clock and a terminal are on the disk. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Nov 85)

Switcher is Andy Hertzfeld's contribution to Mac productivity. This ★★★★★ program lets users run several programs at once (up to 8 on

MINIFINDERS

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

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

TurboCharger 2.0 rev. D is a RAM cache utility for 512K and ★★★★★ larger. Works on most hard disks and Mac XLs. Dramatically improves any program you use that heavily accesses the disk, like *MacPaint*. $69.95. Microsystems, PO Box 1249, Capitola, CA 95010. NCP (Jan 87)

TurboDownload is a desk accessory designed specifically to ★★★★½ increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50% to over 300% at 2400 baud. $39.95. Mainstay, 28611B Canwood St., 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, 28611B Canwood St., 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. $199 basic system, $299 development system, $499 commercial system. Manx Software Systems, PO Box 55, Shrewsbury, NJ 07701. NCP (May 86)

ExperLISP is a very buggy, but still incredibly useful, programming ★★★ language for high-level programmers. The more you use it, the more you'll figure out about it. System crashes are too common for a language this useful and expensive. $495. Requires 512K+. ExperTelligence, 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. ExperTelligence, 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. ExperTelligence, 559 San Ysidro Blvd., Santa Barbara, CA 33108. NCP (Mar 87)

LAP MacProlog is a flexible program that supports several Prolog ★★ syntaxes, producing a rich programming environment. How-

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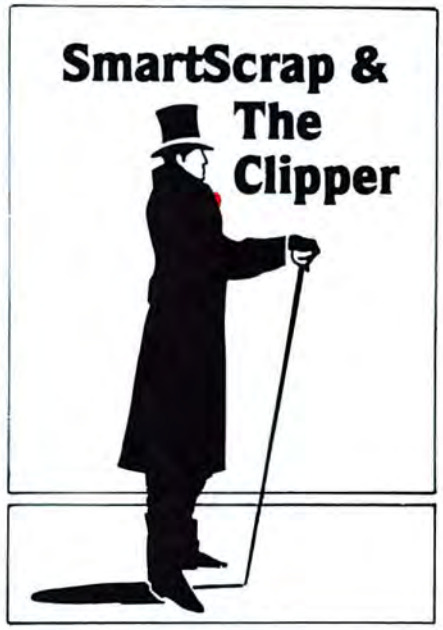

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ever, the program's implementation and documentation are both poor. $295. Programming Logic Systems, 31 Crescent Dr., Milford, CT 06460. NCP (Mar 87)

Lightspeed C provides an integrated environment for the development 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, 420 Bedford St., Lexington, MA 02173. NCP (Apr 87)

Lightspeed Pascal is a fast, powerful development system for Pascal programming. Fully integrated mac-like environment. Requires 512K+. $125. Think Technologies, 420 Bedford St., Lexington, MA 2173. NCP (Feb 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, 28611B Canwood St., 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 is an implementation of the popular Forth programming language. Level 1 is a simple, introductory version. Level 2 supports the Mac Toolbox fully. Level 3 extends the language to allow standalone applications. $149 (Level 1), $249 (Level 2), $499 (Level 3). 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)

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 and the whole Mac interface can be implemented in your programs. For nonprogrammers there are lots of programs available to run. $150. Microsoft, 16011 NE 36th Way, Redmond, WA 98052-6399. NCP

Personal Prolog is an inexpensive and well-documented program. Has no debugging or search and replace facilities, making it

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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 may need separate *Toolbox* disk with 58 additional predicates. Only 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 Courseware, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 86)

TML Database Toolkit is an ISAM type database that provides ★★★★ fast and efficient administration of large data files in applications developed with *TML* compiler. Supports open multiple index files simultaneously. $89.95. TML Systems, PO Box 36126, Melbourne, FL 32936. 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, PO Box 361626, Melbourne, FL 32936. NCP (Jun 86)

TML Source Code Library shows how to write programs that use ★★★★½ custom definition routines, speech, serial drivers, split bars and other topics. Provided on three 400K diskettes. Requires *TML Pascal*. $79.95. TML Systems, PO Box 361626, Melbourne, FL 32936. NCP (Dec 86)

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 ★★★½ programs to maneuver robots through a set of 8 mazes. The programs are written in *ChipWit's* built-in icon-based programming language (IBOL). Now HFS compatible. $49.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP

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 is a nice introduction to musical notes. Sparse documentation. $49.95. Great Wave Software, PO Box 5847, Stanford, CA 94305. CP (Oct 86)

MacChemistry is a two-disk set consisting of a titration program, ★★★ a periodic table program, *MacNest* (a scrapbook with indexing), and a disk of *MacPaint* files. *MacNest* is of general appeal. $145. Fortnum, 31 W. Sierra Madre Blvd., Sierra Madre, CA 91024. NCP

