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

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A C Compiler For All Reasons

DO IT IN RAGTIME
Syncopated Page Processing

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The Critics' Choice

Turbo Pascal: The
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Turbo Pascal at a glance

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- No need to switch between programs to compile or run a program
- Streamlined development and debugging
- Compatible with Hierarchical File System
- Compatible with Macintosh Programmer's Workshop Pascal (with minor changes)
- Ability to define default volume and folder names used in compiler directives
- Search and Change features in the editor speed up and simplify alteration of routines
- Unlimited use of available Macintosh memory
- "Units" included to call all the routines provided by Macintosh Toolbox

The Critics' Choice

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

Robert Forras, MacTimes

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

John Sculley, Apple Computer, Inc.

System requirements:

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The complete Turbo Pascal package, including compiler and editor, occupies only 30K of memory.

*Introductory offer expires July 1, 1987

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

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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 Gassèe 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.

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 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 Three will be your mainframe's color 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 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 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 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 database 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 demoted 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 ma- vens 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 developed 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 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.

THE FRENCH QUARTER

Ever since John Sculley and Jean-Louis Gassèe 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.

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 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 Three will be your mainframe's color 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 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 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 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 database 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 demoted 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 ma- vens 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!
Art Gallery

Animals (4189,4170) Animal MacPaint pictures volume 1 and 2.

Nudes (4171,4172) Volume 1 and 2.

Apple Scholastixics (4094) Poohs from Apple IIe, IIc & Macintosh™ Exchange/Scholaastics (4116) Detailed MacDraw sketches of Space Pump, Punch, Thrusters...

Word Processing

Printer Utilities (4102) Wordstar to MacWrite, PageSetup (Create your own paper sizes on your printer).

Spellcheck (4104) A speller and extensive dictionary for MacWrite 2.2 and textfiles.

Business

Business Programs (4106) Office Manager (Accounts Receivable, Invoicing, Sales, Inventory) Also included are Excel™ templates: Depreciation, Revenue.

Excellent Exchange™ templates: The following require MS Excel™ to run. Included are great tutorials for learning to work with MacWrite.

Excel templates (4164)

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Excel templates (4165) Database Macros, 1st and 2nd Morgage, Staff Weighting Report, Roles of Equiments, Steam Volume, Triangles, Monthly Calendar, Truth in Lending, Loaning Label II, Tax Templates, Micro Function Tutor & Travel Expense Weekly.

Excel templates (4166) 1986 Call!, Payroll and Checkbook organizer with documentation. Also included: ProgrammerSelf, a programmer's/financial planner's calculator. This program will allow you to print your owner onto Impressions™ (4187)Mac III Demo & Examples

Relational Database program.

Telecommunications

Red Ryder 9.4 (4111) Latest update. It has an autoroll feature and can store up to 80 telephone numbers. It also allows you to receive faxes automatically in any of 5 modes: ASCII, CCITT V1 and II, and M/M3.

Red Ryder Macros (4090) Contains DocJoned® & E. F. Hutton Contact. Also contains a dating of area codes.

Termworks 1.2 (4112) Supports MacWrite II/MacWrite capability for storing numbers & protocol settings. Also included are Freeterm 1.8, Padfill and Flexdom.

Communication Utilities (4167) Binfix 5.0. Supports the raw Z line protocol, as well as the old HEX, HX & HXO protocols. Pack rf 1.2. (Compress your data for faster transmission), Compact, AppleTalk Chat and more.

Hecker Tools

H. Tools (4106) DrawPaint 1.0 (Convert MacDraw files to MacPaint) TabULI (Text File processor: add or remove tabs) Icon Exchanger, Icon Collector, Cleanup, Icon & more.

H. Tools (4106) Patchdisk (Get into any sector of a disk and modify it), Purgescence, Disk Test, Answering machine and more.

Programmer Utilities (4162) SortTools™ (Draw many standard software engineering drawings such as Datasheet diagrams, flowcharts etc.). Fast Eddie A powerful programmers' text editor. Includes documentation.

Programmer Utilities (4163) MainTest, Altier/Exchanger, F3FT Format, PRAM 2, Font-KEY-DA sampler. This very useful program will open any font, Dial Accessory or Function Key without having to install them onto the System. Also included: Cleanup, Mac ID, Hex & ASCII Strings, Developer Stuff (4067) and ResDestruct. (A Macintosh application which can convert certain types of resources in a resource file into source code suitable for compiling with ResEdit (Apple's Resource Editor), Developer Stuff (4068) and Systems 6.0 archiver & more.

Music

Macnifty (4124)

This disk contains realistic digitized sounds that may be added by changing the sampling rate. Sounds include:

Museworks™ songs (4120) Includes Museworks Demo which plays back songs. You can't write your own songs unless you have the commercial Museworks. Songs included:


- Museworks™ songs (4126) Pop Music songs.

Concertworks™ Songs (4123) A varied selection of classical as well as contemporary songs.

Mid Music Applications

These programs require a MIDI Keyboard.

Mid Music (4117) Midi 2, Midi Mouse, 7th Heaven

CZEdit Demo (4118) CZlibrarian for use with the Casio CZ101™ Keyboard.

Educational

Flashcard (4138) Octal Mixing & Codes binary

Math Master (4139) Venn, Conformal Maps, Automata, Tree and Tangent.

Speech Synthesis (4140) The following programs demonstrate Speech Synthesis: Fona, Talking Eliza with demo files & instructions, Speak Easy and La Lineare Machine. (This one will read limericks that are typed in and can be stored with documentation and many educational programs.

Master Tutor (4181) Wainburg. This program facilitates drawing math functions like integrals, summations etc., Equation, Math Drill & Camera tutorial.

Engineering:

DesignScope (4119) Simulation Program that helps design component Circuitry (Demo Version)

Digital Simulator (4120) Digital Logic Simulator, Build & test electrical circuits.

Utility Programs

System Utilities (4102) Bootdisk (After the Welcome to Macintosh message), Change application font, Install (Install necessary to your system that will RESOLVE your program after many system bombs), Window Changer (set yourself to the Save AS & Open dialog boxes)

Disk Utilities (4183) Disk Cat, Disk cataloging program.

Disk Test, Display (text file reader), & Scanner (scanner files). (control files).

Diagnostic Utilities (4184) DiskTest, Speed Check, Ram Test 1, 2, Disk-Ary (Reads directory of & disk then converts it to an outfile document for use with the Adata command). Remount HD (Remount an Apple Hard Drive that has been accidently thrown into the trash).

Updated Disks

Redi 1.2 (4186) European Resource editor. This program is excellent for translating Macintosh programs to other languages. It does not offer any of the resources.

Switcher: 5.0.0.1 (4106)

Languages

Basic Compiler (4101) Complete with documentation and examples.

Smalltalk (4089) Disk also includes Ada and a 5800 assembler.

XStep 1.4 (4077)

Acorn (4075) 68000 assembler and Linker.

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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 IIc 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 an 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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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.

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.

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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.

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4 Process your ideas, then present them.

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F
riends, 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

D
orak'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

R
esponding 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

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

L
et 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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I n 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 Anti­Editor scorned.

unn is like ten cups of coffee; Dvorak’s is like a suicidal dose of sleeping pills.

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 over 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 more 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
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L E T T E R S

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

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:

Is there such a product as Doug Clapp’s Word Tools? If there is such a product,
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fully that within the first month TOPS was available, it was already installed in over 100 Fortune 500 companies. This talk is also remarkably cheap. TOPS is $149 per Macintosh, $389 per PC.

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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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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.

by Ezra Shapiro

(Special to MacUser) Long known for experiments in unusual uses of personal computer technology, Marginal Software, Inc. (MSI) of San Luis Abymo, 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 threat-
**NEW ON THE MENU**

**Executive Emulator**

An 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 bureaus 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. 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

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**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 Deli. There should be a lot of special work. Type 2 will be a very simple basic Mac (1MB RAM, 140K 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 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 Smartoom II... . There'll be a big hard disk shakeout by midyear with up to half of the current manufacturers either failing or moving onto manufacturing add-on boards for the new Macs... . A big debate going on at many publishers is how to 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
Automate

One Keystroke = A Thousand Words.

Touch-n-Go is the answer to repetitive keyboard and mouse entry. Simple key combinations and short abbreviations eliminate tedious typing and lengthy sequences of mouse movements.

Point and Click From the Keyboard. With Touch-n-Go you can perform any mouse operation from the keyboard. You'll never have to move your hands to change fonts or scroll to the end of a document.

Automate any multi-step procedure. Open a MacWrite document, set-up margins and tabs, choose a font and style, then stamp the letterhead on the top of the page — all with a single keystroke!

Touch-n-Go is simple to use. In no time you'll customize keys to make menu selections, scroll through documents, enter formatted paragraphs of text — even combine tasks into other simple abbreviations.

- Create and edit your own glossaries of over 10,000 time-saving abbreviations
- Create entire libraries of customized commands for each of your applications
- Memory-efficient — only 15k
- Macros have never been so easy to use and so powerful
- Mac Plus compatible

Touch-n-Go $39 When purchased separately.

Just one of seven performance enhancing utilities from TopDesk.

TopDesk $59.95

Includes Touch-n-Go, BackPrint and five other outstanding utilities

Lose Wait

Print and Work at the Same Time.

