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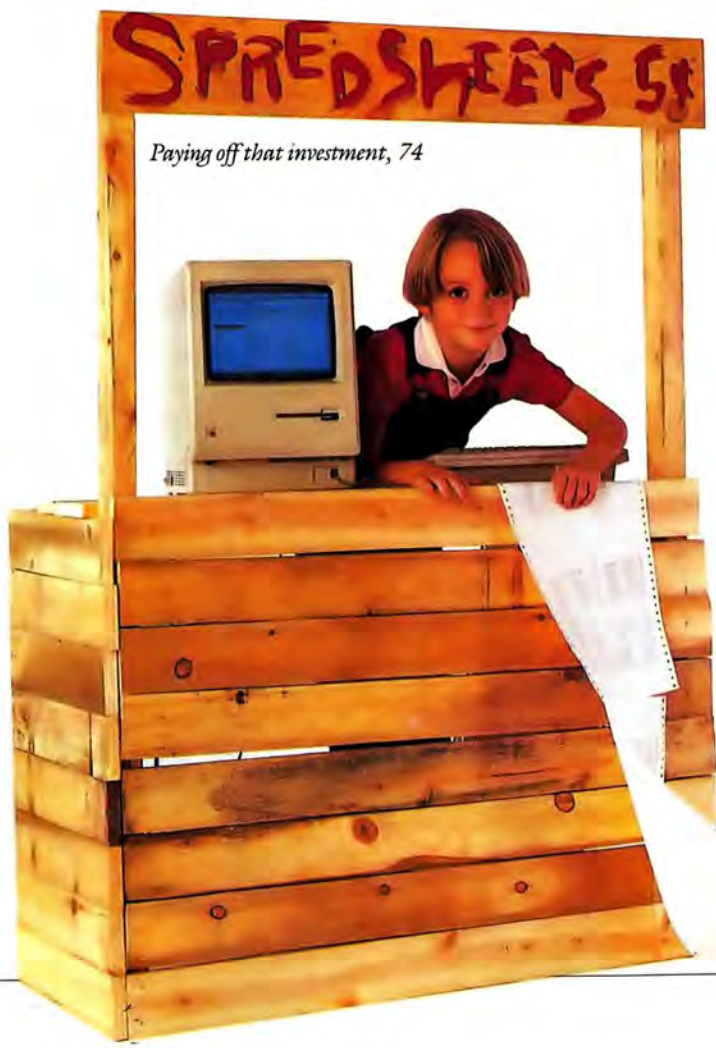

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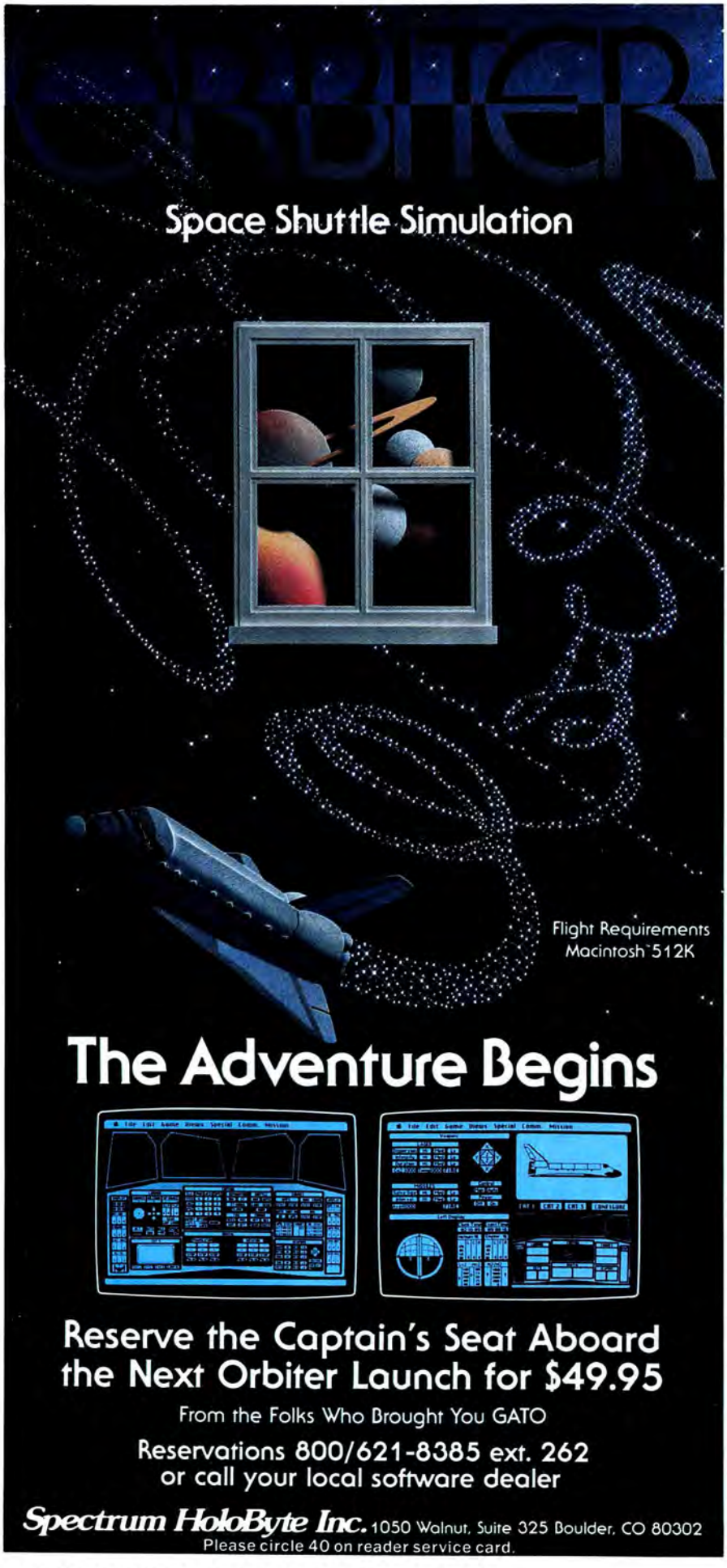

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When the Macintosh first came out, everyone looked at it and said, "Wow, wait 'till the gaming wizards get ahold of this baby..." And some of them did. But some of the "quick and dirty" products that have appeared have left some entertainment software for the Mac a little disappointing.

Here at **Miles Computing**, software designers who simply will not put up with second best, or half-baked concepts, have delivered entertainment products of such intensity of effort and such depth that our designers say "Wow, wait 'till people get ahold of *this*..."

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If real trouble is what you're looking for, **MacWars** has it. Miles Computing just can't keep away from 3-D, and this one has a black planet strewn with a deadly obstacle course of surface and sky targets through which you fly your laser cannon-equipped and shielded space ship. On the way to the enemy's planet-sized space station you must survive waves of enemy space paraphernalia, and only your mouse or joystick stand between you and destruction as the waves keep coming, and coming, making things "rather difficult indeed" for you.

For those who want to exercise brain muscles, we have **Overlords.** The object is galactic domination, with power struggles. Struggles against whom? Well, up to *32* players, that's who! Players can be either people or the Macintosh itself, or can even be linked up via Apple Computer's Apple Talk network, the very first game to do this. You can have multiple players on one computer, or link up to other computers, each player with its own strategy and personality. You can use the ships that come with it, over a dozen, or design your own, and by zooming in and out over the Galaxy, set out for high adventure.

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CALLING ALL ROMS

by Neil Shapiro

According to some people, writing programs for the Macintosh is similar to wearing a velvet, fashionably-cut and designer-styled straitjacket. No one, least of all yourself, will notice the restraints up until it's time to flap your arms wildly about. Of course, you shouldn't need to flap your arms wildly about so what's the problem?

That in a, pardon me, nutshell more or less describes the so-called Macintosh interface. Now, many people have heard the term Macintosh interface so many times that they think they understand what it means. But few people really do comprehend this term.

It all goes back to the design philosophy of the Mac Team and to Apple's published tome Inside Macintosh. In this book, (which looks and weighs very much like a huge and wizardly incunabula that you might find on a dust-covered podium within the laboratory of an alchemist such as Hermes Trismegistus), Apple spells out just how a Macintosh program can and should run from the standpoint of the guy running the mouse.

It is thanks to Inside Macintosh that the programs which run on Macs mostly share common commands. A lot of these commands are technically spelled out within this volume—not only how to accomplish the command but when to program in the command.

These commands which the user sees are all dependent on the programmer knowing enough of Inside Macintosh to program in the right "ROM calls" to achieve these commands.

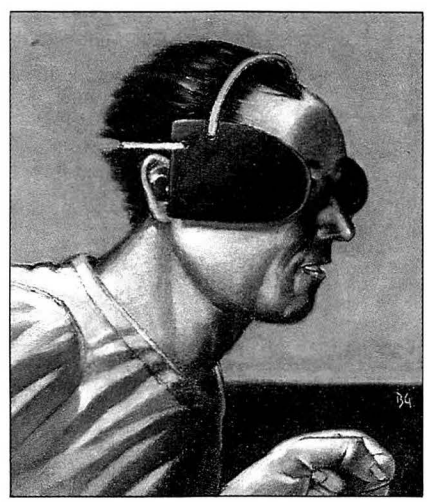
ROM CALLS?

The Read-Only Memory (ROM) in the Mac is contained in preprogrammed chips. These chips can only be read, not written to, nor can they have their contents changed in any way.

Inside these chips are all the hundreds and hundreds of miniature programs that the Mac Team designed and included with the Mac. These miniature programs are responsible for such things as knowing how to draw dialog boxes, sizing windows, doing scroll bars, recognizing mouse clicks and all the things that we take for granted as being Macintosh-like.

THERE'S NO ILLUMINATI

Did you ever wonder why the scroll bars in *Microsoft Word*'s windows look the same as the scroll bars in *Jazz,* which look pretty much the same as the scroll bars in *VideoWorks*? It isn't because Bill Gates, Mitch Kapor and Marc Canter all met in a bar one day and, over a few piña coladas, decided that's how they would all do scroll bars. Scroll bars are built-ins, they are part of the routines included in the ROM, they are inside your Macintosh and Inside Macintosh tells how to get to them and include them in your own programs. When



you want a scroll bar to appear in your program, then you use in your program's code a ROM call which tells the Macintosh to look deep within itself and pull out the right routines.

Some of Inside Macintosh can be understood by anyone. Even me. For example:

"To allow the software to distinguish efficiently between single clicks and double-clicks on objects that respond to both, an operation invoked by double-clicking an object must be an enhancement, superset, or extension of the feature invoked by single-clicking that object."

Of course that one sentence is not representative of the book. Most of the book is more like:

"The magnitude of the integer is converted modulo 2^32, and the 32-bit result is negated if the string begins with a minus sign; integer overflow occurs if the magnitude is greater than 2^31 – 1. (Negation is done by taking the two's complement. . . .)"

Never mind, this is getting too heavy for a Journalism major.

The point is, even programmers can find it pretty rough sledding. So, why bother? Why not program the Macintosh the same as you would any other computer and just forget about all the stuff locked in those ROMs?

The main reason is consistency and the subsidiary reason is waste of time. There's a third reason not much spoken about, but which we'll get to.

Consistency is fairly self-explanatory. If Macintosh users all expect that double-clicking a mouse button is going to highlight a word in the text then it makes sense to do so. And, if you decide that clicking in a certain rhythm would be nicer, well, it will certainly take a lot longer to program that than simply making a ROM call to your friendly built-in chip.

THE MASTER PLAN

I once heard a programmer refer to Inside Macintosh as Apple's version of Mein Kampf. He was only half-joking.

The Macintosh interface is The Way, the One True Path to glory. If you purposefully deviate from the plan then God help you because Cupertino won't.

What happens if you're a programmer and you don't follow the Way?

Well, there's no enforcement squad with silhouette of Macintoshes crossed by lightning strokes on black armbands to visit your home in the middle of the night. But you had better prepare yourself for the criticism about to be heaped on you and your coded brainchild.

Some programs can survive this criticism, others can't.

Think Tank with its gray areas on all four sides of the main window and no scroll bars does not follow the Macintosh interface. *TK! Solver* with windows that cannot be sized does not. *MacPaint* with its onscreen palette does not (believe it or not). The first version of *Mite* never even heard of the Macintosh interface.

Most Mac owners are, by this time, conditioned to expect that the Macintosh interface is going to be followed in every program that they buy. And, they have a right to expect that—usually.

After all, one of the things that makes the Macintosh so intuitive to use is that you do not have to relearn how to do everything whenever you launch a new program. The Macintosh interface is a little bit of terra firma.

Nothing quite matches the outrage of a Macintosh owner who starts off a new pro-

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gram, double-clicks on something and it doesn't work like a Macintosh. Have you ever seen a mouse stomped to death? It's a grisly sight.

THE OTHER SIDE

All of this came to my mind one day when I enjoyed playing *Universe 2* (it's reviewed elsewhere in this issue). There are many areas wherein it does not follow the writ of Inside Macintosh.