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

MacStronomy is a good package for novice sky watchers. Has ★★★ expandable database of sky objects that can be customized by the user. New version is very fast. $75. Etlon Software, PO Box 649, Lafayette, CO 80026. CP (Apr 86)

MacType offers structured typing instruction. Can teach both ★★★★ standard and Dvorak keyboards. Features include certifi-

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MINIFINDERS

cates 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

NotePro is an educational package that teaches users to organize ★★★★ and make best use of their notes. Consists of five well designed parts. $59.95. Learning Skills, PO Box 8038, Reno, NV 89507. NCP (Jul 86)

Score Improvement System for the SAT is a no-nonsense drill ★★★★ and practice session covering practice tests, vocabulary, reading comprehension, math and quantitative comparisons. On-line tutoring for wrong answers. $99.95. Hayden, 1 Kendall Square, Cambridge, MA 02139. CP (May 86)

Tellstar I & II are Mac astronomy programs. Have extensive ★★★★½ databases, quick sky plotting and can locate specific objects. Level II has southern hemisphere star table, Messier objects. $49.95 (level I), $79.95 (level II). Spectrum HoloByte, 1050 Walnut, Boulder, CO 80302. NCP (Apr 86)

Turbo Turtle is a turtle graphics program primarily designed as a ★★★★ learning tool for children. Uses Logo commands for graphics, but is not a full Logo implementation. Simple to use, good introduction to Logo for young children. $59.95. Hayden, 1 Kendall Square, Cambridge, MA 02139. CP

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+. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. CP (Apr 86)

Airborne is a classic arcade-style game with "real" sound effects. ★★★ The player defends against an assault from flying enemies. Game noises digitized from actual recordings add to the game. $34.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. CP

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 similarities to previous characters. $59.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (June 86)

The Ancient Art of War gives users a chance to refight some ★★★★½ famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, addicting game. Requires 512K+ Mac. $49.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Apr 86)

Archon pits the forces of Light against Dark in a quest to gain ★★★★½ 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. $44.95. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. CP (Oct. 86)

Balance of Power is the world's first computer peacegame. 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. $54.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60022. CP (Prem)

Borrowed Time casts players as detectives who have to solve their ★★★★ own murder — before it happens. This game requires players

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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 ★½ 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. Plays slowly since it's written in BASIC. $29.95. Artworx Software, 150 N. Main St. Fairport, NY 14450. CP (Sep 86)

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. $59.95. Rubicon, 6300 La Calma Dr., Austin, TX 78752. CP (Jan 86)

Dungeon of Doom is a fairly standard, *Ultima*-type adventure ★★★★ game of the pick-it-up, cut-'em-down variety. Fun, if you like the type. Requires 512K. Version 4 is HFS compatible. Shareware. $25. If you like it. John Raymonds, PO Box 13, Pittstown, NJ 08867. NCP (Jan 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)

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 98052. 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 ★★★★½ 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, 1050 Walnut St., Boulder, CO 80302. CP (Nov 85)

Grand Slam is an absorbing and realistic tennis simulation game. ★★★★ Practice or play tournament against Mac-controlled players 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, 20833 Stevens Creek Blvd., Cupertino, CA 95014. CP (Feb 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 3D 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 that ★★★★ requires a joystick for truly effective play. Move around a

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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*. ★★★½ 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 ★★★★½ 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)

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)

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, 55 South Broadway, Tarrytown, NY 10591. CP

MazeWars+ is an interactive, multiplayer game to be played on ★★★★ AppleTalk or through a modem link. Chase opponents 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)

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 4035, Newport Beach, CA 92661. CP

Orbiter puts a real space shuttle on the Mac screen. A multitude of ★★★★½ 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, 1050 Walnut St., Boulder, CO 80302. NCP (Jul 86)

Orbquest is a fantasy role-playing adventure with better-than-★★★½ 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 ★★★½ 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). $40. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. CP (Jan 86)

Psion Chess is as good a micro chess player as you'll find. This ★★★★★ 1984 World Micro Champion makes superb use of graphics and the Mac interface. Switch between 6 languages for a touch of spice. $59.95. Psion, 40 Lindeman Dr., Trumbull, CT 06611. CP (Mar 86)

Puppy Love is a combined game and teaching tool. As you teach ★★★★½ your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. $19.95. Addison-Wesley, Reading, MA 01867. CP (Mar 87)

Real Poker is five-card draw against five other players with Old ★★★★½ West names, distinct personalities and playing styles, in a saloon setting. Dealing and play are very fast. Game evaluates your hand. $39.95. Henderson Associates, 980 Henderson Ave., Sunnyvale, CA 94086. CP

Sargon III is a chess program with 9 levels of play, problem-★★★★ solving modes, take back, hint, etc. Easy Play blocks *Sargon* from stealing search time during player's move, effectively doubling number of levels. Disk stores 107 classic games for review and replay. $49.95. Hayden, 1 Kendall Square, Cambridge, MA 02139. CP (Mar 86)