BackPrint lets you continue to work without interruption while you print. Never again will you have to stare at a “Printing in Progress” message.

Print High Quality Graphics. BackPrint is especially designed for high quality background printing of text and graphics from programs like MacWrite, MacDraw, Microsoft Word, Excel, MultiPlan, File, and Aldus PageMaker.

Superior Performance. BackPrint eliminates both printer slowdown from heavy typing and typing slowdown from printing. And that's 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.

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<th>Time required to format a 5-page Word file</th>
<th>Time required to format a 5-page MacWrite file</th>
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<td>MaxPrint</td>
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- Queue up an unlimited number of pages from different documents to be printed in succession
- Prints any document that can ordinarily be printed in high quality, standard quality, best, or faster modes
- Memory efficient — only 6k
- Mac Plus compatible

“BackPrint is by far the fastest spooler” · MacUser (Aug 86)

BackPrint $29 When purchased separately.

Just one of seven performance enhancing utilities from TopDesk.

CORTLAND COMPUTER
PO. Box 9916, Berkeley, CA 94709

See your Apple dealer or call 415-845-1142 to order.

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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., 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 under 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.

Quick & Dirty Util. Vol. 2
Quest Video production with... 

Fokker Triplane 1.0 CP, +
ConcertWare+ 3.1 CP, +
DeluxPaint 1.0 CP, +
Copy II Mac 6.3 NCP, +
Gato 1.42 CP, +
Film 4.1.1 NCP, +
ImageWriter 2.3 NCP, +
Fontographer 2.1 CP, +
Editor 2.0 NCP, +
MacASMA 2.0 CP, +
FontFinder 4.1 NCP, +
Fontographer 2.1 CP, +
Front Desk 3.0 CP, +
FontPaint 1.0 NCP, +
Frontier 1.1 CP, +
FontMover 3.2 NCP, +
Frame 1.4 CP, +
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Java 1.1 CP, +
FontMover 3.2 NCP, +
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JANUARY 1984. (Cupertino, California.)—Apple introduces the Macintosh. At the press conference, six software developers, including Microsoft and Lotus, announce their commitment to the new machine. Among them is THINK Technologies, a start-up developer of advanced systems software.

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

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

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

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

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

The future is here. Order Lightspeed Pascal now.

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

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ACCT # □ MC □ VISA □ AMEX □ CHECK ENCLOSED EXP. DATE

TITLE
CITY
SIGNATURE

COMPANY
STATE ZIP PHONE

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

Lightspeed Pascal is a trademark of THINK Technologies, Inc. Macintosh is a trademark of Macintosh Laboratory, Inc. and is used by Apple Computer, Inc. with its express permission.

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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

This disk is locked.
This disk is full.

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

The Best Bitmap Font Editor.

Imagine gaining absolute control over your letters, documents, reports, and pictures by customizing the actual printed letters themselves. Create unique individual characters never seen before. Call these characters up with the stroke of a key. Size them precisely and repeatably up to 127 points high.

With FONTastic Plus, all this will become second nature to you. FONTastic Plus gives you unlimited access to every Macintosh bitmap font. And the power to make as many new fonts as you can imagine. Text fonts, display fonts, symbol fonts, logos or foreign language fonts are all as simple as clicking the mouse.

Fatbits editing like MacPaint— but with three sizes of fatbits— makes it easy to create and modify characters. Use cut and paste to copy common letter parts from one character to another. Background and guideline layers help maintain a consistent look from letter to letter. An integrated font mover makes installing fonts as easy as cut and paste. Instant print samples let you see how the font looks in print, without having to install it and type a sample.

FONTastic Plus is the next step in font editing. Fast, powerful, easy to use, and only $79.95.

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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. — DB

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

MacCAD

The Two Keys to Turn-Key Drafting

- Architectural & Engineering software templates.
- Compatible with either MacDraw or MacDraft.
- 12 separate library packages to choose from.
- Typically 3 or 4 disks per library package.

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Microspot

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For people who aren't afraid of heights.

If in the race to the top, you are not averse to taking major shortcuts, then we have something to talk about:

Microsoft* Excel for the Macintosh.*

A financial analysis tool of unprecedented power, Microsoft Excel is first of all the most formidable spreadsheet ever to run on a personal computer.

A spreadsheet which is in turn linked in harmony with an extraordinary graphics program and a highly capable data filing application.

These already considerable powers
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.

Yet for all its ability, Microsoft Excel is simple to learn, simple to use. We don’t give you arcane commands to memorize. Or expect you to buy vast libraries on the subject of our program. Or require you to take classes.

The only thing we expect you to take is advantage. Of Microsoft Excel’s simply potent capacity to make mountains of numbers mean something.

If you can imagine how such powers could accelerate your ascendency, see your dealer for a demonstration of Microsoft Excel.

Once you’ve tried it, you’ll never look down.
"Despite our best efforts to disrupt MacServe, we failed. MacServe's automatic crash recovery system was able to recover from the worst network disasters we could throw at it and never lost any data. We could reestablish network connections quickly and without any elaborate recovery procedures. This is a remarkable achievement for such a complex product with so many opportunities for data loss."

"We are impressed and can't imagine what more could be done to make MacServe bullet proof."

INFOWORLD
November 17, 1986

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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 Mac 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 already 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 tax 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 MacInSle, 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.
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.

LASER Serve: 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.]
YOU WOULDN'T DRIVE A CLUNKER TO THE OFFICE.
What BMW has done for the automotive industry, Mirror Technologies has done for the hard drive industry. We don’t simply crank out drives to meet current demands. We carefully engineer them to exceed yours.

Our products are extremely quick — taking you from 0 to 60 pages in a heartbeat. They handle like a dream as they wind through desksloads of information. And their reliability is unmatched. Built to go full throttle day after day. So you can overtake the pack. Instead of just running with them. So don’t settle for a hard drive riddled with compromise. But rather, choose a drive built by a company that looks on compromise as a 4-letter word.

WE’VE GOT A GREAT TRACK RECORD.
Before you buy a drive from a company, you should take a look at their history. Ours is quite impressive.

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.

MAGNET 20X, 30X AND INTRODUCING THE 40X.
Here are all the choices for storage you need (20, 30 and 40 Mb). 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.

MAGNUM TAPE 20. INTRODUCING THE MAGNUM TAPE 40.
For the serious user who can’t afford to lose data. These “safety nets” keep a portable, permanent record of your data. So reliable, the Library of Congress uses us to backup their most critical data. Free software update policy so your tape drive can be updated as we update ours. We’re the only one to deliver file by file, volume and incremental backup. With incremental, you backup only the data you’ve changed since your last backup. These totally secure systems run silent and cool. When we designed the new Tape 40, we worked side by side with Apple and 3M so it would be compatible with any products released by Apple in the future.

THE MAGNUM 800.
THE MAGNET 40/40.

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

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

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

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WHEN YOU WORK IN THE FAST LANE, YOU CAN’T AFFORD TO BREAK DOWN.

To win in today’s fast and furious corporate arena, you need a drive that can survive the grueling pace. You need a well built machine.

Well you’ll be happy to know that our drives are so well built that we were the first to introduce a full-year warranty. And of course, this warranty is still policy today. Plus each unit comes with a Quality Assurance Report detailing every step of production. And finally, before a drive is allowed out the front door, it is tested for 24 continuous hours to insure its durability.

Our “pit crew” is equally dependable. If you ever have a problem, we have trained experts standing by. Just give us a call, toll free. And we’ll have you up and running in no time. Flat.

WE’RE REVVING UP FOR THE FUTURE.

The Macs of tomorrow are just around the corner. And with Mirror Technologies, you can hit the ground running when they arrive.

Currently, we’re shipping more drives than any other company except Apple. Like the 85X, 172X, the Magnet 40/40 and tape drives, too.

When File Servers hit the streets in January, we were there with big enough hard drives to tie dozens of Macs together. Other drives would blow an engine trying to do that.

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

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Dynamac is a hardy traveler, but also one with savoir faire. The internal 300/1200 Baud modem operates on both U.S. and CCITT international standards; compatibility at 110/220 volts, 50/60 Hz is built in...as is an E-Machine interface for a direct connection to the Big Picture™ monitor.

Dynamac is available in more than two dozen different configurations—prices starting at just under $5,000. All options and upgrades come from a single point of warranty.

Dynamac. It lets you leave the office without getting left behind.

For additional information, please contact Dynamac Computer Products, Inc., 1356 Cole Boulevard, Suite 252, Golden, CO 80401. (303) 233-0305.

Because the world of information doesn't sit still.
UNSUNG HEROES

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 Shanghi in four consecutive issues — in articles, in my column and in New on the Menu. Every time we mentioned Shanghi we raved about it because all of us, myself in particular, think that Shanghi is a brilliant program.

Brad did not chastise me for mentioning Shanghi, 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 Shanghi, 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 Shanghi, 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 Kerce 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 our 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 Oppenheim. 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 compatibility 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 DHA, more or less) supervised the development of the open Mac. Ron Hochsprung and Rich Castro, two long-time 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 Lentzner 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 68801 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-
If your Mac can't graph like this, it's not quite Cricket.