Anyway, I showed it to a bunch of fellow Mac freaks. Over a third of them instantly hated it, and the rest said they couldn't wait to buy a copy.

Now, I don't think that *Universe 2* did it right. I think it would have been an even greater game for the Macintosh had it followed the guidelines. Still, when it comes down to it, I have some ambivalent feelings toward the Macintosh interface. I'm all for it in every kind of productivity program. In fact, I'm all for it in every program.

Where I get ambivalent is thinking of a programmer leaving the fold and pulling it off. Most programmers couldn't do this. Almost all programs that depart from the Macintosh interface do so at great risk to themselves and their audience.

If a program doesn't follow the guidelines then, of course, I would not rate it as highly as I otherwise would. But I think that quality and value have to be included somewhere in the formula. If it works, it works.

It's like literature. A novelist has to follow the rules of English grammar and style in order to communicate. The best novelists will season such communication with creativity and personality. But, every so often, there will come the experimental novel.

Almost all of these works will be dadaistic garbage fit only to serve as "Danger" signs for others to see. But, who knows, once in a blue moon we may possibly see a James Joyce or a Lawrence Ferlinghetti.

FOLLOW ALONG

I am not, in any manner, shape or form, attempting to encourage people to leave the Macintosh interface when programming. Indeed, I feel that this interface is the bedrock of Macintosh viability.

But, I do feel that there is a slight danger of provincialism inherent in the way that people tend to worship Inside Macintosh.

The Macintosh is a part of the ongoing computer evolution. It's possible that we may see new ways of doing things on the Mac that improve on what we have now.

I hope that, should this ever happen, we'll be able to recognize it.

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Based on the novella of the same name, this eerie adventure takes you into a quiet New England town. Suddenly, a dense fog mysteriously descends, and with the mist comes Stephen King's own brand of terror that only the fearless can survive. Available Winter 1985.

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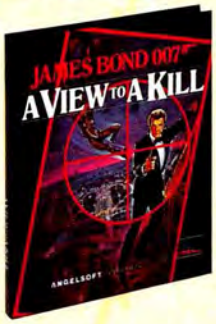
James Bond 007 A VIEW TO A KILL



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FROM THE REST OF US

letters from the Mac Community

Do you have a question or comment about MacUser? Address it to: Letters to the Editor, MacUser Magazine, 25 W. 39th St., New York, NY, 10018

PULLING NO PUNCHES

Finally, my questions answered—just between us adults. Straight talk about what's hot and what's not. Nice little features like updates, listing the latest versions for our software. Big, wide open, shoot'em duels too!

Steve Kubby
Truckee, CA

NO PAIN NO GAIN

My wife and I are both Macintosh users and have read the issue from cover to cover.

First of all, you didn't "love everything!," a "no" or even a "qualified yes" means something. Going through your ratings in the MiniFinder, I would agree with 90% of your assessments. Not all Macintosh software are beauties; it's time that everyone admitted that.

Scott D. Allen
Kettering, OH

GEOFF SPEAR

FILLING THE VOID

Your magazine has a good mix of articles describing the "guts" of the Macintosh, in-depth reviews of products available, lots of capsulized mini reviews, and descriptions of available Mac products. MacUser fills a needed niche, as a place to disseminate information to people who are interested in programming the Mac, not just using programs which other people have written.

Don Sample
Nepean, Ontario, Canada

DVORAK ON TARGET

Kudos to John Dvorak for his hilarious parody of obnoxious journalism (*The Devil's Advocate, November, 1985*). In the spirit of the column, shall I feign outrage? Keep it coming!

Dan Chadwick
Concord, MA

Mr. Dvorak's proposition that the Macintosh is "too small" to be a "serious" business computer was not very convincing. Mr. Dvorak emphasises the correlation between product quality and size, maintaining that the two are directly related. And according to him, computers are no exception.

With the high quality and level of education of today's business man, I am sufficiently self-assured that decision makers recognize that a positive relationship between size and quality doesn't exist in the market for personal computers. If businessmen actually beleive in the size—quality relationship, why do most of them prefer driving BMWs instead of Cadillacs?

Gregory M. Mather
Austin, TX

John Dvorak makes the point that real men don't use wimpy computers. But then again, real men don't use IBMs either. Their secretaries do. No boss worth his weight in pinstripes would be caught dead using an Apple. I mean, here is a company that consists of people rather than economic units. How untidy; how unbusiness-like. How human.

More and more businesses are using Macs, though. What can this mean? I guess we'll have to wait for one of John's upcoming editorials to find out. When he writes it, maybe it will be photocopied and pasted in all of IBM's cubicles.

M. Burton Hopkins, Jr.
New Castle, DE

MAKING THE GRADE

Enclosed please find for your perusal another report card for your files. Your mag is incomprehensible. Even the quickie method of storing the *MacPaint* image(s) on a *MacWrite* disk (Issue 1, page 13) were utterly beyond me. Two hours of frowning, mousing and pecking led to absolutely nothing! A language problem? Inadequate instructions? A stupid tyro? If I can't figure it out, it's a reasonable assumption that thousands of others can't either and you're going to

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For all of you who thought Dennis Brothers was crazy to give away MacTEP,™ here's MicroPhone.™ The one he's selling.

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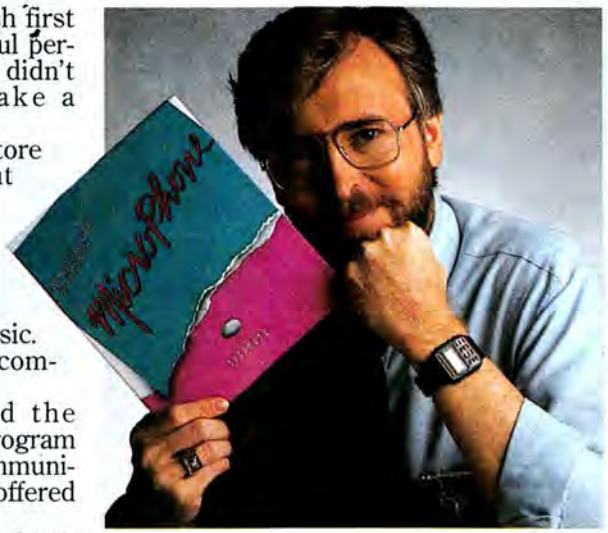

MicroPhone is so sophisticated, it cuts through the worst tangles you encounter when you go on-line. A delight to the experienced. And a saviour for the novice.

Run on automatic.

When you open MicroPhone to the desktop you'll find a comprehensive collection of icons pre-programmed to access all major information services: CompuServe,® Dow Jones News/Retrieval,® The Source,℠ Delphi,™ the works.

A few clicks and you're in. With automatic log-in and sign-on.

But that's just the beginning of its ability to automate the whole telecommunications process. For MicroPhone features the most powerful, yet simplest to set up macros ever seen on a program.

Write your own script.

Dennis gives you two ways to create these macros. The first is to set MicroPhone in the Watch Me,™ the recording mode.

The program looks over your shoulder as you conduct a communications session following your keyboard and menu commands.

MicroPhone can remember not only an uninterrupted string of keyboard commands, but also wait-for-prompt conditions. In fact, virtually any series, no matter how long or complex.

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The second way to generate macros is through MicroPhone's unique "Script" window. Open it and you'll discover an extensive set of functions which can be called up and linked with a series of mouse clicks. The resulting macro is extremely powerful. The method is Mac-simple.

Using Watch Me or the Script window, or a combination of both, you can automate log-ons, file transfers and unattended operations. And navigate back into the farthest reaches of any database with a single stroke.

Make files fly.

Sending and receiving files is faster and easier with MicroPhone, too. Using XMODEM protocols and MacBinary, MicroPhone transmits or receives anything you can create on a Macintosh. Including MacPaint documents, text, spreadsheets, charts, database tables, or programs.

MicroPhone allows you to scroll back and forth at high speed to review your session. Then you can select any portion of your session, print it, save it to a file, or copy it to the Clipboard for use by other Macintosh programs.

MicroPhone also features an editor desk accessory for composing text in mid-session using familiar Macintosh editing techniques.

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lose a good chunk of your market before you ever begin. A column for the rank tyro, that'd be a good first step, a teaching column. Overall grade: D

Please bear in mind that I'm grading you strictly from my point of view. You will, I'm certain, receive huzzahs and raves from many of your readers. Even I found your articles and graphics pleasing while I was busily misunderstanding them. Saved you from an F. . .

Jon T. Kemp
Stockton, CA

"BUT I HAVE 512K"

Perhaps some MacUser readers who have recently upgraded their Macs to 512K have experienced one of the following problems. When you try to use *Switcher*, you get the message: "Sorry, but you don't have enough memory to run the *Switcher*. Go get a 512K Macintosh."

Something is definitely wrong. You just upgraded to 512K. In desperation you click on About the Finder under the apple menu and it throws up a window with "512K Version 4.1 C1985 Apple Computer" written at the bottom. This is reassuring but you still have a problem as far as the *Switcher* is concerned. Most probably you're trying to run the *Switcher* after using a startup disk with RamDisk installed. This will not work. The problem is solved by simply replacing the offending System File (not the whole System Folder) by a virgin one.

Ray A. Gaskins
Hampden-Sydney, VA

TO BUY OR NOT TO BUY

I am the principal software buyer for my employer, and it is, as I'm sure you know, often a difficult decision making process. One concern of mine when making my buying decisions, is how the software will perform in conjunction with the Apple LaserWriter. If you run into any of these quirks that only affect the LaserWriter users, please pass them on.

Don Harreld
Minneapolis, MN

EYE ON MACUSER

Nice to see more Mac dedicated publications. Hope you have some in-depth reviews of high end database programs.

Michael Rime

THE PROOF IS IN

I find that MacUser is an informative, witty, exciting, and useful resource, proof positive that the Mac is not a "wimp."

Brian McNett

WANT NOT, FEAR NOT

If Apple didn't want Steve Jobs' contribution within the company why fear his competition now that he's putting his best to work outside the company? Am I missing something here? If he was no good inside, why is he such a threat out?

My allegiance is slipping—and it deeply saddens me. There was a time when I'd gladly pay extra for an Apple with the great pride of thinking that I wasn't just buying excellent equipment but actually investing in a more positive future. Where have all the flowers gone?

Tim Conner
Kingman, KS

SPEAKING OUT

As a woman, and a computer user since early 1979, I was deeply offended by much of the language in Mr. Dvorak's piece, particularly the second paragraph in which he stated that "The AT is a man's computer designed by men for men." I would like to ask Mr. Dvorak what the AT would have looked like had it been designed by women for women? Is his later analogy between the Macintosh and a Cuisinart supposed to give us a clue?

If Mr. Dvorak is implying that the Mac is a "wimp's" machine because it was designed without some sort of male focus, then he is sorely mistaken.

Shari Leventhal
Arlington, VA

GREAT THINGS IN SMALL PACKAGES

As a student at the University of Southern California, my IBM PC takes up nearly every free inch of precious space in my dorm room. The Macintosh would be the perfect solution to my problem of space.

My only hope is that these businessmen, with big things on their minds, open their minds, and eyes, and see that a computer does not have to be big to fit the classification of great.