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 (Oct 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, 2755 Campus Dr., San Mateo, CA 94403. CP (Oct 86)

Smash Hit Racquetball is an accurate and entertaining simula-★★★★½ tion 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. $14.95. Primera Software, 33 Norwood Ave., Kensington, CA 94707. CP (Dec 86)

Strategic Conquest is large scale, strategic conflict on the Mac. ★★★★ This very involved war game will be enjoyed by those who like this genre. $49.95. PBI Software, 111 Triton Dr., Foster City, CA 94404. CP (Dec 85)

Suspended is Infocom's most unique text game. Using a small ★★★★ plastic board and six markers, the player keeps track of six uniquely designed robots which check on damage to a complex's machinery and report back what they perceive as the problem. $49.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. CP

Tass Times in Tone Town is a slightly off-the-wall graphic ★★★½ 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. $39.95. Activision, 2350 Bayshore Pkwy, Mountain View, CA 94043. 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. $64.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Nov 86)

Ultima III allows up to four characters to cooperate to explore the ★★★★½ vast wilderness of Sosaria; dungeons, oceans, and the Moon Gates to help solve the adventure. $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. Epyx, 1043 Kiel Ct., Sunnyvale, CA 94089. 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-

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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 ★★★★½ 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

Zork II is where the adventure continues in the underground ★★★★½ 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. CP

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. CP

MUSIC

ConcertWare+ is an enhanced version of *ConcertWare*. Has ★★★★½ 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, PO Box 5847, Stanford, CA 94305. NCP (Nov 85)

Deluxe Music Construction Set is a good general purpose music ★★★★½ program. An active piano keyboard and instant audio feedback make this program perfect for educational applications. $50. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403. CP (Mar 86)

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)

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

Professional Composer is aimed at music professionals. Pro- ★★★ duces 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, and Editor and a Player, ★★★★½ that produce music with six voices of digitized sound. Excellent program plus good manual make this a good buy. $89.95. Impulse, 6860 Shingle Creek Pkwy, Minneapolis, MN 55430. CP (Dec 86)

HARDWARE & ACCESSORIES

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. $1995. SuperMac Technology, 950 N. Rengstorff Ave., Mountain View, CA 94043.

Ergotron 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 55417.

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 Computers, 20525 Mariani Ave., Cupertino, CA 95014. (Feb 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)

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 ★★★★½ digital waveforms which can then be manipulated using the *SoundCap* software it comes with. Capable of truly stunning effects. Requires 512K+. $129.95. Impulse, 6860 Shingle Creek Pkwy., Minneapolis, MN 55445.

MacNifty Switch allows any port on your Mac to connect to two ★★★★ peripherals. Turn the knob to switch between the two devices. $34.95. Impulse, 6860 Shingle Creek Pkwy., Minneapolis, MN 55445.

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)

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. $399.95. Koala, 3100 Patrick Henry Dr., Santa Clara, CA 95052.

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

Mouse Mover is a mouse pad-type surface that snaps on to the ★★★★½ 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 desk top 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.

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. $49.95 per node. Farallon Computing, 1442A Walnut St., #64, Berkeley, CA 94709. (Dec 86)

ThunderScan replaces the ribbon cartridge in an ImageWriter, ★★★★ which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $229. Thunderware, 21 Orinda Way, Orinda, CA 94563.

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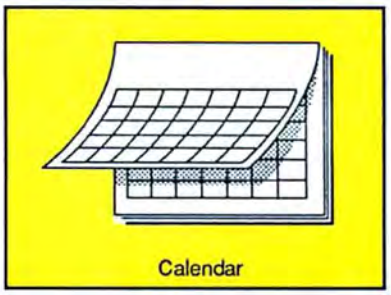