Cricket Graph

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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 multithreading 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.
CRICKET DRAW

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

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Special effects with text are Cricket Draw's forte. Place text on any arbitrary path; rotate, tilt, shadow, shade — YOU NAME IT!

PRECISE CONTROL

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

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High quality graphics output on a laser printer requires knowledge of PostScript. Cricket Draw is actually a PostScript code generator. It does all the work. You never have to come in contact with PostScript, UNLESS you want to. Then you can access a PostScript window to edit or create your own code from scratch.

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Your current draw program is simply obsolete. why not advance to Cricket Draw, just $295, available at local dealers everywhere.

Requires a 512K Enhanced Macintosh or a Macintosh Plus.

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We've thrown Page

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But that's not the only reason to consider Scoop. Scoop also allows you to create text and graphics simultaneously, without having to develop the two separately and then combine them. PageMaker can't do that, either.

And Scoop is a totally self-contained program. It comes complete with the features you'd find in SuperPaint™ and MacDraw™, an excellent word processing program, and our own best selling spelling checker, MacLightning.™ It also accepts scanned images and PostScript® files (like Adobe's Illustrator®). Scoop is

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fast, comprehensive and remarkably cost-efficient.

And PageMaker? Well, even if you bought all the supplementary programs, it still wouldn't do what Scoop can do. And you'll have spent more than twice as much.

Point is, if you want to produce first class brochures, catalogs, financial reports, newsletters and the like — and save time and money — you really ought to get the Scoop. Pick it up at your local dealer starting May 1st.

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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 Gray 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 bit paths 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 590K 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 communicate, and learns to do what you did. MacLightening 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: new computers can watch all the time! Not surprisingly, this will be easier with Macs than with IBM s. 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 menu? Access a particular menu item often? It might suddenly have a command-key equivalent.

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

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Compatibility: Macintosh 512K, 512K Enhanced or Plus; Finder 5.5 and Chooser; Apple modem and Hayes Smartmodem or compatible; ImageWriter and LaserWriter; selected laser and dot matrix printers from Brother, Diablo, Epson, Hewlett-Packard, IBM, NEC, Star Micronics, Texas Instruments, and Toshiba; HP desktop plotters; HP LaserJet laser printers.

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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 gotten 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.

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 resemblance 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 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 brings any file to the 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 labels without visible borders).

Groups of symbols can be selected and 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.

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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 management 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 engineers, 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 kernel. 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 Mengazol

### WRITER'S WORKSHOP


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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QUICK CLICKS

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 it 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 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.

Play 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 play.

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. Depending on your 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.

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


Ask anyone vaguely familiar with computers what 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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If that was all VersaTerm-Pro could do, it would be a very strong if not exceptional 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 program 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

Graphically


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 oval, rectangles and the like. Each easel is a full-featured bit-mapped drawing region and each panel is an editable text block, which can beEmpty 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 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 percent, 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 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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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

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 are 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.

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


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, 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!

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, TextEditor 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 Quick-Draw 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.
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
### 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 chips to do it.

**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.

**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 modems.  
DB-25 SCSI ports  
Decided to keep the DB25 to maintain consistent interface across machines.

**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.

**Mouse**  
Standard Apple mouse  
Mechanical tracking, optical shaft encoding  
New mouse looks like Apple II GS 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.

(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 II 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 of the 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.
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 understand; I just don't usually feel like drooling over it.

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...

Another Two Cents Worth

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 5 1/4" 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 5 1/4" 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.

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 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.
SOFTWARE

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Cortland ... CP
TopDesk (7 new desk accessories) ... 35.

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

Cricket Software ... NCP
Cricket Graph (multiple windows) ... 129.

Cricket Graph (multiple windows) ... 129.

Cricket Draw (advanced draw capabilities) ... 179.

DataViz ... NCP
MacLink Plus (transfer MacIBM 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.

Drib-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 (free-form info organizer) ... 52.

Forethought ... NCP
Factfinder (form-free info organizer) ... 49.

FileMaker (custom forms & reports) ... 79.

FileMaker Plus (feature packed database) ... 159.

Fortnum/Southern
Macintosh Choco-Choco (512k, NCP) ... 21.

Macintosh Choco-Choco (512k, NCP) ... 21.

FWB Software ... NCP
Hard Disk Backup (protect hard disk info) ... 39.

Hard Disk Partition (speeds up hard disk) ... 39.

Hard Disk Utility (program backup) ... 59.

Great Wave Software ... NCP
KidsTime (educational, ages 3-8) ... 29.

ConcertWare + (music composition) ... 29.

ConcertWare + MIDI ... 75.

Greene, Johnson ... CP
Spellwell (spelling checker) ... 52.

Hayden Software ... CP
I Know It's Here Somewhere (hardy file) ... 20.

Hayden Software (for Word & MacWrite) ... 27.

MusicWorks (songs for Mac) ... 32.

DaVinci Building Blocks (NCP) ... 46.

Home Design (NCP) ... 49.

Score Improvement for the SAT ... 59.

Score Improvement for the SAT ... 59.

Achievement Test ... 59.

VideoWorks (animation) ... 59.

Idealform ... CP
MacLabeler (font 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 Accounts (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.

Super French/Spanish ... 39.

MacHieroogie.cs, MacKana/Basic Kanji ... 39.

MacSem/Coptic/Devanagari, MacKorean ... 39.

MacArabic, MacGreek, MacHebrew each 59.

SuperGreek New or Old Testament ... 79.

MacGreek/Hebrew/Philippines ... 89.

LaserGreek ... 79.

LaserFrench/German/Spanish ... 79.

LaserCyrillic ... 115.

Living Videotext ... NCP
ThinkTank 512k (outline processor) ... 99.

More (outlines, windows, & trees charts) ... 159.

MacMemos ... 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.

MacFlight ... CP
Flight Simulator (the Mac takes flight, CP) ... 33.

Learning Multimap and Chart (2 disks, CP) ... 39.

Basic Interpreter 3.0 (NCP) ... 59.

Chart 1.0 (42 chart styles, CP) ... 72.

Multimap 1.1 (63 col. by 255 rows, CP) ... 111.

File 1.04 (flexible database manager, NCP) ... 111.

MacWrite (word processor, CP) ... 111.

Basic Compiler 1.0 (NCP) ... 119.

Fortran 2.0 (compiler, NCP) ... 169.

Works 1.0 (integrated tool, NCP) ... 189.

Excel 1.03 (power spreadsheet, NCP) ... 225.

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

Mindscape ... CP
The Lusher Profile (personality profile) ... 24.

The Perfect Scope - SAT ... 47.

ComicWorks (create your own comics) ... 49.

GraphicWorks (workshops, ads, posters) ... 49.

Monogram ... NCP
Forecast (tax preparation) ... 41.

Dollars & Sense (home, small business) ... 81.

New Canaan MicroCode ... NCP
MDCFinder (requires 512k) ... 20.

Mac Disk Catalog II (requires 512k) ... 32.

Odestra ... NCP
Heliq (req. 512k, external drive) ... 105.

Double Helix (relational, custom menus) ... 289.

Painting ... 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.

Peacetime ... CP
Back to Basics GL, AP, or AR ... each 89.

Double Helix (relational, custom menus) ... 289.

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 Palette Collection (NY's finest) ... 29.

Dinner At Eight ... 35.
The SE is the way to go — or at least to start.

BY LOUISE KOHL

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 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 Keyboard with 105-key switch 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-
<table>
<thead>
<tr>
<th>MacConnection Special of the Month</th>
<th>Through April 30, 1987</th>
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<tbody>
<tr>
<td>MacSnap Memory Upgrades</td>
<td>Designed for either a 512k Mac, or a MacPlus. MacSnap memory upgrades offer greater productivity. Several models are available, all 100% compatible with your Mac's operating system and the new Apple ROMs.</td>
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<tr>
<td>- up to 60% increase in performance</td>
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<tr>
<td>- easy installation, no soldering</td>
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<td>- full one year warranty</td>
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<td>- includes a RAM disk, and Apple's</td>
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<td>- Switcher™</td>
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<tr>
<td>MacSnap 524 (512k to 1MB)</td>
<td>$149.</td>
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<tr>
<td>MacSnap 548 (512k to 2MB)</td>
<td>$399.</td>
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<tr>
<td>MacSnap Plus 2 (MacPlus to 2MB)</td>
<td>$269.</td>
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This is a partial listing. Please call for additional MacSnap specials.