Peter Hammer
Los Angeles, CA

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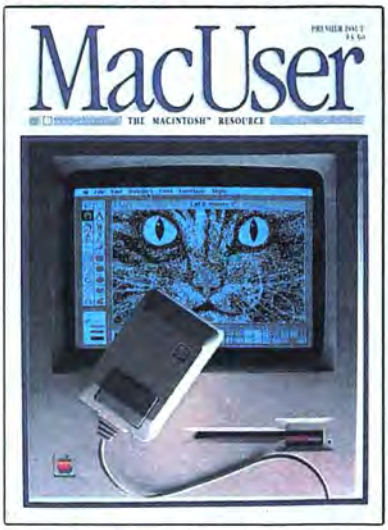

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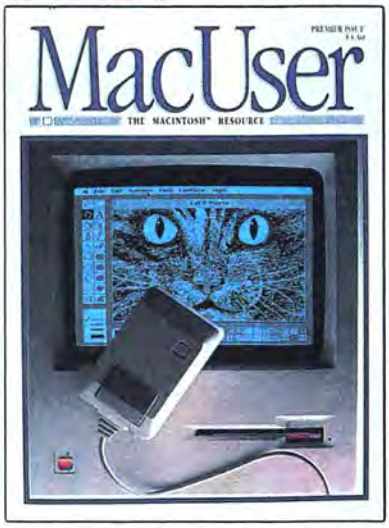

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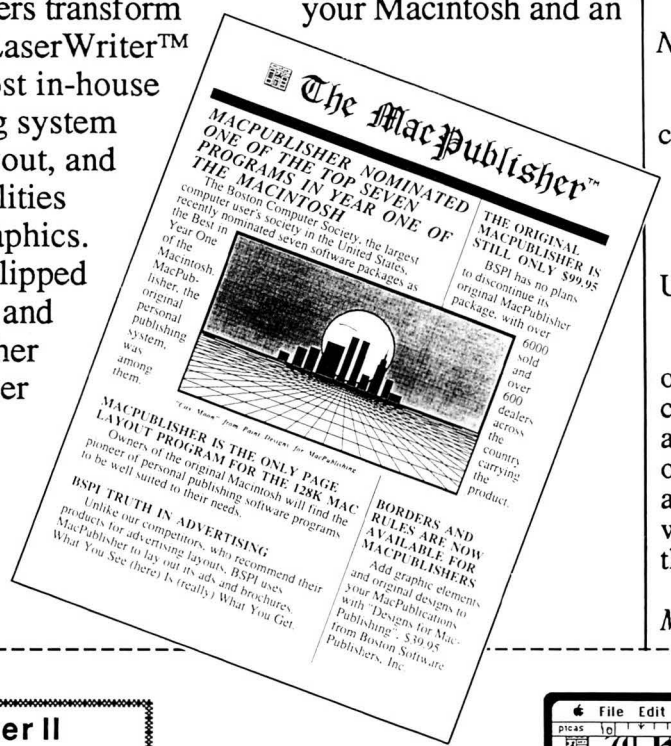
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New ON THE MENU

MACINTOSHES OF THE RICH AND FAMOUS

Informed sources in California tell us that a sophisticated AppleTalk network with at least 5 Macs, a LaserWriter and a Sunol hard disk share Mac enthusiast Marlon Brando's island home. And word on the streets of Manhattan is that Sean Lennon is a devoted Mac wizard. We can't help but wonder if Steve Jobs still owns *his* machine.—*DB*

MAC VICE

Why haven't any Macintosh clones been seen illegally entering the country through the Tokyo Express? Apple cleverly burned several identifying elements (as shown at left) into the Mac's ROM so that would-be Mac knockoffs don't stand a chance in court if they contain bootlegged ROMs. —*DB*

Our thanks to Mr. H. James Rosenburg of Glencoe, IL, for sharing this with us.

"(I would like) to share with you one of those amusing incidents which occur when your extremely bright 14-year-old daughter Tracey, who understands the Mac better than her father, decides to play with the *MacSpell+* program. It also illustrates the strengths and weaknesses of the literal minded machine.

I enclose...the poem "Jabberwocky" by Lewis Carroll, both in its original version and the new, improved version given by *MacSpell+*. While the poem in the original may be a little hard to understand, in the new version it is even less intelligible. Future possibilities are endless. Maybe we should turn it loose on the Bible. On second thought, maybe we should leave well enough alone."

JABBERWOCKY—BY LEWIS CARROLL

'Twas brillig and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

"Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

He took his vorpal sword in hand:
Long time the manxome foe he sought—
So rested he by the Tumtum tree,
And stood awhile in thought.

And as in uffish thought he stood,
The Jabberwock, with eyes of flame,
Came whiffling through the tulgey wood,
And burbled as it came!

One, two! One, two! And through and through
The vorpal blade went snicker-snack!
He left it dead, and with its head
He went galumphing back.

"And hast thou slain the Jabberwock?
Come to my arms, my beamish boy!
O Frabjous day! Callooh! Callay!"
He chortled in his joy.

'Twas brillig and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

JABBERWOCKY—THE *MACSPELL+*WAY

'Tweaks brim and the sliver tows
Did gyro and gimmick in the wack:
All the mince were the boroughs,
And the moment ratifications outgrow.

"Beware the jack, my son!
The jaws that bite the claws that catch!
Beware the judge bird and shun
The frustrates bandit!"

He took his vortex sword in hand:
Long time the many foe he sought—
So rested he by the tumult tree,
And stood a while in thought.

And as in ugliest thought he stood,
The jack with eyes of flame,
Came whiling through the tumble wood,
And burdened as it came!

One, two! One, two! And through and through
The vortex blade went snicker-snack!
He left it dead, and with its head
He went galvanizing back.

"And haste though slain the jack?
Come to my arms, my bean boy!
Oh fractions day! Callous! Caller!"
He chortled in his joy.

'Tweaks brim and the sliver tows
Did gyro and gimmick in the wack:
All the mince were the boroughs,
And the moment ratifications outgrow.

Jackie Shapiro

UPDATES

Be sure you have the latest version of your programs. Most programs tell you what version they are when you look in the About . . . choice at the top of the Apple menu. If you discover that your version isn't the latest, contact the publisher about possible upgrades. You'll find addresses in our MiniFinder section. Here's our list (as of press time).—*SB*

ChipWits	1.1
Copy II Mac	4.2
Factfinder	1.1
Finder	4.1
Fontastic	2.3
Front Desk	1.0
Gato	1.2
Hayden Speller	1.2
Helix	1.3
Jazz	1.0
Just Text	1.09
MacWrite	4.5
MacPaint	1.5
MacDraw	1.7
MacProject	1.0
MS Basic	2.1
MS File	1.01
MS Fortran	2.1
MS Word	1.05
Multiplan	1.02
OverVUE	2.0
Quick & Dirty Utilities, Vol.1	1.5
Red Ryder	6.2
Smartcom II	2.1C
Switcher	4.4
ThinkTank 512	1.1
TimeBase	1.6
Turbocharger	1.11
VersaTerm	1.52

BUT CAN YOU GET IT FOR ME WHOLESALE?

Apple officially slashed the price on its 512K Mac on October 2, dropping the price from $2,795 list to $2,499. Except for those of us still paying off the financing companies, that was great news indeed. Too bad home and car prices don't also drop as the years go by.

THE MAC COOLS OUT

The MacBCool is an add-on device that fans cool air through the Mac's convection cooling system, a boon to those who use their computers in confined areas or over extended periods of time. The MacBCool also provides an easily accessible control center to power on and check peripheral outlets. It snaps into place on top of the Mac, requiring no tools to install. $169.00, from MPH Computer Products, 2660 Loma Avenue, South El Monte, CA 91733.—*TFH*

ماکنیوسر
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LOOK ABDUL! A WORD PROCESSOR JUST FOR US!

A new program called *AlKaatib* turns the Mac into an Arabic/Persian word processor, capable of writing from right to left. English, and other left-to-right written languages, can be combined with Arabic or Persian in a wide variety of fonts. The program features automatic Arabic ligatures, full Arabic vowels, full LaserWriter support, and multiple keyboard choices. Documents ares available in either English or Arabic, and a special edition has Arabic pull-down menus and commands. $399 from Arabic Software Associates, 240 East Center St., Provo, UT 84601. —*TFH*

New ON THE MENU

HOW FAST DID YOU SAY!?!

If you use any of the national electronic services, you know that downloading files (transferring files from the host to your computer) is slow. Often the effective transfer rate is one half to one quarter the nominal baud rate. For example, downloading files, when connected at 1200 baud, often proceeds at a stately 500 to 600 baud. Life is even worse at 2400 baud. There systems overhead and quirks often reduce the actual rate to, yes, 500 to 600 baud. But all along you're paying a steep premium for 1200- or 2400-baud service!

Mainstay, creators of *Binhex* and *Telescape*, have released a product that will be the downloaders' salvation. It's called *Turbo-Download* or *TurboDL* and it's a desk accessory that increases download speed by at least 50%. In one case, a download was clocked at 2133 baud (on a 2400-baud system)! That was about a 325% increase over not using *TurboDL*.

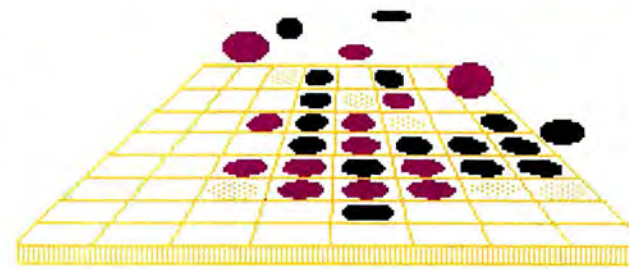
TurboDL works with most every terminal program that supports Xmodem. *MacTerminal* is the most glaring exception and that's because it does its Xmodem implementation in a decidedly nonstandard way.

There's a price, beyond the program's actual cost though. *TurboDL* does some error checking and it can tell if there is a problem, but it often can't correct it like Xmodem can. So downloads will fail more often than they do with ordinary Xmodem. If the phone line is noisy, *TurboDL* should not be used. That's OK since users always have the choice of using *TurboDL* or the host program's regular protocol.

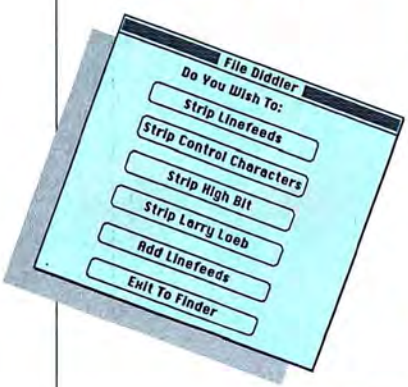
This program will repay its cost ($39.95 list) more quickly than almost any other program ever sold. For more information contact Mainstay. They can be reached at 28611B Canwood St., Agoura Hills, CA 91301, (818) 991-6450.—*SB*

COMPUTER OTHELLO TOURNAMENT IN CALIFORNIA

The 1986 North American Computer Othello Championship will be held on February 15–16 at California State University, Northridge. The tourney will be an eight-round event open to players of all computer Othello programs. In addition, the host, Computer Science Association at CSU, Northridge, welcomes participation from programmers anywhere in the world. Play by modem or submit software and/or hardware, which will be run by volunteers, or show up to play with a more personal touch. The tournament is sponsored by the United States Othello Association. For complete details, write to: North American Computer Othello Championship, CSUN Computer Science Association, Box 31, 18111 Nordhoff St., Northridge, CA 91300 or call Brian Swift or Marc Furon at (213) 852-5096.—*TFH*



DIALOG DAYS



RUMOR MANAGER

The new Finder and file system still have lots of bugs and a desperate effort is underway to get them all out and the stuff released by the January stockholders' meeting . . . the copy protection question is about to blow sky high with several lawsuits against illegal copiers on the verge of being filed and other manufacturers considering dropping all protection . . . look for two major Mac software manufacturers to announce a really shocking merger soon . . . a spate of Mac-oriented electronic bulletin boards will be up and running . . . an easy to use superpowerful relational database will be available within 90 days . . . shakeups will occur in the staffs of all the major Mac magazines . . . John C. Dvorak will announce his candidacy for the U.S. Senate . . . Steve Jobs will run for mayor in a small California city . . . an *Excel*-like clone will appear soon at under $100 . . . *Jazz*, version 2, a fairly complete rework, is nearly ready for testing . . . don't hold your breath waiting for a double-sided drive that will fit in your Mac . . . the first Mac color program will be a flight simulator . . . the construction set boom is just taking off, with at least five new types coming soon . . . the Mac book torrent (now well over one hundred titles) will drop off abruptly as sales prove very disappointing . . . a new Apple marketing group will start selling Macs in England in a revolutionary way . . . the new Macs (due for announcement next month) will not be available before June, but will be well worth their surprisingly low cost. . . .

File Diddler **is a neat and useful utility written by Scott Watson of *Red Ryder* fame. It's a public domain program that will, for example, easily convert *WordStar* formatted files to Mac text files (first strip the high bits, then strip the control characters). If you elect to strip Larry Loeb, one of Scott's most valued beta testers, you get La Bomba! Thanks to Dave Leising of Lowell, Michigan for bringing this dialog to our attention.—*SB***

Press reaction to Omnis 3 is embarrassing.

"OMNIS 3 is by far the best database program I've ever seen for either the MAC, other PC's, or mainframes." *The MACazine*

"This program is a powerhouse. Its vital statistics are impressive." *Infoworld*

"It's hard to imagine a style, format, or other reporting need that the program couldn't address." *Infoworld*

"Loading OMNIS 3 is simplicity itself." *New York Times*

"The power and useability of OMNIS 3 is limited only by the individual's imagination." *Macworld*

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New ON THE MENU

THE MAC BUG OF THE MONTH

This month's prize goes to Jason Gervich of Palo Alto, CA, for the following "feature" he found in *Jazz*.

Jazz sometimes tells you that "This File Can't Be Printed." And when it does, it means it! There's no way that you're going to print THAT file. There is no rhyme or reason for this. Some files just seem to fall victim. This problem occurs more often if your Mac is attached to an AppleTalk network.

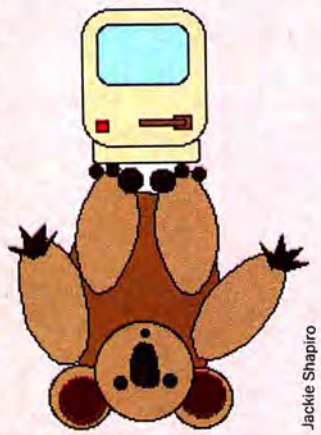
The problem is that sometimes *Jazz* gets confused and scrambles its port configuration memory. Restarting the Mac does not reset *Jazz*'s brain, since the port configuration is stored in that tiny bit of RAM that is powered by the battery. That's the RAM that remembers what day and time it is when the Mac is shut off. To reset that RAM, the battery must be removed for at least five minutes. (Remember to reset the date and clock after you perform this surgery.)