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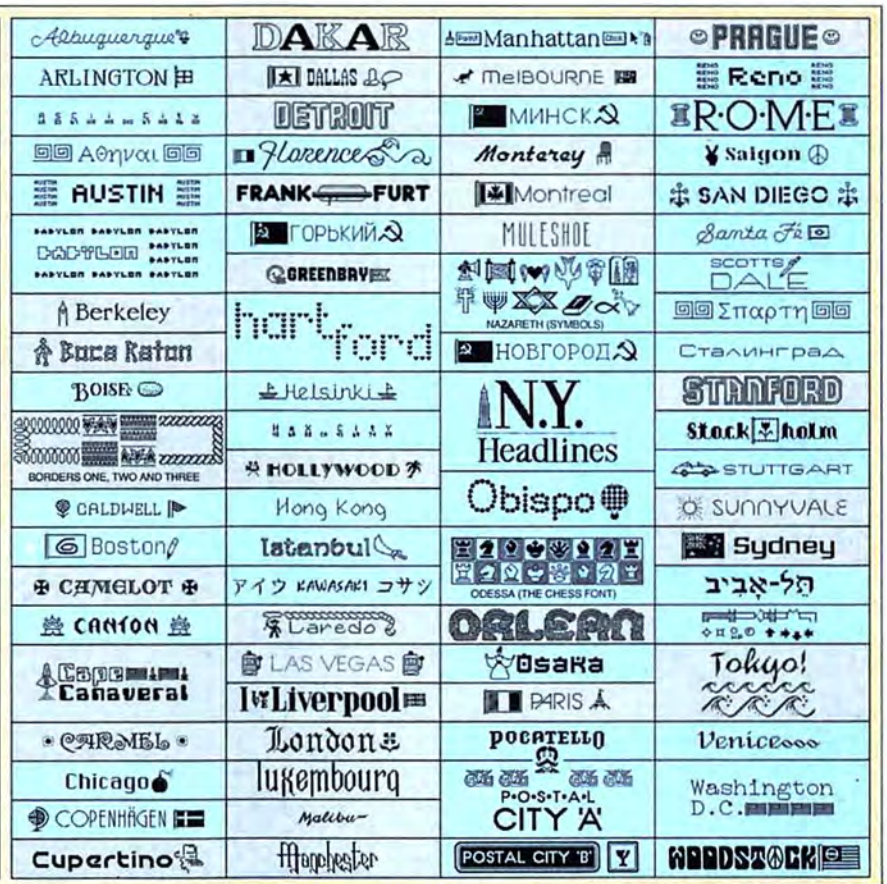

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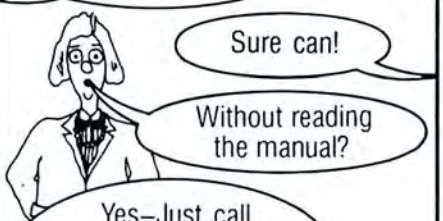

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. . . FOR THE REST OF US

(continued from page 87)

machine and keyboard without the optional hard disk; the higher includes the hard disk. The in-between price range covers other configurations, such as two internal floppy drives.

Apple calls the Mac II "the product that people who loved Macintosh wanted." Maybe we can think of the Macintosh SE as "the product less affluent people who love Macintosh will want."

No matter how you look at it, though, no one will ever dismiss *this* machine — or its big brother, for that matter — as a "cute little computer."

LOUISE KOHL IS THE SENIOR EDITOR OF MACUSER AND A PERSONAL FRIEND OF MIKE WESLEY.

And Furthermore . . .

There are several things about the Macintosh SE that inspire hard questions and suggest a deeper investigation. First, informal discussions (rumor, hearsay and bulletin board patter) have hinted that the SE, previously identified by the code name Aladdin, would be a 68020 machine. You may have noticed from Louise Kohl's article that the SE is in fact a 68000-based machine like its older but less developed brothers, the 512E and Mac Plus. Why didn't Apple make the SE a 68020 machine?

The best answer seems to be a combination of technical, pricing and marketing issues (maybe not in that order). The SE has been under development for some time, and as has been the case with previous Apple products, design decisions had to be made at a time when the chip in question cost much more than it does now. Putting the 68020 in the design from the beginning would have pushed the SE higher up the family tree in price and rearranged Apple's careful positioning of the product. In addition, the 68020 requires some distinct hardware modifications and re-engineering that hadn't been planned for the SE. Revising the system would have delayed the development of the machine considerably.

In the style of hardware and software critics, it's easy for me to sit back and question or attack the way a piece of hardware or software is designed. Since it is easy, I'm going to do it. I think Apple blew it by not making the SE a 68020 machine. I think Apple may agree with this and that could be one reason the machine's introduction — originally intended for January — was held until March. The excitement of the open Mac will perhaps dilute any abuse directed toward the SE for not having the 68020.

Still, with or without the 020 the Macintosh SE is a splendid machine. The power supply has been dramatically beefed up, and two areas of ROM control have been changed that significantly improve the SE's speed of operation. The SCSI manager has been rewritten so the SE has a 2 to 1 interleave for SCSI hard disks (compared to 3 to 1 on the Plus and 1 to 1 on the Mac II). This will speed up disk access times for internal and external drives. The engineers also smoothed out some of the kinks in SCSI handshaking, and you should notice a 1.7 to 2X increase in throughput.

The other major change affects the way the SE's CPU reads information from the monitor. The Macintosh system must constantly check the screen to see if anything has changed and to update the CPU. The CPU may be working hard processing data while this video scanning takes place. This is one reason that operations slow down when there is a lot of information on-screen, especially graphic information, and the CPU is being accessed heavily as well.