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<th>Games</th>
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<td>Accolade</td>
<td>CP</td>
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<td>Hardball (baseball simulator)</td>
<td>$27.</td>
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<td>Activision</td>
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<td>Championship Star League Baseball</td>
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<td>Mind Shadow (Who Am I?)</td>
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<td>Hacker (you're on your own!)</td>
<td>27.</td>
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<td>Hacker II (breach Russian computer)</td>
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<td>Borrowed Time (murder mystery)</td>
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<td>Shanghai (Mah Jongg strategy)</td>
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<td>Alter Ego (male or female version)</td>
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<td>Addison-Wesley</td>
<td>CP</td>
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<td>Puppy Love (your dog will love it!)</td>
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<td>Ann Arbor Softworks</td>
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<td>Grid Wars (3D graphic arcade)</td>
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<td>Artwork</td>
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<td>Bridge 4.0 (sharpen your skills)</td>
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<td>Avalon Hill</td>
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<td>MacPro Football</td>
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<td>Blue Chip</td>
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<td>Millionaire (stock market)</td>
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<td>Tycoon (commodities)</td>
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<td>Baron (real estate)</td>
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<td>Squire (personal finance, req. 512k)</td>
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<td>Broderbund Software</td>
<td>CP</td>
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<td>Lode Runner (over 150 levels)</td>
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<td>Ancient Art of War</td>
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<td>Toy Shop (create working models)</td>
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<td>Bullseye</td>
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<td>Ferrari Grand Prix</td>
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<td>Formula One racing</td>
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<tr>
<td>Electronic Arts</td>
<td>CP</td>
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<td>Archon (arcade strategy, req. 512k)</td>
<td>27.</td>
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<tr>
<td>Skybox (3D graphics)</td>
<td>27.</td>
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<tr>
<td>One on One/Dr J vs. Larry Bird (req. 512k)</td>
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<td>Patton-vs-Rommel</td>
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<td>Pinball Construction Set</td>
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<td>Epxy</td>
<td>CP</td>
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<td>Rogue (fantasy dungeon classic)</td>
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<td>Temple of Asp (4 levels)</td>
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<td>Winter Games (Olympic events)</td>
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<td>Hayden Software</td>
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<td>Perplex (scrabble-type game)</td>
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<td>Sargon III (9 levels of chess)</td>
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<td>Infinity Software</td>
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<td>Grand Slam (tennis, req. 512k)</td>
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<td>Infocom</td>
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<td>Leather Goddesses of Phobos</td>
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<td>Wishbringer, Enchanter, Trinity</td>
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<td>Moonmist, Bathjoo, Cutthroats, Zork I (standard)</td>
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<td>Love, Forever Voyager (advanced)</td>
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<td>Spellbreaker (expert)</td>
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<tr>
<td>Invisibles (hint booklets)</td>
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Please circle 82 on reader service card.
MacConnection.

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

Miles Computing ... CP
MacAttack (3D tank simulation) ................. 27.
Harrier Strike Mission (3D light simulation) .... 27.
MacWars (3D space simulation) ................. 27.

Mindscape ... CP
Racter (converse with your Mac!) .............. 27.
Balance of Power (world politics) ............. 30.
King of Chicago (req. minimum 512k) .......... 30.
Bratacus (great graphics, req. 512k) .......... 30.
Uninvited (mystery adventure) ................. 30.
Dea Vu (murder mystery) ....................... 33.

Origin Systems ... CP
Exodus: Ultima Ill (fantasy adventure) ......... 38.

PBI Software ... CP
Strategic Conquest (multi-user) ................. 35.

Pallon ... CP
Psion Chess ................................ 59.

Qware ... CP
Orb Quest (graphic fantasy adventure) ......... 29.

Sierra On-Line ... CP
Championship Boxing (knock 'em out) ......... 25.

Silicon Beach Software
AutoCon (CP the classic) ......................... 20.
Enchanted Scepters (CP over 200 scenes) ..... 21.
Dark Castle (NCP, arcade action) ............... 28.

World Builder (NCP program creator) ........ 42.

Simon & Schuster ... CP
Star Trek—The Kobayashi Adventure ............ 24.

Sin-Th ... CP
Mac Wizardry (high-rated fantasy) ............ 36.

SPHERE, INC. ... NCP
 Formerly Spectrum Holobyte .................... 31.

GATO (submarine simulation) ..................... 26.
Orbiter (space shuttle simulation) ............ 27.
Tetris II (N & O. & hemispheres, req. 512k) .... 32.

XOR ... NCP
NFL Challenge (be the coach) ................... 79.

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

Apricorn ... 1 year
Apricorn Mac (Mac Plus parallel interface) .... 75.

Curtis Manufacturing ... lifetime
Diamond (6 outlets) ................................ 29.
Emerald (6 outlets; 6 ft cord) ................... 35.
Sapphire (3 outlets; EMI/RFI filtered) .......... 47.
Ruby (6 outlets; EMI/RFI filtered; 6 ft cord) .... 55.

Dove Computer ... 1 year
MacSnap Memory Upgrades ....................... see special

Ehman Engineering ... 1 year
600K External Disk Drive ......................... 225.

Ergotron ... 1 year
MacTilt (includes external drive bracket) ... 75.
MacBuffer 512K .................................. call
MacBuffer 1024K .................................. call

Hayes ... 2 years
Smartcom II (communications software) .... 89.
Smartmodem 1200 or 2400 ....................... call

InterBridge (connect Appletalk networks) .. 59.

IOMEGA ... 90 days
Bernoulli Box (dual 10 MB w/SCSI) .......... 1649.
Bernoulli Box (dual 20 MB w/SCSI) .......... 1895.
Bernoulli Box (dual 10 MB, Appletalk) ...... 2198.

Kensington ... 1 year
AppleTalk Cable Clips or Connectors. each $1.
Mouseway (mouse tracking pad) ............... 8.

MacAttack (for your arcade mouse) ............ 8.

Mac Plus System Saver Cover ................. 9.

Imagewriter II (Dust Cover) .................. 9.

Mouse Cleaning Kit w/Mouse Pocket .......... 17.

Disk Case (holds 36 Mac disks) ............... 19.
Disk Drive Cleaning Kit ....................... 20.

TrilSwivel ...................................... 22.

Universal Copy Stand ......................... 24.

Polarizing Filter ............................... 34.

Surge Suppressor .............................. 35.

A-B Box (for the Mac Plus) ................. 65.

Control Center ............................... 65.

System Saver Mac (complete with fan) .... 66.

Turbo Mouse .................................. 69.

Koala Technologies ... 90 days
KAT Graphics Tablet ......................... 139.
MacVision (digitizer) .......................... 175.

Kraft ... 1 year
3 Button QuickStic k ....................... 49.

Mirror Technologies ... 1 year
FastPort ("SCSI" for your 512k Mac) .......... 139.

Magnum 800K External Drive .......... 229.

Magnum 20 Ktx (w/MacServe) .............. 995.

Magnum 20 Tape Backup .................... 929.

Magnum 30x (w/MacServe) ................. 995.

Magnu friends 40/40 (40MB, 40MB tape) .... 2695.

Magnu tape 50x (w/40MB tape) .......... 4595.

Personal Computer Peripherals ... 1 year
MacBottom Hard Drive 20MB (kernal) .... 879.

MacBottom Hard Drive 40MB (SCSI) .......... 879.

MacBottom Hard Drive 60MB (SCSI) .......... 999.

MacBottom Hard Drive 100MB (SCSI) .... 1295.

Summographics ... 90 days
MacTablet 6" x 9" (stylist driven) .......... 299.

MacTablet 12" x 12" (sketching) ............ 389.

Systems 2 years
MacGard (surge protection) .................. 55.

Thunderware ... 90 days
Thunderscan (high-resolution digitizer) ...... 179.

Westernware ... 1 year
DASCH RAMdisk 1000K ...................... 379.

DASCH RAMdisk 2000K ...................... 459.

DISKS

Single-sided Diskettes
Sony 3½” Disks (box of 10) .................. 15.

MAXELL 3½” Disks (box of 10) ............ 15.

Verbatim 3½” Disks (box of 10) .......... 15.

Full 3½” Disks (box of 10) ............. 15.

3M 3½” Disks (box of 10) .................. 18.

Double-sided Diskettes
Sony 3½” Disks (box of 10) .................. 23.

MAXELL 3½” Disks (box of 10) .......... 23.


Fuji 3½” Disks (box of 10) ............. 24.

3M 3½” Disks (box of 10) .................. 24.

INFORMATION SERVICES
Compuserve

Dow Jones
Dow Jones News/Retrieval Membership Kit .. 24.

Source Telecomputing
The Source (subscription & manual) ....... 30.

ACCESSORIES

Automation Facilities
Floppicine Drive Care Kit .................. 15.

Floppicine Refill (ten cleaning disks) ....... 10.

MacPak Complete Care System ........ 29.

Clean Image Ribbon Co.
Clean Image Ribbon Kit ................... 12.

Computer Coverup
External Disk Drive Cover .................. 4.

Imagewriter II (Cover) ................... 8.

Mac (Plus) & Keyboard (two covers) ....... 10.

Diversions
Underwrite Ribbon (iron-on black transfer) 9.

Multi-color Transfer Ribbon ............. 19.

ColorPack (includes Colorpens) ......... 19.

I/O Design
Imagewriter II (Imagewriter II carry case) . 59.

MacPlus Plus (Mac Plus carry case) ....... 69.

Innovative Concepts
Flip & File Micro (holds 25 disks) ....... 9.

Flip & File (holds 40 disks) ............. 18.

Innovative Technologies
The Pocket Pak (holds 6 disks) ......... 10.

The Easel (holds 20 disks) ............. 15.

The Disk Directory (holds 32 disks) ....... 15.

The Library (carousel, holds 80 disks) ... 29.

Kalmar Designs
Teakwood Roll-top Case (holds 45 disks) .... 15.

Teakwood Roll-top Case (holds 90 disks) ... 22.

Magnum
Mouse Cover (let your mouse ride!) ....... 14.

Moustrak
Moustrak Pad (standard 7" x 9") .......... 8.