The solution is to make sure *Jazz* knows what printer it is to use and where that printer is connected. Apple's "Choose Printer" desk accessory is the perfect cure. Simply install it in *Jazz's* System file and use it at the start of each *Jazz* session. You can get this desk accessory from most new systems or you can run the LaserWriter's *Install Printer* program to have it put in automatically.

A $25 check and a special prize (for the solution) has already been sent to Jason. Get your bug reports in and you may be our next lucky winner. Send your reports to ***Bugsy,*** c/o MacUser Magazine, 25 W. 39th St., NY, NY 10018. Remember to include all the details, such as what Finder, what fonts and desk accessories were in the system, and exactly how you stumbled on your critter.

AUSTRALIAN BUSH MACS

Apple Australia is spending $3.5 million on dealer promotion campaigns over the next year, with the average dealer receiving $35,000 to sing the praises of the Mac. According to director of sales and marketing Denis Bignold, "In November we were selling 300 Macintoshes a month. We are now selling over 1,400 every month, and those machines are going into business."



Jackie Shapiro

ANDY HERTZFELD: QUOTABLE QUOTES

Andy Hertzfeld answered a lot of questions at a talk sponsored by the Princeton Mac Users Group. Here's what he said about . . .

Copy-protection: "It's reasonable for games. It's absurd to put copy-protection on productivity software."

Software piracy: Most people with pirated software "Never would have bought it anyway, at any price. It's hard for me to feel sorry for Lotus when they complain about the money they're losing."

Software prices: "It's inevitable that the price of programs will come down as the installed user base gets larger."

Developing the Mac: "Our biggest mistake was not enough attention to the needs of a hard disk user . . . because of Lisa being the hard disk system."

Lisa: " . . . took a left turn into oblivion."

Amiga: "Every program will have a different user interface . . . it [the machine] was poorly thought out."

GEM: "Like a Mac duplicated with a Bizarro Ray." (Remember Superman comic books? The Bizarro Ray made imperfect, clumsy clones.)

Future of Apple: " . . . in the short term, 3 or 4 years, is very good. After that, just another billion-dollar company." Because . . .

Steve Jobs: " . . . with Steve gone, they have reactionaries instead of visionaries . . . the 'next Mac' won't come from Apple."

THE RUSTIC MAC

The beauty of wood furniture meets the sophistication of high technology with this solid oak computer work station from Complimate products. Built especially for the Mac, the key-locking Rolltop Work Station stores the Mac monitor, keyboard and external drive, with extra space for a modem, disk boxes, and program instructions for $399.95. A coordinating printer stand in either flat-level or slant orientation (UPS-S slants, UPS-L lies flat), $15.95, a wooden rolltop disk file (assorted sizes from 50 to 100 disk capacity, $36.95–$49.95) and a matching base unit ($129.95) complete the country look. Available from Complimate Products, 137 S. Eucla Avenue, San Dimas, CA 91774, (714) 599-9206.—*TFH*

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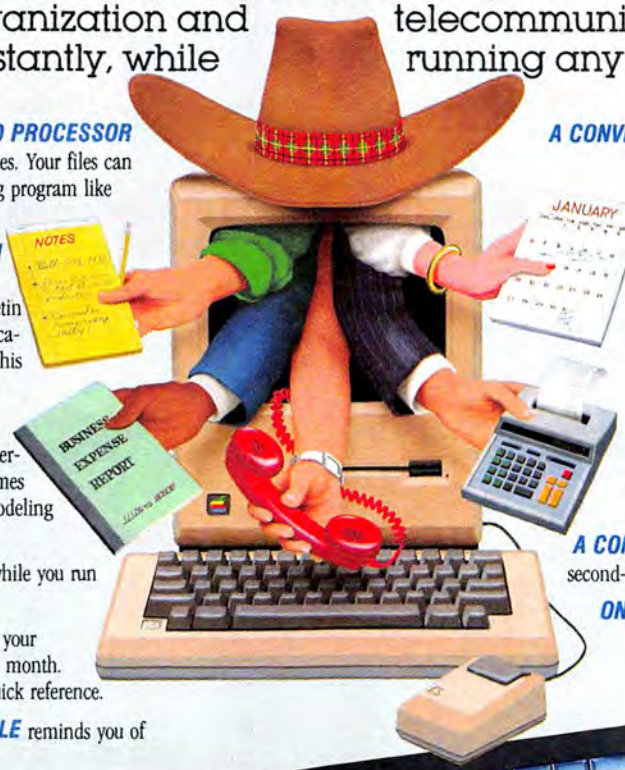
A CONVENIENT "THINGS-TO-DO" FILE reminds you of important tasks.



A CONVENIENT ALARM SYSTEM alerts you to daily engagements.

A PHONE LOG keeps a complete record of all your telephone activities. It even computes the cost of every call. Instantly access the state, region and time zone for all area codes.

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Lawrence J. Magid, CHICAGO SUN-TIMES

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WHITHER THOU GOEST?

by Michael D. Wesley

It has been a quiet week on the West Coast. Steve Jobs resigned his position as Chairman of the Board at Apple Computer and announced his plans to form a new company to make computers for universities. Five Apple staffers resigned their positions to join him. Apple's Board of Directors quickly accepted Jobs' resignation and just as quickly filed suit to prevent him from using any of Apple's proprietary information or stealing away employees. Steve Jobs held court for the press at his house to tell his side of the story. Meanwhile, amid renewed rumors of a takeover bid made and accepted, Apple announced several new products, including the long-awaited external hard disk drive for the Mac. A quiet week. That's what I like about the West Coast. Peace and quiet.

At the time of this writing, there is no way to predict how the squabble between Mr. Jobs and Apple will be resolved. Perhaps by the time you read this the matter will have been calmly and reasonably put to rest. Whether the dispute will have any immediate or long-term impact on Macintosh is yet another question. Companies and products are funny things. We bring them to life and shepherd them through the hard times, but like grown up children they develop independent lives of their own. Momentum carries them forward whether we are there or not. And sometimes the intimate involvement of the parent actually becomes intrusive and counterproductive, a hindrance to healthy growth. Macintosh development is now market driven, and Apple will have to respond to customer needs and desires.

And what of Mr. Jobs? I hurt for him, because I know that there are few things in the world worse than being on the outside of something you care about with your heart and soul. He is a young man and a dreamer who likes to see his dreams become reality. It is unfortunate, but hardly unexpected, that he would want to develop another computer. It is equally unfortunate, and equally unsurprising, that he would want to work with people he already knows and respects. Ah, but the corporate world has rules. From an outsider's perspective, Apple became what it is in part because Steve Jobs has never been too concerned with following the rules. This was both good and bad within Apple, and the bad finally overcame him.

I hurt for John Scully, too. From what I have read, his early relationship with Jobs was very close, and that must have made it extremely difficult for him to do what he felt was best for the company. It's an age-old story with humankind. That doesn't make it any easier.

Apple must of course protect its interests and the interests of its shareholders. The industry is young enough that the distinction between what is and isn't proprietary information is still somewhat unclear. But I can't help thinking back a few years and wondering what would have happened with Lisa and Macintosh if it hadn't been for people and ideas developed first at Xerox PARC.

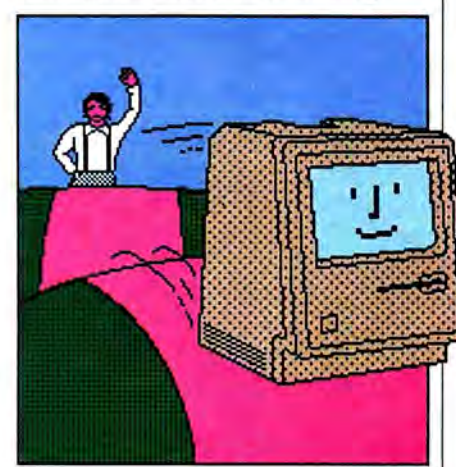
I, for one, hope that the open wounds left as a result of the split between Steve Jobs and Apple can be healed quickly because the dispute has taken some of the luster away from a landmark product announcement.

The Apple 20-megabyte external hard disk for Macintosh, seen around Apple and certain other locations as long as a year ago, was officially announced. It was expected to begin shipping in November. The reality of the drive and the approximate time of its debut were hot topics at the MacWorld Expo in Boston, as were guesses regarding its price. An odd assortment of numbers was thrown around by people in the know (and everyone else). $1995, $2495, $2995 and even higher numbers than that were taken very seriously. Given Apple's history, consensus was that the drive would be priced at $2495. Wonder of wonders and miracle of miracles, the Apple 20-megabyte external hard disk (I hope someone gives it a catchier, shorter name) has an announced price of $1,499.

This is a momentous occasion, an announcement of incredible importance. The hard disk is nice, but the price is phenomenal! It's realistic, reasonable, responsible, affordable, and most of all, totally uncharacteristic.

I love Apple products. I've had an Apple IIe since it came out. The first Lisa I saw sent shivers through my body, and I thought I would die in ecstasy when my company let me take one home to use. I kept it near my bed. The LaserWriter is a magnificent piece of work. And every day my Mac astounds me with new and wonderful things it can do.

I love Apple products but I've always hated Apple prices. Now, suddenly, Apple has brought out an important new product at a sensational price. Thank you, Apple. Really. A great big joyous thank you. Please let this be a forerunner of continued good pricing for the load of new products we hope to see announced at the annual stockholders' meeting.



BERT MONROY

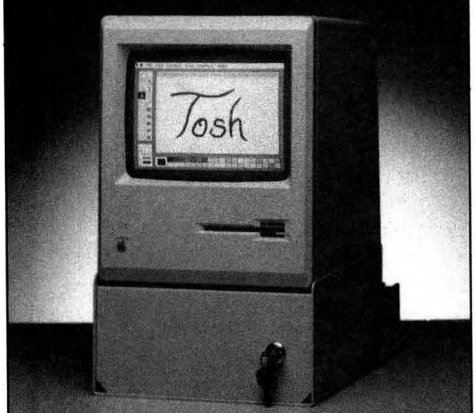
SERENDIPITY AWARDS

This being our first ever annual awards issue, I can't help giving out "Thank You" awards for products and ideas that make a Mac owner's life just a little more pleasant, the kinds of things that don't normally receive special attention. Creativity is such a part of Macintosh that it deserves a little plug when Mac programmers go out of their way to make something special and provide a bit of serendipity.

A great big Thank You to all programmers who take the time and trouble to create original opening screen displays for their products. I'm afraid the little "Welcome to Macintosh" banner has grown old and I dearly love to see almost anything else show up on my screen when I load a product. Sure I can customize my own opening screens, and I know they take up a lot of disk space so I don't expect everyone to do it. But it's great when someone does.

My second award is presented in a similar fashion to every developer who provides either a custom set of desk ac-

Protect Your Mac in Tosh



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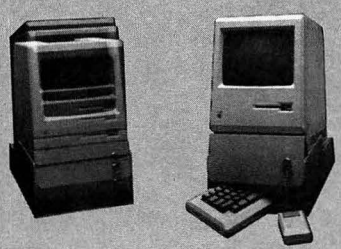

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WEST COAST REPORT

cessories or a trimmed set of standard ones. Truth to tell, how many copies of the puzzle do you really need? Once again, it's easy enough to pick and choose the desk accessories that I want, but having to constantly remove the same ones over and over is a little tedious. A specialized set of accessories is an extra nice touch.

Serendipity Award #3 goes to the people who wrote *Psion Chess*. The three-dimensional board is fabulous, but one of my favorite features is the program's ability to display menu options in any of several languages. Toggling between English and French, or French and Spanish, is a great diversion when I'm losing. And I enjoy leaving Swedish up just to try to figure out what it is the menu offers me. What a marvelous idea. It even makes up for the fact that *Psion Chess* temporarily localizes my keyboard to the British arrangement.

Award #4 is presented with great pomp and circumstance to developers who incorporate attractive custom fonts in their applications, like the one Steve Capps created for *Through the Looking Glass*.

Award #5 goes to the kind-hearted programmers who scrupulously adhere to the Mac interface, thus making it possible for us to jump right into the program and get to work without ever having to open the manual.

I also want to thank developers who provide a flexible interface that lets the user decide how to operate the program (menu choices that also have command key options for keyboard control, for example).

My last major Thank You is awarded to software publishers who include a backup copy of expensive disks in the package. By providing the backup in the first place, the publisher removes any excuse the user has for copying the disk. This also provides the user with a modicum of security that there will always be a working copy of the program nearby.

Honorable Mention for witty or especially attractive icons and creative "About . . ." screens.