In the Mac Plus, the system scans a 16-dot chunk of video information, cycles to the CPU, gets another 16 dots of video, cycles to the CPU and so on down the screen. With the Macintosh SE, the engineers have been able to rewrite the ROM so that the CPU is given three consecutive cycles, the screen one, the CPU 3, the screen 1, and so on. And instead of taking 16 dots of video data in a chunk, the SE gobbles 32 at one time. The result of all this electronic magic is that the CPU gets more of the system's time and this will mean an overall increase in speed. The increase is not a dramatic one — but it is consistent.

By putting in a more robust power supply, adding an internal fan and providing one slot, Apple should have corrected many if not all of the problems that have cropped up when people tried to open the Mac — problems like overloaded power supplies and poor connections to the CPU that resulted in blown fuses, blown analog boards, minor fires, etc.

The Macintosh SE is a considerable improvement on the Mac Plus, almost 100 percent compatible with existing software and much easier to "open up" than previous Macs. — *MW*

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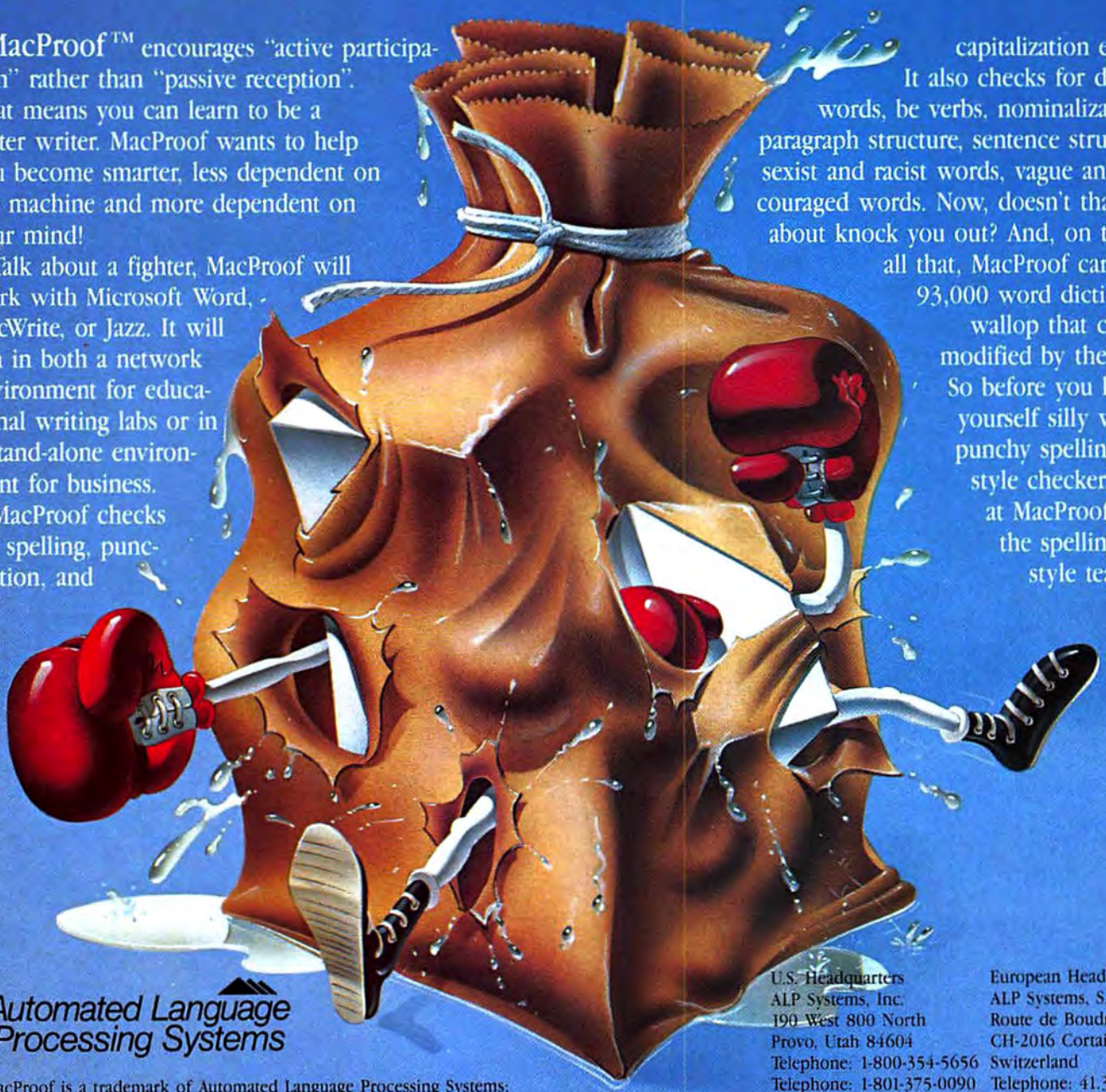

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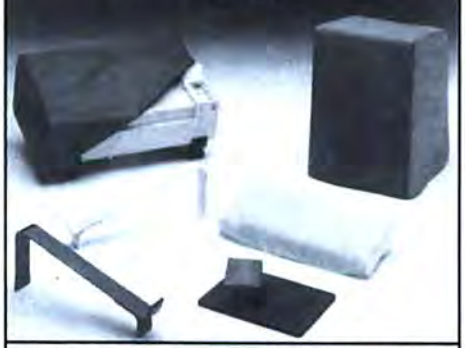

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...THE THRONE

(continued from page 116)

so if you position yourself there, you don't have to kill them when they attack. They come close, but are never able to strike.