Moustrak Pad (large 9" x 11") .......... 35.

Ribbons Unlimited
Imagewriter Black or Color Ribbons ..... 5.


Smith & Bello
Mahogany Disk Case (holds 90 disks) ....... 28.

OUR POLICY
We accept VISA and MASTERCARD.
No surcharge added for credit card orders.
Your card is not charged until we ship.
If we must ship a partial order, we never charge freight on the shipment[s] that complete the order.
No sales tax.
All U.S. shipments insured; no additional charge.
APO/FPO orders usually shipped 1st Class Mail.
Allow 1 week for personal and check orders to clear.
UPS Next-Day Air available.
COD max. $1000. Cash or certified check.
120 day limited warranty on all products.*
To order call us anytime Monday thru Friday 9:00 to 5:30. We will automatically use UPS cover UPS shipping. We will automatically use UPS Blue charge will be added. For all other items, add $2 per order. For all other items, add $2 per order. Alaska and Outside Continental US: Call 603/446-7711 Monday through Friday 9:00 to 5:30.

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

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 "home range" 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!

Betty Faber investigates the stuff dreams are made of.
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.

What it means is no more piggy-backing 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

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.

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

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.
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, you'll 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)

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REPORTING IN RAGTIME

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

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 rejusify and graphics will automatically be resized 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
REPORTING IN RAGTIME

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. Or alternately, content cannot be edited. Type in frames may vary somewhat, but all Micro say that overlapping text in frames is bad. A frame with a 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.

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

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

A N D A O N E , A N D A T W O ....

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.

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,
REPORTING IN RAGTIME

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 full-sized 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 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 PRINT.

Ragtime

Overall Rating
Follows Mac Interface
Printed Documentation
On-screen Help
Performance
Support
Consumer Value

Peripheral Land, the SCSI Experts

* RANKED #1 IN SEPT. ISSUE OF MacUser
* THE PERIPHERAL LAND DISK SATISFIES 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.

* IT ALSO COMES WITH A COMPLETE SET OF FLEXIBLE UTILITIES TO FORMAT AND PARK THE DRIVE.

* ALL PERIPHERAL LAND HARD DISK DRIVES RUN AS A SINGLE HFS VOLUME, OR CAN SUPPORT HFS AND MFS VOLUMES SIMULTANEOUSLY WHEN FORMATTED.

* ALL UNITS COME WITH FULL YEAR WARRANTY.

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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...
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 pur-
chase 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 start-
ed 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 informa-
tion 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 Mac-
intosh, as well as many more exotic
applications.

Until quite recently, hypertext has
been available for only a few main-
frame 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 environ-
ment for creating hypertext docu-
ments and for turning existing elec-
tronic text into hypertext. It also
supplies the support necessary to
view completed hypertext docu-
ments. 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 pro-
vides 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. Howev-
er, users of MiniGuide are not able to
author their own hypertext docu-
ments.

Guide’s special talent is its ability
to create “hot spots” in a document
that trigger a display of additional
PUTTING IT IN CONTEXT

PUTTING IT IN CONTEXT

PUTTING IT IN CONTEXT

There are many different ways of categorizing the jobs people do. It is useful to look at these categories because they help us to compare and contrast the features of different jobs that we may like or dislike.

One of the most useful schemes for categorizing jobs has been devised by John Holland. He found six different basic types of activities. Later he found that the six categories could be used to categorize not only jobs, but also work settings and to some extent the personalities of workers.

These are his six basic occupational types:

- Realistic
- Investigative
- Artistic
- Social
- Enterprising
- Conventional

The essence of the program lies in its ability to create buttons. 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 presence of a reference 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.

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
Follows Mac Interface
Printed Documentation
On-Screen Help
Support
Consumer Value

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Mac the Knife

Oh, the shark has pearly teeth, dear. And he shows them pearly white. Just a jackknife has Mac Heath, dear, and he keeps it out of sight.

When the shark bites, with his teeth, dear, scarlet billows start to spread. Fancy gloves, though he wears Mac Heath, dear. So there's not a trace of red.

On the sidewalk Sunday morning lies a body oozing life; Someone's sneaking round the corner. Is the someone Mack the Knife?

From a tug boat by the river, a cement bag is dropping down; The cement just for the weight dear. Bet you Mackie's back in town.

Louie Miller disappeared, dear; After drawing out his cash. And Mac Heath spends like a savior. Did our boy do some thing rash?

Sukey Tawdry, Jenny Diuer, Polly peachum, Lucy Brown, oh, the line froms on the right, dear. Now turn Mackie's back in town.
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
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 DICTIO-NARY 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-
confuses 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 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.

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 rigueur 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 MacProofWord/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  
Follows Mac Interface  
Printed Documentation  
On-Screen Help  
Performance  
Support  
Consumer Value  

Ten thousand pages, take it or leave it.

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

Introducing 'Tomet'!

A rather revolutionary Bering 20 mb Bernoulli compact disk drive system for Macintosh computers. And, the first truly portable 5 1/4" system. One that lets you tote around 10,000 pages of data on a sleek cartridge about the size of a piece of bread.

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

Yet unlike floppies, the Tomet 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 aero-dynamics 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 Tomet 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 Tomet cartridge.

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

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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.

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 “sub-creator,” 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-
CUSTOM BUILT

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 Dark Dungeon then the Torture Chamber rectangle should be moved above (north of) the Dark 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.

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 on-screen. 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.

**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 “Orfful the Ore” or just a generic ore?) 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 a hit, receives a hit, or 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...
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 never 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 COMUSER’S HUGE AND POPULAR MICRONETWORKED APPLE USERS’ GROUP (MAUG).

World Builder

Overall Rating 1 1 1 1 1/2
Follows Mac Interface 1 1 1 1 1
Printed Documentation 1 1 1 1 1
On-Screen Help 1 1 1 1 1
Performance 1 1 1 1 1
Support 1 1 1 1 1
Consumer Value 1 1 1 1 1

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

THE RATS 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 track-ball 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 is action, adventure and total excitement. We dare you to stop playing (and tell you how to play better).

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
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 to choose from 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 5 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 affected 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 cut.

**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 way. You must have mastered the running jump in order to span the second gap.

Using the action key, take the maze or morningstar. When holding this weapon, you can't throw rocks. Once you drop the maze, 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
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**

First shoot off ledge (otherwise you'll fall on your face and probably die of falling boulder while you are regaining your equilibrium). When the way looks clear, 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 ledge, 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 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.

I, 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 and 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 gargoyles 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 pole are obstacles which can be overcome by simply shifting your body to the opposite side of the pole. Do that as 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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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.

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 addi-

tion 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 warn-
ings 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 communi-
cate 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 assign-
ments (from Inside Macintosh, vol-
ume IV, page 215) is shown in
Table 1. The only way to fit in more
DAs is to use slots you’re not sup-
posed 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.

BY BILLY STEINBERG

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 acces-
sories built into applications. Most
DAs are installed in the System file,
and are available in all applications
(that support DAs), because the Sys-
tem file is always open (well, almost
always).

But DAs can be installed in appli-
cations 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,
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 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, 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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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 Edit 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>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Slot#</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>33</td>
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<td>34</td>
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<td>36</td>
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<tr>
<td>37</td>
</tr>
<tr>
<td>38</td>
</tr>
<tr>
<td>39</td>
</tr>
</tbody>
</table>

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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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 desktop 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-esque 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.
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 places 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), 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 messages 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.

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 dictat 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

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routines that LM 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 spade-work 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...
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 project files, 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 Nor 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 | 4 1/2 |
| Follows Mac Interface | 4 1/2 |
| Printed Documentation | None |
| On-Screen Help | 1 |
| Performance | 3 |
| Support | 2 |
| Consumer Value | 3 |

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) 865-5536. Not copy protected.
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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 CLOONEY
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 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 MCAINESPY
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

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 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 or LaserWriter Page Setup... and Print... dialog boxes. For both of the dialogs, COMMAND-D or COMMAND-PERIOD chooses Cancel, while COMMAND-D 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 margin 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

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

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

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
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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 *Scratchbook* DA and paste the graphic into the *Scratchbook*. 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 *Scratchbook* 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 (6) is the control code for ESCAPE, or ASCII 27.

Bob Rronabarger  
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**

<table>
<thead>
<tr>
<th>Style</th>
<th>Command</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bold on</td>
<td>Option-o 1</td>
<td>6!</td>
</tr>
<tr>
<td>Bold off</td>
<td>Option-o 2</td>
<td>6&quot;</td>
</tr>
<tr>
<td>Underline on</td>
<td>Option-o X</td>
<td>6X</td>
</tr>
<tr>
<td>Underline off</td>
<td>Option-o Y</td>
<td>6Y</td>
</tr>
</tbody>
</table>

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.

**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 pointing 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.

**MindWrite** allows you to produce a document up to 15-1/2 inches on a wide carriage ImageWriter. *MindWrite* windows automatically zoom to the size of the screen so you will not see more than 6-1/2 inches of *MindWrite* 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.

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**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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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 activity occurs. 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 ELYN, 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 RAM/disk 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 Save 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 go to the RAM cache as well as the disk. Like Volume Info Caching, this is invisible to as well as unnoticeable 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 caching 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 30 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.” Instead, 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-flash 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 should 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. Hmmn...The earphone came with your Macintosh so why is it better to see the Customer Service desk 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 Sony RP1250 transistor radio, plugged it into the sound port, boosted my volume, 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 whether 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 be 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.