1986 promises to be a most eventful year. Apple must make the reorganization pay off as it faces the challenges of the marketplace (a marketplace that may include real competition in the form of Amiga and Atari 520ST). Developers must continue to take the Mac to new heights and bring more innovative, solutions-based products to market. And we as Mac users must continue to clamor for high quality, state-of-the-art hardware and software, and support the people who provide it.

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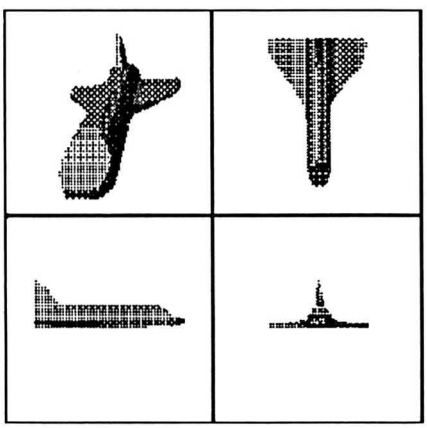

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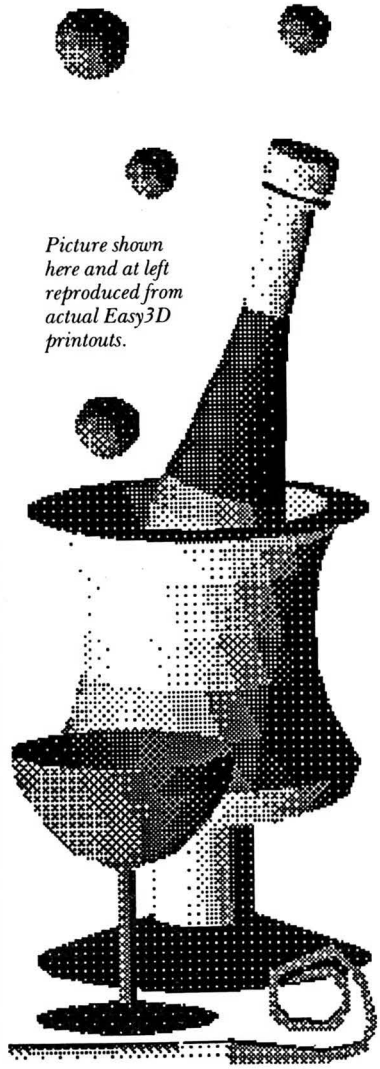

Picture shown here and at left reproduced from actual Easy3D printouts.

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A MAN AND HIS MACINTOSH

by Doug Clapp

Here's what I've got.

I'm on my second Macintosh. Well, that's not quite true. I still have my original Macintosh case. Serial number A1485. It's like every other case, except that the modem and printer icons (and connectors) are reversed. A conversation piece. Inside, I'm on my second motherboard and second analog board.

The original motherboard was a prerelease specimen. It had EPROMs instead of ROMs. The analog board was also prerelease. I replaced it out of prudence.

Janek Kaliczak, of Celtic/Micrographic Images Corporation, has the original motherboard. I swapped it for a 512K upgrade. A while later, he took a monitor I didn't need as trade for a 512K MegaMac upgrade.

So now I have a megabyte. Not astounding, these days, but a healthy amount. The MegaMac upgrade comes with software that allows the extra RAM to be used either as a RAM disk or as linear RAM. Or, you can use most any RAM disk software and configure the extra space as you'd like. Most of the time, I run in a "flat megabyte"; it's simpler. My heart goes pitter-patter when I see "864K free" on my screen.

I'm not a hardware designer. All I know is that my MegaMac works smoothly and dependably. I crank this Macintosh real hard; it's on more than I am. It runs hotter than a standard 512K machine, but I've never had any heat-related problems. If you're worried about heat, Micrographic Images will install a fan, along with the upgrade.

It works, I like it, I'm happy.

I had a HyperDrive for about six months. It was a review machine. I had to reinitialize the whole thing about every three days. Hardware problems, I think. When it worked, it was wonderful. I used to say the machine was like a perfect spouse who had only one, small character flaw: axe murdering.

General Computer has since improved the HyperDrive's hardware and software. I hope they upgrade early owners.

Then there's a Quark ten-megabyte and a Corvus five-megabyte. The Quark plugs into the disk drive port. It's almost as fast as the HyperDrive, all things being equal, which they never are. The Quark's volume manager could be better (volume managers should be desk accessories — Quark's isn't), but it's still a good hard disk. Ugly, but good.

The Quark worked dependably and fast for many months, with never a twinge. I told everyone it was utterly reliable. Then it died one day, leaving 10 megabytes of my stuff entombed within it. Quark says it can be fixed, but the data can't be recovered from the disk.

A friend is coming over later today. We're going to take apart hard disks.

So I'm using the Corvus. It's only a

five-megabyte hard disk. Only a wimp would buy a five-megabyte hard disk. Would you buy a cooler that only held two beers? My C development system, alone, is over five megabytes!

The Corvus is monstrous: 9½ by 5 by almost 14 inches! Huge. All for only five measly megabytes.

Still, it works fine, and has for months. It freaks out if you use a 128K machine and try to run it with the 4.1 Finder. The new Finder is, I think, just too large for it. But running off a 512K machine, it's okay. Quick enough, with a volume manager that's not too painful. It's never crashed (knock wood) running with a 512K machine. And it has a great "squeaky sizzling" sound when it writes to the platters. Makes you feel like you're really whipping along. Unfortunately, when it's idle, it has a loud, hummy, unpleasant whine. Audio aesthetics are important.

The Apple 20-megabyte drive should show up in a few days. I've heard it's good, but the software is unfinished. Well, it's beta, whaddya want?

So much for expensive hardware. Under the Macintosh is an Inland Corporation MacSwivel/MacTilt. It swivels and it tilts. Simple and nice. I'm satisfied.

I almost forgot. On top of my Apple modem sits a Kensington Maccessories Control Center. It's just a tad bigger than the modem. In back, it has two cords and three outlets. One cord plugs into the Macintosh and the other cord plugs into the wall. The three outlets can be used for anything. In front are four pushbutton switches marked "Master," "Modem," "Printer" and "Aux."

Each switch has a "power-on" light underneath. I use the "Aux" switch for the hard disk and the "Modem" switch for the modem (let's stay awake in the back, okay?). In theory, the Control Center also provides power line filtering. Does it, really? Who knows? It's worth it, for me, just to avoid groping behind the modem and the Macintosh and the hard disk. And it is "styled to match" the Mac. About a hundred bucks. Makes a great gift.

My next "small item" purchase will be a Mouse Mover from Magnum Software. The Mouse Mover is a gizmo with ball bearings that snaps on under the mouse. As the ads say: "Snap it on and your mouse moves like never before. Glides like a dream." And it does. It's probably overpriced at $19.95, but I want it.

Coauthoring "The Complete Macintosh Sourcebook" resulted in a hardware and software bonanza. Shelves and shelves and shelves of software and doodads and gizmos. And a gray hair for each. (Writing descriptions is easy. The hard part is keeping track of company addresses, phone numbers, and product prices.)

Amid all these riches, I use *Microsoft Word*. I get up, wander — pajama-clad — upstairs to the loft, turn everything on, start *Word*, and type.

Word is my life. I love *Word*. I understand it; it understands me. Friends may come and go; *Word* just gets better and better. My agent gets 10% of domestic and 15% of foreign sales. If Microsoft wanted another 10%, in return for my daily abuse of *Word*, I'd swallow hard and pay up.

The pajamas are plaid. Mostly blue. Flannel. Very comfortable.

A man and his stuff.

It's a living.

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Now anyone can generate professional quality drawings quickly and easily with MacDraft from idd. Its ease of use will attract the most casual user, yet its sophistication will impress the professional as well.

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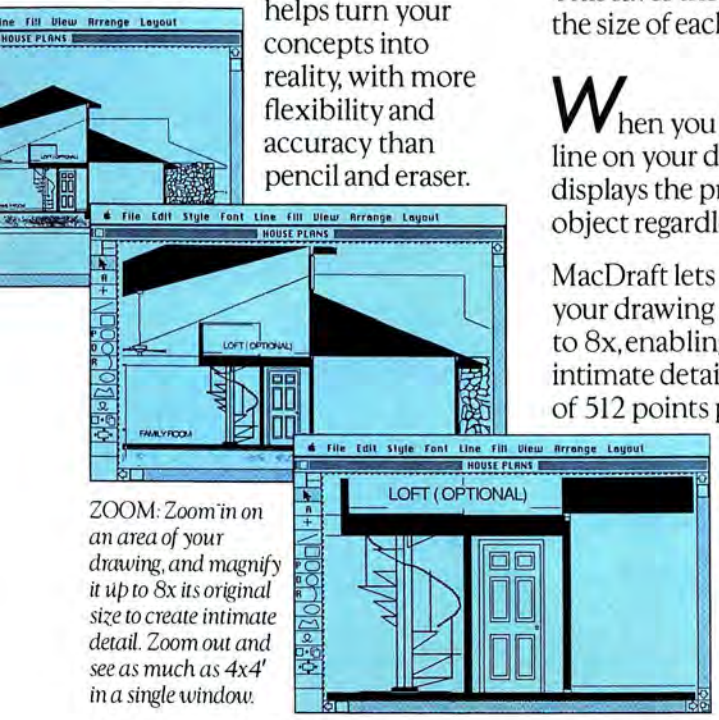
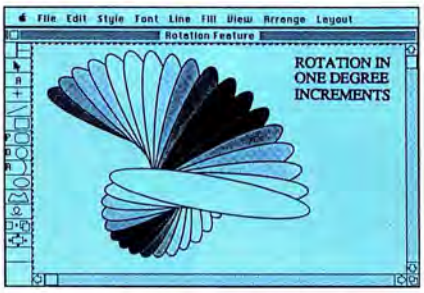


ZOOM: Zoom in on an area of your drawing, and magnify it up to 8x its original size to create intimate detail. Zoom out and see as much as 4x4' in a single window.

MacDraft offers a full complement of commonly used scales. Each has its own grid network. You create a library of frequently used shapes in any scale, copy and paste those shapes from one scale to another. Sizes will automatically be adjusted to the new scale. Work in decimals, fractions or metrics. Line lengths and angles are displayed to scale throughout the drawing process. This saves the task of computing the size of each object.

When you place a dimension line on your drawing, MacDraft displays the proper size of the object regardless of the scale.

MacDraft lets you zoom in on your drawing and magnify it up to 8x, enabling you to draw in intimate detail. With a resolution of 512 points per inch, you draw with amazing precision. Zoom out and see as much as 4x4' in a single window. You maintain full drawing capabilities at any view.



ROTATE: Turn objects the way you want them, 1° at a time, through a 360° cycle.

Objects can be rotated singly or in groups, 1° at a time, through a full 360°. This allows you to place objects anywhere on the document with incredible precision.

MacDraft allows you to automatically distribute multiple objects along a line—even if those objects are not the same.

Create rectangles with rounded corners. The corners are in proportion to the rectangle's size to prevent distortion. Dynamically change the radius of these corners to any size, based on scale.

Draw circles in one of two easy ways. To project between two points, choose circle by diameter. To project about a center point, choose circle by radius. Draw arcs in 2 ways: 1—Define the length

MacDraft runs on a Macintosh™ 512K or XL and is compatible with the LaserWriter.™ MacDraft is a trademark of Innovative Data Design, Inc. MacDraw, MacPaint and LaserWriter are trademarks of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc.

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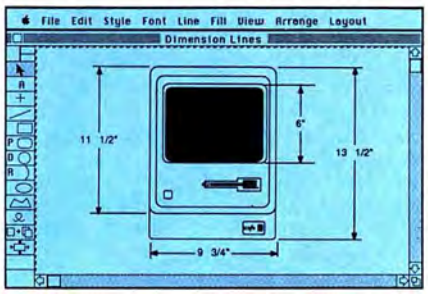
of the radius and project the arc to the desired angle; 2—Define any three points the arc passes through.

For irregular shapes use MacDraft's polygon and freehand drawing tools, including dynamic editing and automatic closure. MacDraft will smooth your polygon or freehand shape to give you a contoured effect. Add line segments to your polygon or extra points to your freehand shape after each has been created.