●Silicon Beach usually honors Christmas day on their game disks. Change the date of your Mac clock in order to see.

While the game is superb, there's still room for improvement should there ever be another version. There's no way to see how many lives or elixirs you have above 5 and 6. A Get Info-type command when on pause would be nice for this and would not interfere with the attractive status bar. As for the score, an alternate score card would be welcome for the times you topple the Black Knight. On that score card, the lowest score could occupy top position. I'd like to see our hero, after a successful completion of Black Knight 3, play the next level with the appropriate number of medals pinned to his chest. And, of course, it would be nice to be able to save a game.

Overall, *Dark Castle* is the best, and most addicting game to come along in a very long time. It's as good as anything yet done on the Mac. Anyone who enjoys breakneck adventure or the beauty of the Mac should give it a whirl.

LINDA JOAN KAPLAN IS A PSYCHOANALYST IN PRIVATE PRACTICE IN NEW YORK CITY AND A MAC ADDICT (CURRENTLY UNDERGOING TREATMENT).

Dark Castle

Overall Rating	★★★★★
Follows Mac Interface	★★★★★
Printed Documentation	None
On-Screen Help	★★★★★
Performance	★★★★★
Support	★★★★★
Consumer Value	★★★★★

Comments: Multilevel arcade style action game with many levels and screens. **Best Feature:** Totally addictive. **Worst Feature:** Inability to save a game in progress. **List Price:** $49.95. Published by Silicon Beach Software, Inc., PO Box 261430, San Diego, CA 92126 (619) 695-6956. Requires 512K+. Not copy protected.

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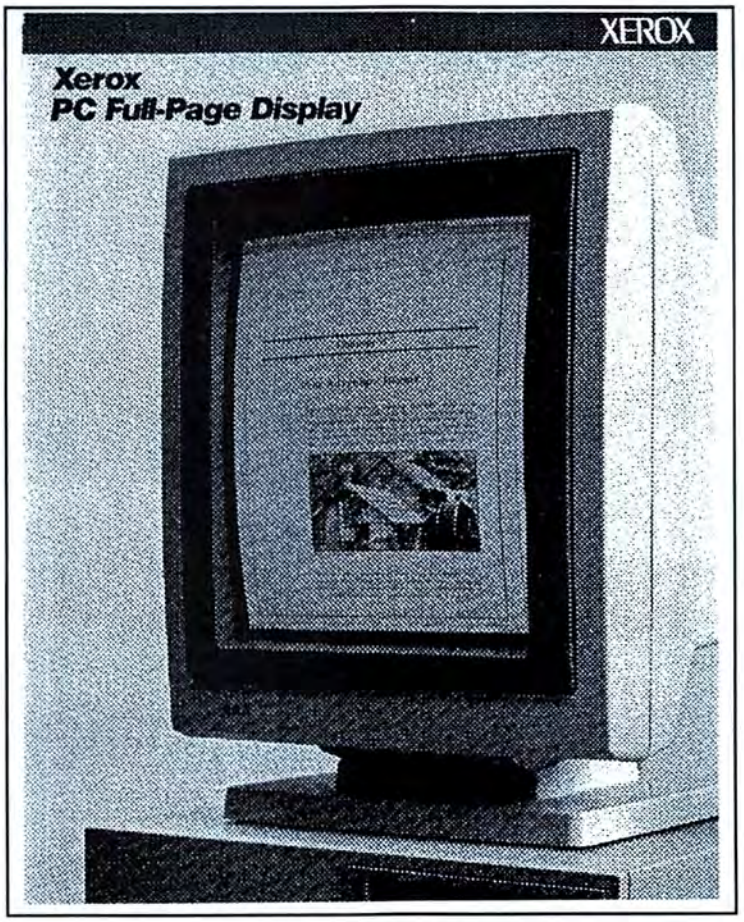