What gives?

CHUCK SPUGNEN

WASHINGTON, DC

A. The image on the screen of my Mac Plus also seems to be shaking. When I load any program that uses the video chip, I can see the same image expanding. The image expands and contracts. What gives?

MICHAEL A. KORDesch

SAN FRANCISCO, CA

A. The image on the screen of my Mac Plus also seems to be shaking. When I load any program that uses the video chip, I can see the same image expanding. The image expands and contracts. What gives?

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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 Association (APDA). Lots of people don’t have u201cnew u201d 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.

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## MINIFINDER INDEX

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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 concise. Requires 512K plus and printer. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98052-5399. CP (Prem)

Jazz worksheets and databases. Provides a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. Requires 512K plus and external drive. $395. Lotus, 55 Cambridge Parkway, Cambridge, MA 02142. CP (Prem)

Microsoft Works is an integrated application that includes word processing, database, spreadsheet and telecommunications functions. The telecommunications module includes background uploading and downloading. $295. Microsoft, 16011 NE 36th Way, Redmond, WA 98052. CP (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

### 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)

### BUSINESS ACCOUNTING

**BPI General Accounting** is an easy to use system. Six journals. Requires AR, AP, Payroll and GL on one disk. Offsets 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 Disbursements, Receipts, General, Sales, and Purchases. Menus and data entry are very straightforward. Flexible summary reports are built in, but customer and vendor information is very minimal. $295. CheckMark Software, PO Box 860, Fort Collins, CO 80522. CP

**Gallery Finance** is a one-write system with General Ledger, Cash Disbursements, Payables and Receivables in a single package. Easy to use program. $59.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Dec 85)

Insight is a high-powered accounting program for the small to medium business user. At present, two modules are available: Accounts Receivable and General Ledger. Others are in the works. Requires 386K and hard disk. $995. Layered, 85 Merrimac St., Boston, MA 02114. NCP (Dec 86)

Rags to Riches integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. No detailed or flexible reporting. Very easy to use, but it can be confusing with several windows on screen. Requires 512K plus 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 professional 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. CP (Aug 86)

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 spool. Requires 512K plus and printer. $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 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, $49 California. SoftView, 4620 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 that handles 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 Flevolution** 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 that turn Flevolution 2.0 into a powerful tool for customizing applications. Requires 512K+, AppleWorks, and Enhanced AppleTalk. $295. ProPlus Software, 2830 E. Brown Rd., Mesa, AZ 85203. NCP (Nov 86)

**FileMaker Plus** retains features of FileMaker and reads FileMaker data, also displays up to 8, files, uses "lookup" to retrieve data. $195. DataBase Dimensions, 1028 W. 17th St., Santa Barbara, CA 93109. 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 (Oct 86)

**FileMaker** 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 (Feb 86)

**Flevision** is an environment to generate custom applications built around a data base-type framework. Contains enhancements that turn Flevolution 2.0 into a powerful tool for customizing applications. Requires 512K+, AppleWorks, and Enhanced AppleTalk. $295. ProPlus Software, 2830 E. Brown Rd., Mesa, AZ 85203. NCP (Nov 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 (Oct 86)

**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 (Feb 86)

**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 (Oct 86)

**FileMaker** 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 (Feb 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 (Feb 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. MegaHouse, 5703 Oberlin Dr., San Diego, CA 92121. CP

**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. MegaHouse, 5703 Oberlin Dr., San Diego, CA 92121. CP

**Omnis** 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 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 86)

**Professional Bibliographic System** is a specialized data base storing and retrieving bibliographies. Redesigned templates (20) simplify creation. Version 2.6 offers improved speed, flexible formatting. $295. Personal Bibliographic Software, Box 4250, Ann Arbor, MI 48106. CP (Feb 87)

**Record Holder** is a flexible, easy-to-use form-oriented data manager. Setup is particularly simple and the search features are powerful. $49.95. Software Discoveries, 99 Crestwood Rd., Tolland, CT 06084. NCP (Apr 86)

**Reflex** is a flexible, easy-to-use form-oriented data manager. Setup is particularly simple and the search features are powerful. $49.95. Software Discoveries, 99 Crestwood Rd., Tolland, CT 06084. NCP (Apr 86)

**Writer's Workshop** is a very powerful and flexible word processing program. Hands 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 (Dec 86)

**StatView 512 +** is an excellent tool for preparing tax forms. Intuitive, 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)

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**GRAPHICS & DESIGN**

**CalendarMaker** creates monthly calendars in a variety of formats. Users can incorporate their art and daily notes. Note files can be imported from a variety of DA calendars and outliners. Shareware and prelicensed versions available.

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**NUMBER CRUNCHING**

**DesignScope** is a construction kit for digital and analog circuits. Up to 254 components can be utilized in a single circuit, and the equivalent of a dual trace oscilloscope plots output in real-time. Good for testing 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 (Dec 86)

**StatView 512 +** is an excellent tool for preparing tax forms. Intuitive, 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)
MINIFINDERS

$30. CE Software, 801 73rd St., Des Moines, IA 50312. NCP (Dec 86)

Chart can easily create area, bar, column, line, pie, scatter and combination charts. A total of 42 styles are provided. Limited to 100 data items (64 in a series) on a 128K Mac, approximately twice that on a 512K Mac. $125. Microsoft, 16011 NW 36th WAY, Redmond, WA 98052-6399. CP

ClickArt Special Effects is a MacPaint enhancement desk accessory. Allows the user to distort, stretch, rotate and use perspective on MacPaint documents. A necessary addition for all serious users of MacPaint. $49.95. T/Maker, 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 and colored ribbon switching. Good results are seen with lots of hard work, but it's cheaper than an ImageWriter II. $49.95. Essoft Enterprises, PO Box 179, Oswego, NY 13126. NCP (Mar 86)

Commlworks is a set of consistent fonts. Base prices are $120 for fonts designed 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 priors, colors, and patterns. Self-generating macro formatting. $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. $300 disk. Enzasan Enterprises, PO Box 27731, Milwaukee, WI 53226. CP (Jul 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 233779, Carmel, CA 93922. NCP

Fontastic is the best font editor now available for the Mac. It 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. Altys, PO Box 865410, Plano, TX 75086. NCP (Dec 85)

Fontographer is a complex, but excellent laser font creator. The 128 fonts created by Freeform are $149.95. Enzasan Enterprises, PO Box 27731, Milwaukee, WI 53226. CP (Jul 86)

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. Altys, PO Box 865410, Plano, TX 75086. NCP (Jun 86)

GraphicalWorks is a powerful bit-mapped graphics program using 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)


LaserFonts are new fonts for the LaserWriter. Users download them to their machines. Very high quality and very simple to use. Williamette looks like Avant Garde. MicroFonts provides tiny, expanded and condensed versions of the LaserWriter's own fonts. $29.95 each. Comtech Software, 2306 Cotner Ave., Los Angeles, CA 90064. NCP

LaserWorks is a high-resolution font and graphics editor, producing 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 Way, W. Hartford, CT 06113. 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-e-Mug is an identikit type program for creating faces from facial feature files. Facial feature files can be designed, imported or hard disk. $29.95. Shamerazam, PO Box 27731, Milwaukee, WI 53226. CP (Jul 86)

MacDraft is an object-oriented graphics program. It sports advanced features such as variable scaling, single degree rotation, complex arcs and a FatBits-like magnification mode. Best used to complement MacDraw, not replace it. $239. Innoop, PO Box 2975 Willow Pass Rd., Concord, CA 94520. CP (Feb 86)

MacDraw is an object-oriented structured graphics program. Can be used to design forms, create presentation materials and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Text can be easily generated and integrated in the graphics. $195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. CP (Feb 86)

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., Benton, WA 98025. 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 pictures 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 60430. NCP (Jan 87)

MapMaker produces maps and analyses of related geographical data. Additional data disks available. Documentation could be better. Requires 512K. second drive recommended. $295. Select Micro Systems, 2717 Crescent Dr., Yorktown Heights, NY 10598. NCP (Jan 87)

MockPackage+ is a set of extremely powerful DAs. Includes a latest editor, text printer (supports LaserWriter), chart, 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 easily create multiple page documents. Output is optimized for LaserWriter. Good documentation. $495. Aldus, 411 Front 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
MINIFINDERS

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, letterheads 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! is a page makeup program for 512K+ Macs. Users can upload pages from MacWrite, 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 10513. NCP (Apr 86)

Slide Show Magician 1.3 is useful for creating full screen audio-visual presentations on the Mac. Frame branching, improved editing capacity, better external 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 Inteliware, PO Box 6980, Torrance, 90705. NCP (Apr 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.