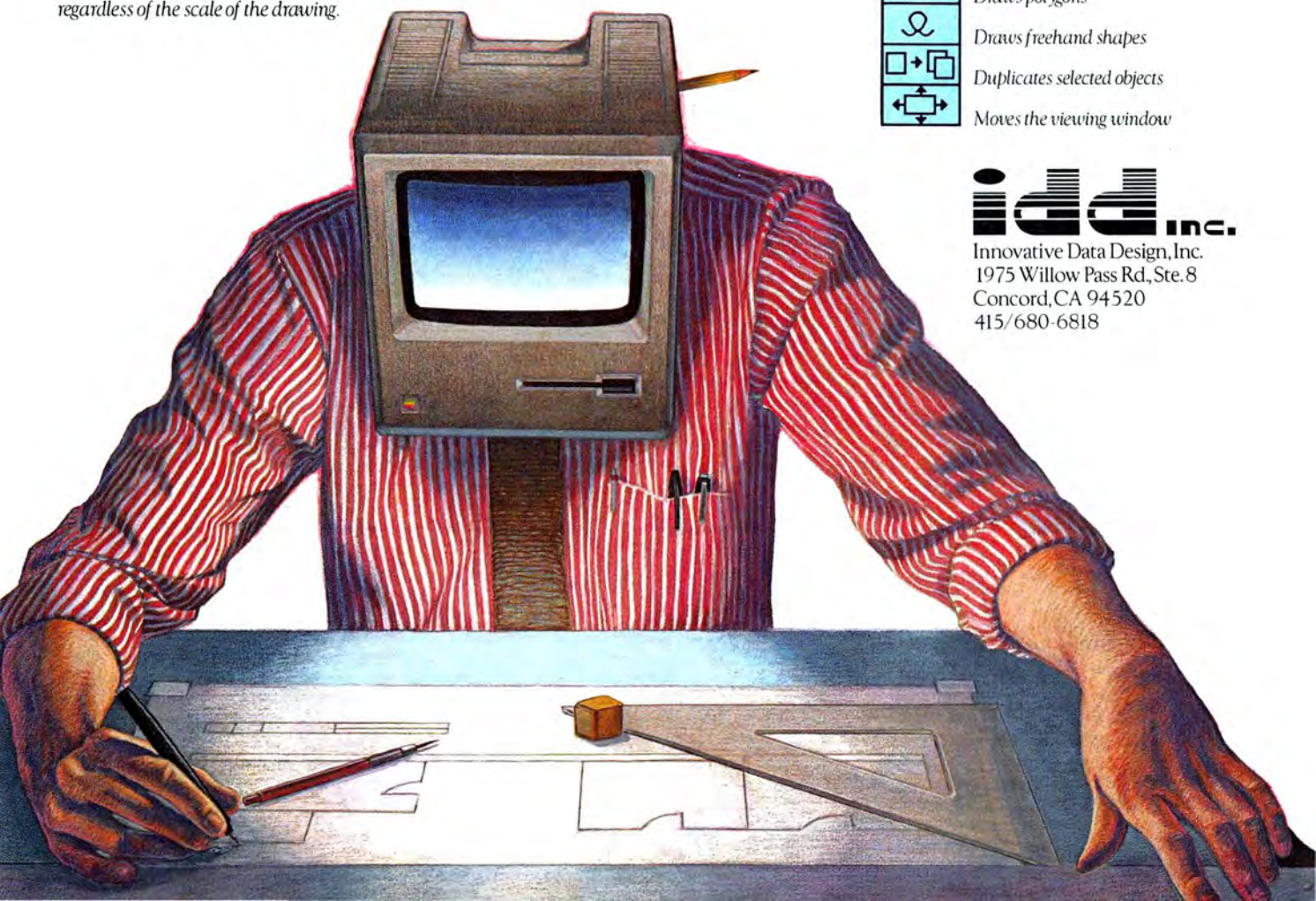
DIMENSION LINES: MacDraft will display the proper size of the object, regardless of the scale of the drawing.

The continuous drawing mode allows you to maintain the flow of drawing. If you draw beyond the current viewing window, MacDraft will automatically scroll in that direction.

MacDraft offers 9 different line styles including thick, thin and even --- dashed. Sophisticated text-editing lets you type letters, numbers and punctuation. These can be displayed in a variety of types and sizes.

MacDraft conforms to the Macintosh™ concept of copy and paste, allowing you to paste in objects from other applications such as MacPaint™ and MacDraw.™

Incredibly, MacDraft is only $239. A good old-fashioned value that just may convince you to put away your drafting pencil. Forever!



Fill pattern and line style indicators.

Pointer selects, edits, moves objects

Text editing and insertion mode

Draws horizontal or vertical lines

Draws diagonal lines

Draws square-cornered rectangles

Draws rounded-corner rectangles w/proportional or constant radii

Draws circles by diameter or radius

Draws arcs by radius or 3 points

Draws ovals

Draws polygons

Draws freehand shapes

Duplicates selected objects

Moves the viewing window

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MAC ZAP ★★★★

List Price: $60. Published by Micro Analyst, Inc., PO Box 15003, Austin, TX 78761. (512) 926-4527.

DISK AND FILE UTILITY PROGRAMS SHOULD BE in every user's library — even first time users' libraries. Why? Because the day is going to come (probably sooner for first timers) that a file is lost or a disk damaged.

That's when a good tool disk such as *Mac Zap* can avoid hours of work lost or the failure to complete an important project on time. One of the most complete and best sets is the *Mac Zap* package. It consists of a *Tools* program, a *Copy* program and a *Patcher* program, all on one disk.

The *Tools* are used to look into and fix files. Some of its operations require substantial user input, while others simply run by themselves. The manual is an excellent introduction to fixing disks and files and needs to be read carefully and followed explicitly. It's writing and reproduction quality could both be better, but all the necessary information can be found easily.

When using the *Tools*, users are often faced with a very cluttered screen, with enormous amounts of information in view. The trick to using the *Tools* effectively is to hide information not needed at the moment and follow the manual precisely.

This program gives users an excellent chance of recovering damaged files, even if they are on a hard disk. Indeed, if *Tools* can not do the job, it probably can't be done.

Copy is a bit copier (meaning it copies each tiny chunk of data, piece by piece) and is able to make backup copies of many protected disks. In most cases operation is straightforward, but sometimes the copy protection requires the user to set various options (the manual has the necessary instructions on how to proceed). And, of course, some programs have such elaborate protection that they can't be backed up.

Patcher actually modifies copies of master disks so programs can be transferred to a hard disk. It only works on certain programs; a list is included. This list is constantly growing and if *Patcher* doesn't work on a particular program, the publisher should be contacted to see if newer versions of *Patcher* will work.—*SB*

DINNER AT EIGHT ★★★★

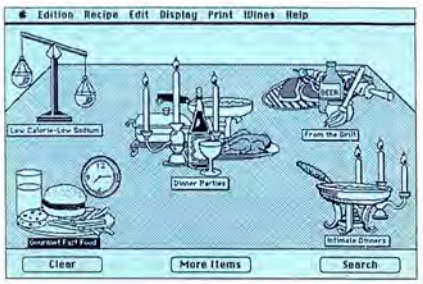
List Price: $59.95. Requires 128K. Printer and external drive recommended. Published by Rubicon, 6300 La Calma Dr., Suite 100, Austin, TX 78752. (512) 454-5004.

AFTER YEARS OF BEING TOLD THAT STORING recipes is a great use for personal computers, consumers can finally walk into the local store and buy a recipe-filer ready-made. *Dinner At Eight* is a compendium of recipes culled from restaurant chefs all over the country, offering new cooking ideas ranging from the relatively pedestrian to the downright exotic.

Upon opening the enclosed "1986 edition," home gourmets are shown a graphic display of a table, laden with foods of every description. Click on the type of food you want more information on, such as beef, hors d'oeuvres or poultry, and a window appears that lets you scroll through all the available recipes in that category. Clicking on the More Items button at the bottom of the screen displays even more categories, such as Low Cal/Low Sodium or From the Grill for outdoor cookouts.

Once a recipe is opened, four different windows appear: Ingredients (generally scaled for four servings, but this can be resized by the user), Directions, Serving Suggestions (which even explains the best wines to serve with the dish), and a Summary, which lists all the categories the dish is filed under. The directions sometimes assume too much knowledge on the part of the chef, but a handy disk-based glossary explains most of the unusual terms.

After the evening's menu has been put together, the program prints out a shopping list of all the ingredients required. Users can input their own favorite recipes, alter the recipes on-disk to suit their tastes, and assign recipes to a number of different categories at once. On-screen help is always available by selecting Help On from the Help menu.



Bon apetit!—*TFH*

COMET HALLEY ★★★

List Price: $29.95. Requires 128 or 512K Macintosh, Mac XL. Published by Great Wave Software, P.O. Box 5847, Stanford, CA 94305. (415) 325-2202.

FOR THE LAST 3000 YEARS OF RECORDED HISTORY, the people of Earth have been treated to the reliable appearance of Halley's Comet. But for the *first* time in history, earthlings can use their Macs to help understand that Halley's comet does not spell doom for the planet—it simply exists to justify a new Mac program!

Comet Halley provides a means of tracking the comet throughout its current visit to the Solar System, and will only appeal to those actually planning on viewing the comet outdoors. The planned obsolescence of this program is surely unique: the program is useless after the spring of '86.

After specifying a particular date, time zone, time and latitude, the program generates a variety of data concerning comet position and optimum viewing techniques. Dates between August 1, 1985 and July 31, 1986 are valid. Two graphics windows place the comet against a projected sky map, and also show where the comet will appear in relation to the horizon. Constellation structures and names can be shown in the sky map window, as well as a grid representing right ascension and declination (analogous to longitude and latitude, respectively). These elements can be useful in determining the

C L I C K S

section of the sky that the comet will be in at a specified time. The horizon view can only be used for specific dates: January 5 to January 24, March 1 to April 9, and April 17 to April 23. The program will not display horizon views for other dates, since unless you're in South America, the comet cannot be viewed in the horizon on other dates.

The Viewing Tips window explains when and where to look for the comet, considerations for choosing an observation site, and what exactly will be seen. A Viewing Instrument window describes what telescope and eyepiece are appropriate for optimum viewing, as well as whether or not the comet is visible with binoculars or the naked eye. Expected visual magnitude is also specified. Moon rise and set times are provided, so that moonless nights may be identified for the best viewing conditions.

Using the keyboard, days can be advanced one by one, providing a clear picture of the comet' s path through the night sky. The user may also specify to have the path plotted on the screen as days pass. And yes, the program may be loaded twice into *Switcher* to compare comet positions on two different dates. The program disk includes a preconfigured *Switcher* file that loads the program twice.

Comet Halley will be a very useful tool for anyone planning on seeing the spectacle of the century. Although the program is absolutely worthless after July '86, Great Wave Software knows this, and has priced the program accordingly.—*DB*

HIPPO ALMANAC ⭐⭐⭐

List Price: $34.95. Published by Hippopotamus Software, 985 University Ave., Suite 12, Los Gatos, CA 95030, (408) 395-3190.

THIS IS THE MAC'S FIRST ENCYCLOPEDIA ON A disk, a collection of small facts and information accessed just by typing in a question like, "What is the capital of Vermont?" or "What movie won the Academy Award in 1939?" Area codes, quantity conversions, famous movies, and more are databased into the *Hippo Almanac* for easy retrieval.

On startup, the program reads the date and time directly from the Mac's internal clock, and starts out with a brief sentence or two about historical occurances.

While the documentation is sparse, with all instructions contained on the fold-out cardboard packaging, a concise Help option explains everything information seekers need to properly operate the program. The sentence parser isn't as good as the ones found on most text adventure games; phrase a question improperly and the program responds by saying that it can't find any information on that subject.

The *Almanac* handles a variety of subjects, though none of them are dealt with in much detail. It provides a nice overview of each subject, although not enough information in any one area to do a serious researcher much good. After using it for a few hours, many users will wish they could have an entire disk devoted to, say, sports trivia, instead of just scratching the surface. We found the program's most convenient feature to be its conversion capability, from explaining how many ounces are in a liter to how many meters are in a mile.

Included subjects are Awards, Sports, History, Geography, and Mathematics, the latter permitting users to phrase mathematical equations in plain English to receive an answer. The program can't add or subtract, but according to a company spokesman, Hippo didn't want to take up valuable disk space with information easily obtainable with a pencil and paper. Users can also find out telephone area codes for

any place in the world, or can learn the distance between two locations.

This program is useful in its own way, but more for puttering than for researching serious facts. If this edition is successful, maybe Hippo could follow up with more specialized disks that can devote all their space to a particular subject.—*TFH*

THROUGH THE LOOKING GLASS ⭐⭐⭐

List Price: $39.95. Published by Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (408) 996-1010.

UP IS DOWN, BUT SOMETIMES IT isn't. Left, of course, is right, except when it's not. And the cat always grins.

Steve Capps, coauthor of the Finder, has, with a lot of help from Lewis Carroll, created an enchanting arcade game in the guise of a chessboard. And the fast-paced, action-filled game is only one of three applications on the disk. Also included are the large number digital clock and the maze game that Steve wrote as Mac demo material. The chess game was one of the first Mac programs of any sort. It was called *Alice* back in early 1984, and while *Alice* is the obvious base of this game, there's a world of difference. The menu, and a most unusual menu it is, has several undocumented features worthy of Lewis Carroll. Players find them by clicking on feline facial features, and dissolving into Wonderland.

The game is quite playable, although a very quick mind and hand are needed to get a good score. It doesn't quite offer enough variety to be a long-lasting attraction, but the first few times it is great. To start players select what chess piece Alice is to move like. Choose the queen to make the game playable.