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by John C. Dvorak

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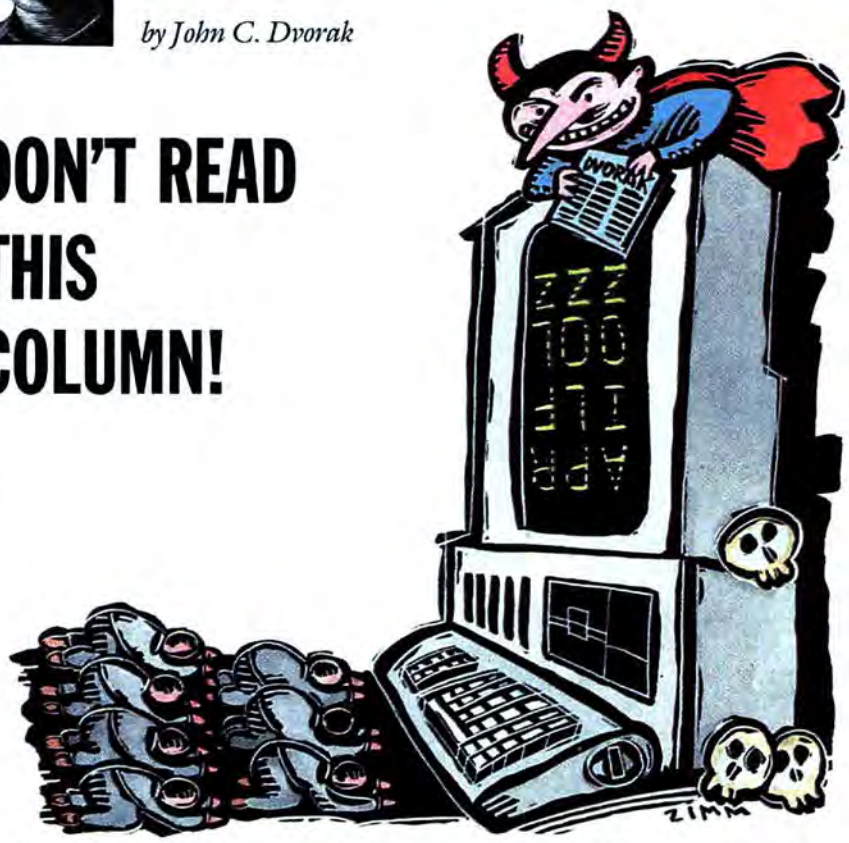

Life is funny. Last week I read this article written about me! Someone sent to me the following clipping:

"Readers are doomed if they read Dvorak's columns. There are hidden and secret demonic messages that you receive from the corporate devils each time you read his columns. These messages of immoral corruption always begin at the end of each column. The reader reads the last word and then counts backwards until the message is finished."

Who thinks thoughts like this? It's obviously the same dull jerk who plays records backwards. You'd think he'd grow up. It's Darby Pugner and his church of Perpetual Passion. Libel suits can result from his kind of gray and muddy assertions.

It starts to wear thin when readers believe this crap. Will paranoid preachers ever learn? Pugner says you count backwards seven words (he says "giant steps") starting from the end. "A corporate satanic conspiracy is very apparent when the column is read backwards from end to beginning. The previous messages have already enslaved thousands of innocent readers. Can nothing be done to stop this? Must we forever be subjected to brainwashing, hidden persuasion and manipulation?" asks Pugner. He then blames IBM and other corporate giants for denying God, goodness and the American way. "It's great big corporations who adversely influence us. The devil is behind it. We shouldn't worship these evil giants. They are satanic. To worship them means you'll be hopelessly doomed to a miserable life in hell — forever!"

Now, I must ask you where are the sane readers? Last year my column was an April Fool's joke. Unlike this column, there WAS a message. You read the first word in each paragraph. (Who couldn't figure it out? It was all boldfaced!) You'd then get a message and it simply said "April Fool's Day. You are being kidded about an imagined life story, and weird computers waiting for your approval." They were designed in France, and were outrageous, screwy and expensive. The spirit of the column was fun.

"Hey! Your column is too close to a mind read," said my editor. "I'm told your descriptions are too accurate. Seven out of ten assertions are correct!" Hmmm, mind control or coincidence I figured. I wasn't taking secret documents or talking to people from Apple France. I didn't even know them or where they were.

Anyway, to stop anyone from thinking that my predictions can possibly be true (apparently something that nobody would believe) we boldfaced the words and said "April Fool's" for all the world to see on the spine of the magazine.

I suppose those are the rules of modern humor. Telegraph the joke! (IBM executives probably still don't get it.)

That was last year. This year my friends told me not to joke around. "Your dubious reputation is fading fast," they tell me. So I figured that I will do a straight informational column that you can hopefully save for your important "computing" library or for that file of serious articles.

But in *MacUser* I write for the cynics. *MacUser* has a staff.

It can write articles about software and used computers better than I. If I ever resort to writing dull informational articles or shallow product reviews, that's when the Mac will have obviously turned me into the magazine's top dork!

Yes, I have enjoyed writing negative columns about all you ever (or never) wanted to know. And you have to mostly agree AND admit that they were funny. Some Dvorak haters deny this, and as a minority they will get lots of recognition in what you call the "controversial letters column." No capabilities or insight (or brains) are exhibited and these complainers are obviously exhibitionists giving performance after performance while moaning and groaning. It's sick. Anyway, no critics ever thought of this hidden message malarky.