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 Fontlas is a full-featured telecommunications program that 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)

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)

RedFinder 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)

SmartCon II balances power and ease of use. Capable of unattended operation and has a very powerful command language. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Prem)

Telescope is the power telecommunications terminal program. Can be configured to remote terminals or Data General DG200 emulation. Supports Xmodem and MacTerminal Xmodem protocols and MacBinary. Versatile and easy to use and well documented. $99. Peripherals, Computers & Supplies, 2457 Perikemen Ave., Mt. Penn, PA 19606. CP (Prem)

VersaTerm features include DEC VT100 and VT52, Tektronix 4014 graphics terminal and Data General DG200 emulation. Supports Xmodem and MacTerminal Xmodem protocols and MacBinary. Versatile and easy to use and well documented. $99. Peripherals, Computers & Supplies, 2457 Perikemen Ave., Mt. Penn, PA 19606. NCP (Apr 86)

WORD PROCESSORS

Document Compare allows users to compare any two MacWrite or 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 MS 1C9. CP (May 86)

Document Modeler can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial set-up requires time and is complex. $299.95. The Model Office Co., The Gooderham Flattion Bldg., 49 Wellington St. E., Toronto, Ontario MS 1C9, Canada. CP (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 02136. CP (Aug 86)

Just Text is a professional level word processor and page makeup program that generates PostScript output. Comes with a set of LaserWriter utilities that allow total manipulation of art and text. Requires LaserWriter or other PostScript compatible output device. $195. Knowledge Engineering, GPO Box 22853, New York, NY 10013. NCP (Dec 86)

Laser Author is a high-powered, technically oriented word processor. Good math setting capability. Has style sheets, word count and page layout capability. $199.95. Firebird Licenses, PO Box 49, Ramsey, NJ 07446. NCP (Mar 87)

Liberit Spell Checker is a fast, effective interactive checker. The dictionary is smaller than average, but well chosen. Unfortunately, it has a few misspelled words. $59.95. Databak, 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 A P R I L 1 9 8 7 M A C U S E R 1 5 3
MINIFINDERS

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
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
having your own personal copy editor. Grammar rules are
fixed, and you need 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 outline-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. MindWrite Software, PO Box 22280.
Carmel, CA 93922. NCP (Mar 87)

QuickWord is a word processing accessory that adds sophisticat­
ted glossaries to MacWrite. Simple to install and use, yet
powerful and efficient. $49.95. EnterSet, 410 Townsend
St., San Francisco, CA 194107. NCP

The Right Word (ver. 3.0) is a standalone spelling checker that can
be used in a 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. Champi­
on Software, 5201 South Hill Dr., Madison, WI 53705. NCP
(Oct 86)

Spellwell is an effective and powerful standalone spelling
checker. It has many advanced features such as capitaliza­
tion and homonym checking and comes with a large, well­
chosen dictionary. $59.95. Greene, Johnson, 15 Via Chua­
er, Monterey, CA 93940. NCP

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
185. NCP (Dec 86)

Word is a powerful word processor for the Mac. It has just about every
feature your heart could desire. Supports keyword 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.
It 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
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
MacWrite and then some, including the ability to work in
columns. Has built-in spelling checker with 50,000-word
dictionary. $175. TMaker, 1973 Landings Dr., Mountain
View, CA 94043. NCP (Mar 87)

ORGANIZATIONAL TOOLS

Acta is an outline processor in desk accessory format. It has
practically all the power of a standalone program, and then
some. Can save files as Acta outlines, MacWrite or text files.
A must-have for those who do outlining. $59.95. Symmetry,
761 E. University Dr., Mesa, AZ 85203. NCP (Jul 86)

Calliope is a new type of outlining program. Chunks of information
are manipulated as small “light bulbs” containing text.
Related elements can be graphically connected, and their
text information viewed in hierarchical order. Text files can
be created for MacWrite editing. $59.95. Innovation, PO Box
1317, Los Altos, CA 94023. NCP (Sep 86)

DecisionMap organizes data to facilitate decision making.
Unique weighting abilities make this a powerful tool. The decision
analysis process is long and some times complex, but never
difficult. $145. SoftStyle, 7192 Halianelone Hwy., Honolulu,
HI 95825. 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
hyperlinks. You can set up links 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. LM Soft­
ware, PO Box 93, Belmont, CA 94002. NCP (Oct 86)

MaxThink is an outline and idea processor that focuses on
thinking skills. Helps you establish priorities, evaluate ideas, synthesize information. Some unique features and an
innovative manual. $89. MaxThink, 230 Crocker Ave., Pied­
mont, CA 94043. NCP (Oct 86)

Micro Planner Plus is a great project management system with
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
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 Charlestown
Rd., Mountain View, CA 94043. NCP (Sep 86)

ThinkTank 512 is a very fast and intuitive organizational tool. Full
keyboard control is possible. Can store and paste graphics
MINIFINDERS

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)

Voila! 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. $95.95. 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 personnel schedules, activities and payments. The program includes note filer, card filer, calendar, phone dialer, financial and statistical calculators and a file encryption and a 250-page note pad with search and phone dialing capabilities. $49.95. Batteries Included, 30 Mural St., Richmond Hill, Ontario, L4B 1B5, Canada. NCP (Dec 85)

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 get 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 (Mar 87)

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 management applications and RTF files. Functions include phone dialer and logger, desk accessory terminal, calendar, 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. BatchPrint, ShortHand, Blank, Encrypt, and Launch. $59.95. Cortland Computer, PO Box 9816, 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. Functions include phone dialer and logger. $249.99. Published by DataPak. 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Mar 87)

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MINIFIERS

**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 subcategorizes. 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, 26811B Canwood St., Agoura Hills, CA 91301. NCP (Mar 86)

**Dub-Click Calculator Construction Set** lets users design personalised calculators with a variety of standard and special functions. Finished calculators can be saved as installable desk accessories or as clickable applications. $59. Dub-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, 26811B Canwood St., Agoura Hills, CA 91301. NCP (Nov 86)

**Glue** adds a print-to-disk capability to many programs. ImageSaver wininstalls 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 Utility** uses patch files to allow users to mount and run unspecified programs on their hard disks. The list of patches is constantly expanding. $89.95. FWB Software, 2040 Polo St., San Francisco, CA 94109. NCP

**HFS Backup** ranks as one of the preferred hard disk backup utilities. Backs up by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. PCPC, 6206 Benjamin Rd., San Francisco, CA 94124. 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 when an application is opened, or save context. $34.95. PO-Software, 111 Triton Dr., Foster City, CA 94404. NCP (Sep 86)

**ImageWriter II**

**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 disorganized HFS hard drive. $59.95. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr 87)

**MacFind** 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)

**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 time-limited commercial programs, time recording, etc. $49. SoftView, 4820 Admiralty Lane, Camarillo, CA 93010. NCP (Jan 87)

**MacLabeler** lets users instantly index and print labels for all the disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. $49.95. Ideaform, PO Box 1540, Fairfield, IA 52556. CP (Prem)

**MacLink** lets users transfer data between Macs and PCs. Can do special format transfers such as 1-2-3 to Multiplan and WordStar to MacWrite. Contains both Mac and PC disks. $25. $155 with 8-bit 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 other Mac program could dream of going if you have the skill to guide it. The documentation is sparse. For pros only. $55. 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. Macem, PO Box 272591, Houston, TX 77277. CP (Mar 87)

**MacServe** converts a Mac and a hard disk into a disk and print server. Uses the AppleTalk network and is easily hooked up. Users can partition the hard disk into multiple volumes. Runs in the background, so users can work on all machines in the network. $250. Requires 512+ or Mac XL. Infosphere, 4730 SW Macadam, Portland, OR 97201. CP

**MacZip** is a three-part disk and memory utility. It can be used to recover destroyed data; compress disks, compare disks, analyze disk structure and make back-up copies of most files. $60. Micro Analyst, 2505 Roxmor, Austin, TX 78723. NCP (Jan 86)

**myDiskLabeler** is a fast and easy label maker program. It can read directories, or use large or small icons, or everything else the user desires. Comes with more than 1000 labels on pinfeed paper. HFS compatible. $44.95, with color printing ability (on the ImageWriter II). $54.95. Williams and Micaus, 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, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 86)

**Paperflow** 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., Dade City, FL 33673. NCP (Jun 86)

**Packit III** is an essential utility. Primarily used to temporarily "glue" files together. It can also compress and encrypt. Feeware. $10, $10 for printed manual. Harry R. Chesley, 1850 Union St., San Francisco, CA 94112. 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. $119.95. Dilithium Press, 8285 SW Nimbus, Beaverton, OR 97005. NCP

**Quick & Dirty Utilities, Volume One** is a disk chock full of the unhappiest programs you have ever bought. Included are a super disk cataloguer, a disk accessory mover and more. Several disk 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
**SmartScrap**

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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 of 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 (Feb 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 02173. 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, 28611 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. Consulvia, 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, and 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)

**Mogamix 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 85150, 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, 1601 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 an excellent introduction to Prolog. $425. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**Personal Pascal** is an easy to use. full version of Pascal. Has a compiler, linker, disassembler, editor and much more. Good for beginners. Excellent documentation. $299.95. Megamax, PO Box 85150, Richardson, TX 75085. NCP

**Personal Smalltalk** is an implementation of the popular Smalltalk programming language. Only $149 for Level 1. Level 2 extends the language to allow standalone applications. $349. Level 3 provides an integrated development environment. $699. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**QuickBASIC** 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

**Random Access Pascal** 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)

**Required Pascal** is a version of Pascal that allows development in assembly/machine code. $175. Think Technologies, 420 Bedford St., Lexington, MA 02173. NCP (Feb 87)

**Randolph Rd., Rockville, MD 20852. NCP**
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CHIPWITS is a combination game and teaching tool. Players create programs to maneuver robots through a set of mazes. The programs are written in ChipWit's built-in icon-based programming language (BOL). 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. GreatWave 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 index), 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.