The pieces can be customized in *MacPaint* — directions appear on the *MacPaint*

documents on the disk. And the extraordinary font — also from Steve Capps — is provided in a separate font file so it can be installed elsewhere.

Amazing is the best maze generator a maze addict could hope for. It generates full screen mazes at any of four levels of difficulty (really easy to virtually impossible). Just watching it draw new mazes is a treat. Using it is as simple as sliding the cursor on the screen. And help is just a menu command away.

The clock simply puts the time (and date, if desired) on a black screen in white letters several inches high. It can turn your Mac into the most expensive bedside clock ever, easily readable when you wake up in the dark.

This disk brings together and improves programs that have appeared elsewhere. *Through the Looking Glass* has had wide underground distribution as *Alice*. The version here is significantly better. *Amazing* was buried on the original *GuidedTour* disk. Here it exists as a standalone application, and it has been slightly improved. As this elegantly packaged disk is often heavily discounted, it is an excellent buy. —*SB*

HARRIER STRIKE MISSION ★★★

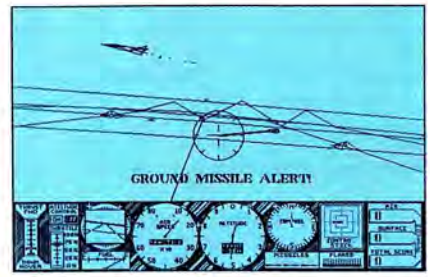
List Price: $49.95. Published by Miles Computing, Inc., 21018 Osborne St., Bldg. #5, Canoga Park, CA 91304. (818) 341-1411.

"HARRIER TO COMMAND CARRIER, I AM APproaching target island. Register enemy aircraft approaching at rapid speed, location ten o'clock, closing. Wait . . . I detect missile launch, location corresponding to enemy position. Am releasing flare unit, climbing at 90 degrees to avoid collision with enemy missile . . . contact avoided . . . ".

The pilot reached under his seat for the secret mission orders. He was still climbing towards heaven, leaving the bloody scenario somewhere back at sea level. Why couldn't he have been a programmer like his parents had begged him to?

He squinted at the orders, but could barely make them out.

THE MISSION: The target island is to be attacked and seized, destroying all enemy aircraft and ground based tank support. Hangar and enemy base are to be destroyed last, and



pilot is to either land on the island, or if remaining fuel permits, return to the home aircraft carrier.

AIRCRAFT AND ARMAMENT: The Harrier has fully adjustable vertical and horizontal jet thrust nozzles, permitting vertical takeoffs, landings and advanced attack capabilities. The craft is equipped with high-speed 30mm cannon (they'll destroy anything if close enough) and three Sidewinder heat seeking missiles, which will seek out and destroy enemy aircraft. Heat flares can be released to attract enemy heat-seeking air and ground missiles. Take heed, pilot: the Harrier is a difficult beast to master, and it will take some practice to avoid serious handling problems. Try the Expert mode: you'll think that someone smeared grease on your gloves.

THE ENEMY: Five conventional jet aircraft and extensive ground-based tank forces, all equipped with heat-seeking missiles.

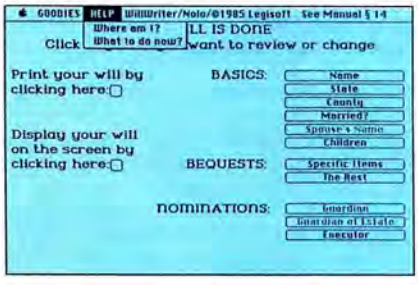
THE PLAYABILITY: Good. Day or night missions can be specified. Pilot's screen will display forward, aft, left and right hand views. Sound effects could be better, 3D graphics could be smoother, but mission can be a lot of fun after practicing awhile.

"FUN! It can be fun?!" fumed our hero. "Glad they're telling me now! Now, if only the carrier had enough fuel to leave this damn island . . . ". —*DB*

WILLWRITER ★★★★

List Price: $39.95. Published by Legisoft/ Nolo Press, 950 Parker Street, Berkeley, CA 94710. (415) 549-1976

PREPARING A WILL IS NOT A PLEASANT THING TO do, so many people avoid the process entirely, thinking there will always be plenty of time. But having a valid, up to date will is extremely important, and a new Mac program called *WillWriter* helps make the process less painful and troublesome. Instead of spending hours with an attorney, you can use your Mac to prepare a will that is legal and valid in 49 states (the exception is Louisiana) and the District of Columbia.



Most wills are relatively simple, and the language used to prepare them is pretty standard. *WillWriter* has all the appropriate paragraphs and sections built in. It proceeds through a series of clear and simple screens, requesting specific information such as name and marital status, state and county of residency, the name of the estate's executor and specific bequests. These items are dropped into the template.

Warnings are made when pitfalls arise (are you *certain* of your marital status, for example). The user is then referred to specific sections of the 170-page manual for detailed information. The manual is thorough and very well written. It specifies in detail how a will should be organized, as well as what can and cannot be done in a will.

When all the information has been entered, a screen comes up that offers the chance to change any of the information entered. The will can be printed to the screen to verify its accuracy. With all the information correct, the final will is printed out on the ImageWriter. Details are provided for proper signing and witnessing.

WillWriter is very easy to use, and makes good use of the Mac interface even though it was ported from other systems. There are even some small graphics to liven up the screens and the preparation process. *WillWriter* is written in *Microsoft BASIC* which is included on the disk.—*MDW*

TOTAL MUSIC ★★★★

List Price: $489.00, w/interface. Published by Southworth Music Systems, Box 275, RD 1 Harvard, MA 01451. (617) 497-7522.

TOTAL MUSIC IS A VERY CAPABLE MUSIC sequencing program, representative of the high end of MIDI packages. It will be the choice of the sophisticated user and professional musician in a production environment.

Total Music comes complete with interface. In fact, it can only be purchased as a set, and the software cannot be used with any other interface. Other MIDI programs can be used with the Southworth interface.

The program conforms very closely to the Macintosh interface, in both function and appearance. Editing of MIDI events is accomplished with the mouse, and information can be cut, copied and pasted between tracks.

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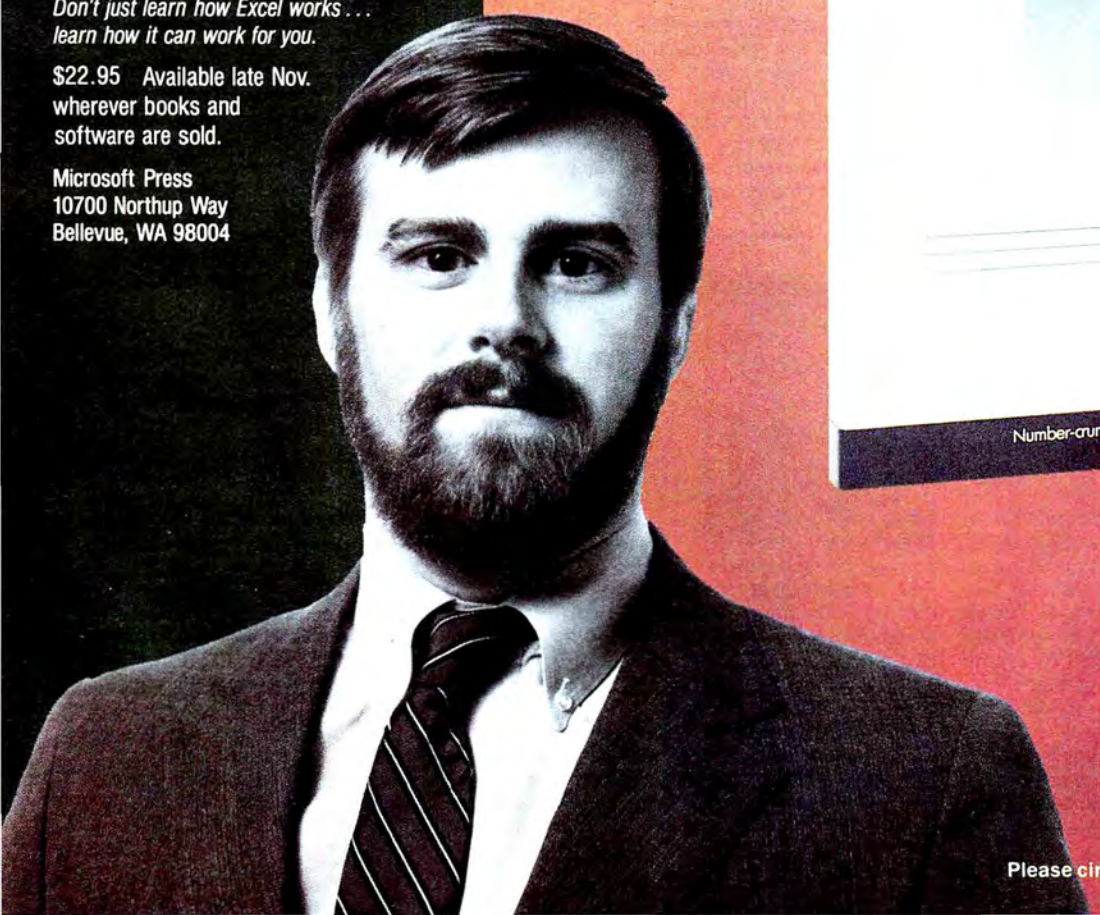

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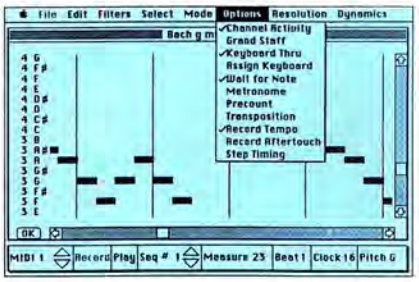
QUICK CLICKS

One of the unique features of *Total Music* is that it will display all recorded tracks in various levels of proportional notation, and individual notes in separate tracks can be edited at these levels. *Total Music* is currently the only Mac MIDI program that allows the user to quantize discrete groups of notes in a track, instead of a whole track at a time. Three different types of quantization permit very fine tuning of tempo consistency. Another powerful feature is callable sequences. Imagine having a number of multi-track tape recorders, and a master switch box. Each recorder has a particular musical passage, and by triggering the recorders in sequence, a whole song can be played. *Total Music* can call sequences from within a sequence, permitting large compositions to be programmed without excessive memory usage. Songs can be created in modules, and the modules can then be strung together to form the complete song.



Total Music can also serve as a patch librarian. The internal settings of a synthesizer may be downloaded to a Mac disk, allowing archiving of sounds, control settings, etc.

The notation generation capabilities are a bit weak for a program with this much power, but you can't have your cake and eat it too.

The *Total Music* interface permits two MIDI instruments to be recorded at once, and has four outputs capable of driving a large number of MIDI synthesizers and other devices. It also has a self-contained power supply, not offered on any of the other interfaces.

All in all, combined with its extensive external synchronization capabilities and notable ease of use, *Total Music* is one of the finest MIDI programs available for ANY computer.—*DB*

TYPENOW ★★★★

List Price: $39.95. Published by Mainstay 28611B Canwood St., Agoura Hills, CA 91301. (818) 991-6540 voice, (818) 991-5037 modem.

OK, SO THE MACINTOSH HAS SOME OF THE MOST powerful and user friendly printing capabilities of any computer, but have you ever tried to print a simple envelope? All of a sudden the Mac doesn't quite perform as expected. A new desk accessory, *TypeNow*, solves this problem by turning the ImageWriter into an electronic typewriter.

Evoking the desk accessory opens a window with a carriage ruler and set of control buttons. The basic operation of the program is simple: typing a line of text and hitting the return key prompts the printer to print the line and send a carriage return. The line can be edited with the backspace key until the return key is pressed.

TypeNow uses only the resident font of the ImageWriter, with no access to the Mac font styles. Different character densities (characters per inch) can be selected, including Pica, Elite, proportional versions of these two, and others. This yields a small variety of typestyles, and a header command expands and enlarges the selected style. Text can be printed flush left on the platen, for neatly printed envelope return addresses. Line and form feeds can be sent to the printer, right and left margins are user adjustable, and tabs are pre-set at every 8 characters. Both six and eight line per inch modes are provided, useful for filling out pre-printed forms. *TypeNow* works with the 15 inch ImageWriter, utilizing the full carriage width.

A macro facility lets users save frequently used text (addresses, for example) to disk, and load the data from within the desk accessory. The return key must still be pressed for each line, allowing the user to edit a line before printing.

TypeNow is an incredibly useful desk accessory, and will be right at home filling out mailing and shipping labels, printed forms, envelopes, and anything else that doesn't require full word processing. Most Mac owners will want this one.—*DB*

PINBALL CONSTRUCTION SET ★★★★

List Price: $40. Published by Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. (415) 571-7171.