My Mac praises ARE weak. So what? Should I sing maniacally, scream aloud, wave my arms and swear allegiance? Hey, I like the PC family of machines, not necessarily the IBM versions. I like the Mac, too. An observer once told me I'd never buy a Mac and love only IBMs and VCRs.

Fact is, I own a Mac and use it. Yes. It's true! Your top Mac tormentor owns one. I'd sell Macs if I could. Many dealers will make a ton of money selling you just the accessories. SO DETRACTORS SHOULD MIND THEIR OWN BUSINESS. In other words, your fears are unfounded and this notion of undying IBM allegiance and ludicrous mind control is pure horse poop. I have taken the side of Apple many times. Have YOU always done the same?

Those who accuse me of prejudice usually hate IBM for sheer pleasure. This attitude comes from the notion that the company is evil, plain and simple. So what kind of nut case thinks there are secret forces, up to no good, deep within the bowels of Big Blue? I'm sick and tired of the notion that somehow Beelzebub even cares about American Corporations. It is to laugh. And secret messages? Forget it!

BOB ZIMMERMAN

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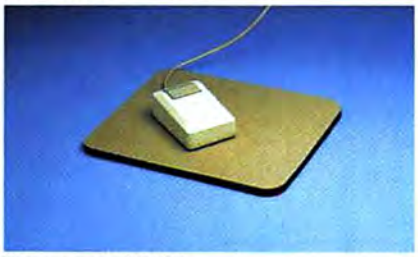

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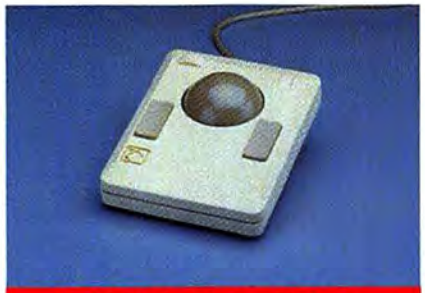

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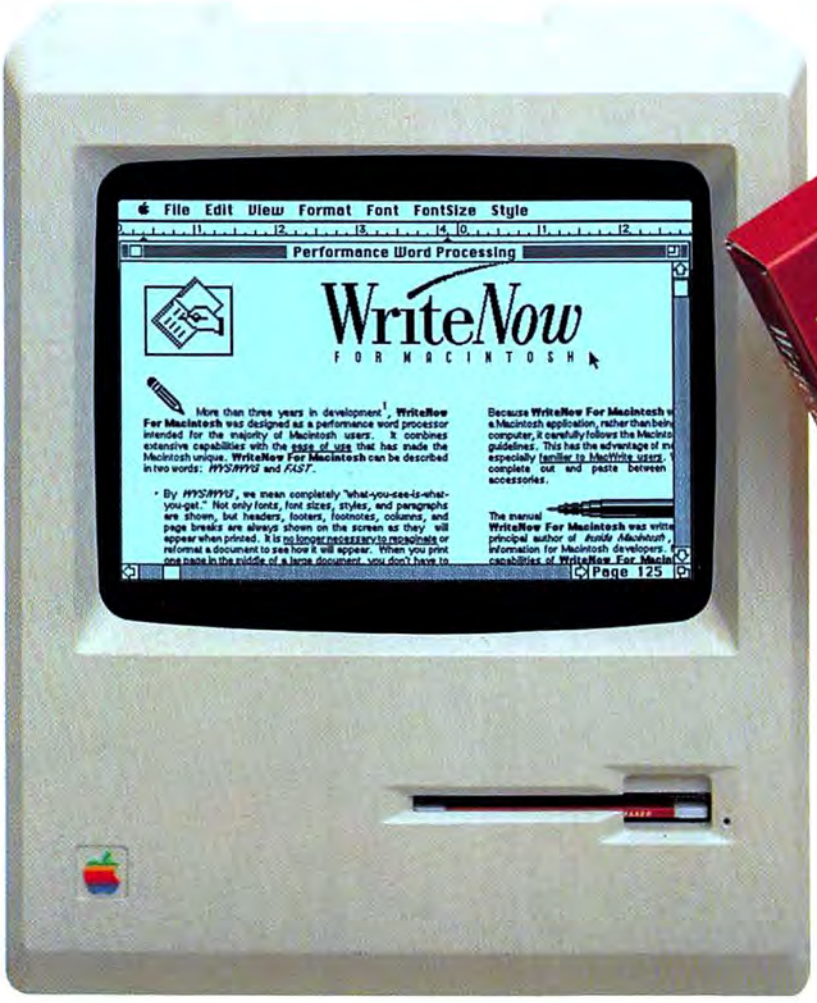

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