MacType offers structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificate documentation and use of Mac interface are excellent.

MacPaint

MacStudionomy is a good package for novice sky watchers. Has a periodic table program, MacNest (a scrapbook with index) and a disk of MacPaint files.

B E D E T E C H D I R E C T 8.95

Reg. $9.95 Value

Organizer! Reg. $9.95 Value.
MINIFINDERS

- cates for reaching certain levels. Can be used in a multistu-
  dent environment. $49.95. Palantr 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
- NotesPlus is an educational program 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 comparis-
  ons. 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
  databases, quick sky plotting and can locate specific
  objects. Level II has southern hemisphere star table, Messi-
  er objects, $49.95 (level I), $79.95 (level II). Spectrum
  HoloByte, 1050 Walnut, Boulder, CO 80302. NCP (Apr 86)
- Turbo Turtlar is a turtle graphics program primarily designed as a
  learning tool for young children. Uses Logo commands for graphs
  and practice session covering practice tests, vocabulary. Box 7287,
  Mountain View, CA 94039. CP (June 86)
- Turbo Turtle is a turtle graphics program primarily designed as a
  learning tool for children. Uses Logo commands for graphs
  and practice session covering practice tests, vocabulary. Box 7287,
  Mountain View, CA 94039. CP (June 86)

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.
HoloByte, 1050 Walnut, Boulder, CO 80302. NCP (Apr 86)
- Airbase 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. Spectacu-
lar the first time you play; after that there are too many
similarities to previous characters. $59.95. Activation, PO
Box 7287, Mountain View, CA 94039. CP (June 86)
- The Ancient Art of War gives users a chance to refight some
  famous campaigns on both strategic and tactical levels.
  Campaigns can also be designed from scratch. Very play-
able, addicting game. Requires 512K+. $49.95. Bro-
derbund, 17 Paul Dr., San Rafael, CA 94903. CP (Apr 86)
- Archon pits the forces of Light against Dark in a quest to gain
  control of five Power Points on a checkerboard grid. The
  shifting cycles of squares' colors keeps the balance of power
  ever-changing. One or two players. $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
  to solve puzzles to advance. Requires 512K+. $44.95.
  Mindscape, 3444 Dundee Rd., Northbrook, IL 60022. CP (Prem)

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over 3 million hard drives in use today! Fast and reliable and whisper quiet, MagNe1 30X starts up in less than 10 seconds and transfers data at a rate of 5.0 megabit/second.

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Bundled with MacServe $1095
Reg. $1095 Value
to think and act like a detective to solve the game. Good
sentence parser, sketchy Mac interface. $44.95. ActiVision,
PO Box 7287, Mountain View, CA 94039. CP (May 86)
Bridge 4.0 provides three other players and the cards for a
game of rubber bridge. It's an average (Goren) bidder and a less
than good card player. Good if it's the only game in town.
Plays slowly since it's written in BASIC. $29.95. Artwork
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)
Doja Vuc: 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 Dunn-
Bee 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 restaur-
ants. 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 avail-
able 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. Bulls-
eye Software, PO Drawer 7900, Incline Village, NV 89450.
CP (Feb 86)
Gato puts players in command of an American submarine in World
War II. This superb simulation game uses all of the Mac's
graphic capabilities to really make you feel that "you are
there." $49.95. Spectrum HoloByte, 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., Cuper-
tino, 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
MINIFINDERS

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 (Apr 87)

MacCourses adds a new challenge and new courses to MacGolf. $14. Courses are swapped on the original MacGolf master disk two at a time. Nice add-on for a good game. Requires MacGolf. $34.95. Practical Computer Applications, 1305 Jefferson Hwy, Champlin, MN 55316. CP (Apr 87)

MacGolf is a dynamic simulation of real golf. Players have a choice of courses and difficulty levels. Superb playability makes this must for all skill levels and gamers. Requires $12K+. $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 Harvard 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 closest capitalist in all of us. $49.95. Scarborough Systems, 55 Broadway, Tarrytown, NY 10591. CP (Oct 86)

MazeWars is an interactive, multiplayer game to be played on AppleTalk or through a modem link. Chase opponents through a four level maze. Requires $12K+. AppleTalk or Hayes compatible modem. $49.95. MacroMind, 1029 W. Wolfiram, Chicago, IL 60657. NCP (Nov 86)

Moe Dione 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)

NowGamon is an adventure game 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. Newssoft, PO Box 4035, Newport Beach, CA 92661. CP (Nov 86)

Orbiter puts a real space shuttle on the Mac screen. A multitude of controls, real-time graphics and 16 distinct missions helps this program succeed as both a game and a simulation. $49.95. Spectrum HoloByte, 3444 Dundee, Northbrook, IL 60062. CP (Nov 86)

Orbquest is a fantasy role-playing adventure with better-than-average puzzles and a great 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 Paw is an unusual British interactive adventure game with text and graphics. The unique interface has some drawbacks, but The Paw has humor, social satire, is entertaining and is challenging. $44.95. Requires a Mac+. Firebird, PO Box 48, 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 is a super use of graphics and the Mac interface. Switch between six languages for a total of 38 languages. $59.95. Psion, 40 Lindeman Dr., Trumbull, CT 06611. CP (Mar 86)

Puppy Love is a combined game and teaching tool. As you teach your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. $19.95. Addison-Wesley, Reading, MA 01867. CP (Mar 87)

Real Poker is five-card draw against five other players with Old West names, distinct personalities and playing styles in a saloon setting. Dealing and play are very fast. Game qualifies your hand. $39.95. Henderson Associates, 960 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 analysis. $49.95. Avalon Hill, 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. Activation, 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)

SMB Hit Racquetball is an accurate and entertaining simulation of a day of a real tournament. 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 94407. CP (Dec 86)

Strategic Conquest is a large scale, strategic conflict on the Mac. This very involved war game will be enjoyed by those who like the genre. $111. Infocom 3D Software, 111 Triton Dr., Foster City, CA 94404. CP (Dec 86)

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

Tasse Times in Tone Town is a slightly off-the-wall graphic adventure in which you need a flashy hairdo and a jumpsuit before you can get anywhere, and you pay for things with guitar picks. Decent puzzles, with a sense of humor. $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 wasteland of Soloria, 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 Dunedee, Northbrook, IL 60062. CP (Sep 86)

Winter Games lets up to eight players compete against each other in Olympic events including figure skating, bobsledging, biathlon and ski-jumping. Excellent animation, good graphics, good theme music. $39. Epyx, 1043 Kiel Ct., Sunnyvale, CA 94086. CP (Mar 86)

Wizdom 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, 8 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-
MINIFINDERS

screen Help menus. A Work mode allows development of new puzzles for the creative. $49.95. Paladin, 12777 Jones Rd., Houston, TX 77070. NCP (Mar 87)

World Builder is an adventure game construction set with what amounts to its own programming language. The whole program language including is easy to learn and produces commercial quality games. No support for the programming language, though. $79.95. Silicon Beach Software, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

Xyphus is a role-playing game pitting four characters (fighters or wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon control. $39.95. Penguin, PO Box 311, Geneva, IL 60134. CP

Zork II is where the adventure continues in the underground to the ultimate enemy — the Dungeonmaster himself. More closed-ended than previous Zorks. $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. Very strong, this well made

MUSIC

ConcertWare+ is an enhanced version of ConcertWare. Has different instruments and can use any four of a set of eight at any point in a piece. Can read and use ConcertWare and MusicWorks files. $69.95. Great Wave Software, PO Box 5847, Stanford, CA 94305. NCP (Nov 85)

Deluxe Music Construction Set is a good general purpose music program. An active piano keyboard and instant audio feedback makes 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. $65. Imaje, 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. Produces performance-quality sheet music; has only limited playback facilities. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Prem)

Studio Session consists of two programs, and Editor and a Player. what 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 2 M 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, 8204 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. Dayton Communications, 50 S. Main St., Salt Lake City, UT 84144. (Dec 85)

MacIntzter is a graphics tablet and absolute positioning device that replaces the mouse. Various scales are possible. $599. GTDC Corp., 7125 Riverwood Dr., Columbia, MD 21046.

MacNifty Sound Digitizer turns ordinary analog sound input into digital waveforms which can then be manipulated using the SoundCap software. After purchase, odable for $1299+ definitely make this program perfect for educational applications.

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.

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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 pattern) 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 2, 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 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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...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
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DON'T READ THIS COLUMN!

Life is funny. Last week I read this article written about me! Someone sent 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 Darby Pugner and his church of Perpetual Passion. Libel suits will make a fortune selling for your approval. They were designed in France, and were outrageous, screwy and expensive. The spirit of the column was fun.

"April Fool's Day. You are being kidded with 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 same 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!" Hmm, 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 most-hateful 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 malarkey.

My Mac praises ARE weak. So what? Should I sing manically, 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.

For me, 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 Beezlebub even cares about American Corporations. It is to laugh. And secret messages? Forget it!

by John C. Dvorak

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