WHEN PINBALL CONSTRUCTION SET FIRST MADE its appearance for the Apple II and Atari 800 in 1983, it already had many of the features that would later become standard for the Mac: a click-and-drag control scheme used to pick up objects like flippers or bumpers for placement on the game board, for example, and a bona fide FatBits-type mode that could be used to edit designs or patterns one pixel at a time.

The Mac edition of this popular roll-your-own program makes up in sound effects for what it lacks in color. Close your eyes before

playing and you'll swear you're in an old-fashioned pinball arcade. The tinny digitized "ping!" the ball makes when it ricochets off a bumper, and the satisfying "kachunk" of a downed drop target are really *that* good.

Five built-in games demonstrate ways in which the *Pinball Construction Set* can be used to design everything from beginner level games to experts-only contests. Up to four players can compete. Each game is enjoyable, but the real fun begins when you start designing your own custom pinball board.

Want twelve flippers? Just pick them up off the parts window, drag them to their respective spots, and drop them where you want them. Bonus scores, bumper elasticity, kick, and even gravity rules are user-specified. A Launch *MacPaint* option lets pinball wizards design graphic flourishes with ease.

There are a few limitations that make this more suited to creating old-fashioned pinball games than the newest board styles. Progressive rollovers, lettered drop targets with progressive bonus, and ironically, computer synthesized-style sounds were left out of the Parts box, meaning that it might not be possible to exactly re-create your favorite pinball board.

Still, *Pinball Construction Set* delivers plenty of punch for the price.

Just remember—tilting can be hazardous to your machine's health!—*TFH*

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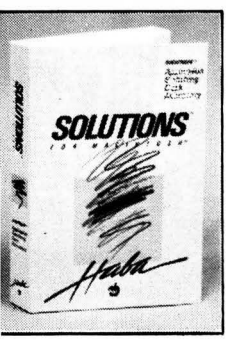

WILLS

features

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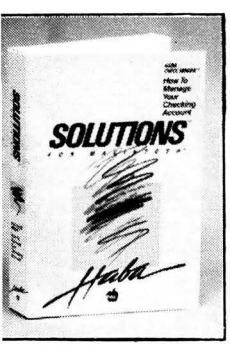

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features

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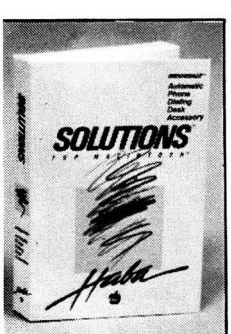

WINDOW DIALER

features

- Works with any Macintosh software
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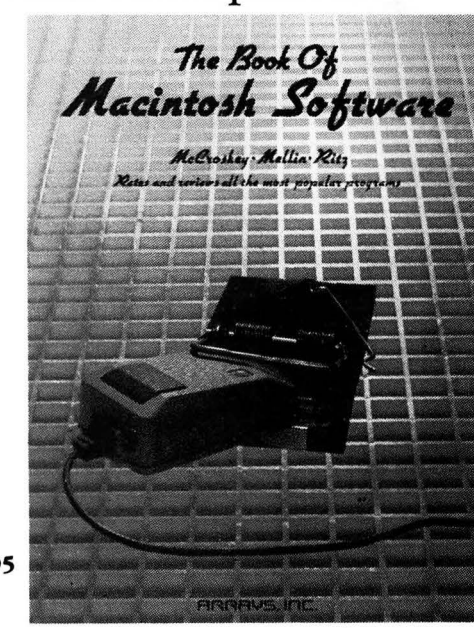

Over 200 Macintosh programs and hardware accessories reviewed and graded on an A-F scale by the software evaluation experts. The concise, no-holds-barred reviews tell you exactly why you need—or don't need—almost every program running on your Mac.

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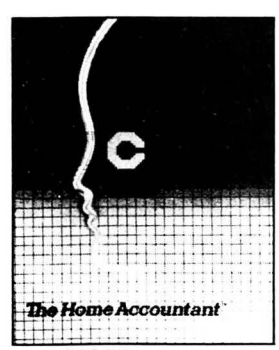

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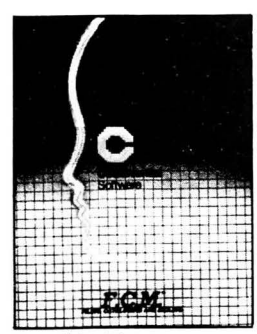

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GREG RAGLAND

THE ENVELOPE, PLEASE...

How do your picks for the best software of 1985 compare with ours?

by The Editors

AT THIS TIME OF YEAR, IT SEEMS that everyone's thoughts turn to reviews of the year gone by and projections for the one to come. In industries such as ours, this process of examining where we have come in the past year inevitably culminates in the giving of awards for outstanding achievements. We therefore present *MacUser*'s Editors' Choice Awards.

1985 was quite a year for the Macintosh. The Mac has proven itself to be a computer capable of amazing tasks thanks in large measure to stunning software and accessories. Without the third party involvement that has made Macintosh one of the world's best supported microcomputers, the Mac might be little more than a large paperweight.

Choosing the best products from the huge assortment of fine, valuable, and powerful contenders was not easy. Many staff meetings, considerable heated discussion and a lot of passionate arguing went into these choices. These awards are the way the editors of *MacUser* choose to say "Thanks!" to all the innovators, the programmers, the inventors, visionaries and businesspeople who have made the Mac great.

RAGLAND

THE EDITORS' CHOICE

BEST BUSINESS ACCOUNTING PROGRAM

Strictly Business from First Design gets the nod as the program that does it all for the small business. **Strictly Business** has all the features one could want in accounting software, including flexible and detailed reports, large capacity for numbers of accounts, transactions, profit centers and departments. In addition, it is very ease to use and follows the Macintosh interface extremely well.

Honorable mention to **Accountant's Choice** from Sierra Information Systems.

BEST GENERAL BUSINESS PROGRAM

Excel from Microsoft with its powerful spreadsheet, graphics and databasing capability can make running your business not only more profitable than ever before but almost as much fun as a video game. The macro language, which allows complex tasks to be run automatically via one keystroke, is a preview of computing's future.

BEST COMMUNICATIONS PROGRAM

Smartcom II from Hayes turns your Mac and modem into a very powerful telecommunications tool. Simple-to-use icons guide even a novice through programming complex chores ranging from automatic log-on through file transfers.

Honorable Mention to **Red Ryder 6.2** by Scott Watson. A "shareware" program, this popular terminal program does just about everything most people will need.

BEST EDUCATION PROGRAM

ChipWits from **BrainPower** is the best, certainly most enjoyable, introduction to programming concepts that we've seen. Its icon based language is wonderfully innovative, and the program's design is both refreshing and highly educational.

BEST ENTERTAINMENT PROGRAM

Deja Vu: A Nightmare Comes True from Mindscape is a mystery thriller designed around the Mac interface. Exceptionally easy to use, players just point and click in almost any situation. Excellent graphics and a liberal dose of humor make this a must for all who love a mystery.

Of all categories, this one was most difficult to decide. The Mac can be a very entertaining computer! Honorable Mentions go to **Ultima III** (Origins Systems), **Balance of Power** (Mindscape) and **Make Millions** (Scarborough).

BEST ART/GRAPHICS APPLICATION

MacDraw from Apple sets new graphics standards for microcomputer software. This is the first of a new genre and we predict that there'll soon be dozens of copycat programs on many other computer systems—but that the Mac and **MacDraw** will still do it best.

BEST SPREADSHEET

Excel from Microsoft features a spreadsheet that blows all others away in terms of speed, functions and ease of use. Recognizing though that **Excel** offers more (charting and database) than some users might need, we give Microsoft's **Multiplan** an Honorable Mention.

BEST WORD PROCESSOR

MacWrite 4.5 from Apple proves that a good program can grow up to be a great program. The new, disk-based **MacWrite** is a writer's tool worthy of respect and rewarding to use. Its commands do not come between the user and his Muse.

BEST DATA MANAGER

OverVue 2.0 from ProVue is a deceiving program in that the more you use it, the more you realize it can do. Power, speed and logical menus make this a dream database.

Honorable Mention here to **Omnis 3** from Blyth Software for those who need to design heavy-duty, structured databases.

BEST INTEGRATED SOFTWARE

Excel from Microsoft proves that the Macintosh towers over Big Blue for most office applications. Its speed, command set and general "feel" make this product a true classic for those who need spreadsheeting, charting and database power.

BEST UTILITY

Copy II Mac from Central Point. Probably the most ubiquitous of utilities it's amazing to watch this program at work. No matter what it's doing, it never seems to crash. It's saved the life of more than one software owner who had a backup when one was needed.

BEST MUSIC PROGRAM

ConcertWare+ from Great Wave Software will satisfy users who really want to take advantage of the Mac's sound abilities. The player module is the best sounding one available and allows up to eight voices (four at one time) in each piece. The unique instrument maker is educational and effective.

This upgrade of the original **ConcertWare** program is a superb example of a publisher responding to user requests.

BEST PERIPHERAL DEVICE

ThunderScan from Thunderware is an astonishing device that transfers images to the Mac by scanning them using a snap-in device that replaces the ImageWriter ribbon. Not surprisingly, it took a Mac designer like Andy Hertzfeld to show what the Mac is really capable of doing. Easy to hook up and use, relatively inexpensive,

AWARDS FOR 1985

this device should be owned by anyone who uses graphic imagery on the Mac.

BEST ACCESSORY

Mouse Mover from Magnum Software clips to the bottom of your mouse, adds 99 ball bearings at three strategic points. **Mouse Mover** makes your mouse glide faster and saves on mouse wear and tear. You either love it or you hate it. We all seemed to love it.

BEST DEVELOPMENT LANGUAGE

Mac C from Consulair edges out a strong field thanks to its power and easy to use structure. Right now, this is the easiest way to write your own standalone applications.

BEST PROGRAMMING LANGUAGE

Microsoft BASIC (Version 2.1) from Microsoft allows easy access to all things Macintosh for the "rest of us" to whom programming is less than a livelihood. More than any other language, **MS BASIC** has allowed the most people to realize that the Macintosh is a computer and that computing can be fun.

BEST DESKTOP PUBLISHER

PageMaker from Aldus can make you into a futuristic Gütenberg or even a William Blake. Using the Macintosh interface to design pamphlets, brochures, even manuals and books is an exciting and rewarding task. Programs like this one allow people to control their own information better than ever before.

BEST DESK ACCESSORY

Q&D Filer from Dreams of the Phoenix on their **Q&D Utilities** Volume #1 makes the Apple Menu a powerful place. This desk accessory will work with any application to allow the user to see disk space remaining; copy, rename, delete files and more.

An Honorable Mention to **Art Grabber** from Hayden as an accessory that can make using **MacPaint** better and easier.

MOST INNOVATIVE MAC PRODUCT

VideoWorks from Hayden allows creativity to sparkle in animated, movie-like graphics. Effects achievable with this program are almost unbelievable and while being an artist certainly helps, the program may be used well by anyone who enjoys and is challenged by state-of-the-art graphics on the Mac.

"NEATEST PRODUCT"

MacPaint from Apple never fails to draw looks of wonder and gasps of astonishment from anyone being first introduced to the Macintosh. More than any other program, it's been **MacPaint** which has captured the hearts and minds of the computer buyer. It's neat!

BEST OVERALL PROGRAM OF 1985

Excel from Microsoft for many, many reasons. Its spreadsheet routines are superb and totally outclass any spreadsheet running on *any* system. Couple the eye-widening graphics and charting capabilities to that spreadsheet and if your proposal doesn't carry the day at the board meeting then you have no one to blame but yourself. It may be strange to quote Jack Tramiel in a Mac magazine but if, as he says, "business is war" then **Excel** is the best ammunition you can own.

BEST PRODUCT OF 1986

Well, it's probably a little early to predict. But we will hazard a guess that a number of products will be headed your way for the next year that will take the Mac to new heights you may only have dreamed about.

MacUsers are Power Users

Every month, **MacUser**, the Macintosh Resource, delivers the insightful, hard-hitting news and information that the Macintosh community has been looking for. **MacUser** contains more product reviews and up to the minute coverage than any other monthly Mac publication.

Who are the Power Users?

Power Users are the Macintosh owners who actively use their computers daily. They are seeking the information that will help them increase their productivity and develop new ways to solve old problems. **MacUser** delivers to this highly targeted group of Macintosh users. Power Users are trying to decide which of the sophisticated new software and peripherals they are going to purchase next. They read **MacUser** because it simply, yet creatively, tells them what's good . . . and what's not. And because they are more involved with their computers, **MacUser**'s readers are ready to buy the best of the new products that fulfill their individual needs.

What is MacUser?

MacUser is basically a tool. We are the definitive source for product reviews (over 150 each issue!), industry happenings, and comprehensive "how-to" editorial. Our staff of seven full-time editors, operating from offices on both coasts, are complemented by some of the most knowledgeable contributing editors in the industry including John Dvorak, Doug Clapp, Dan Cochran and Dennis Brothers. **MacUser** keeps our readers up to date with the latest developments in the Macintosh community.

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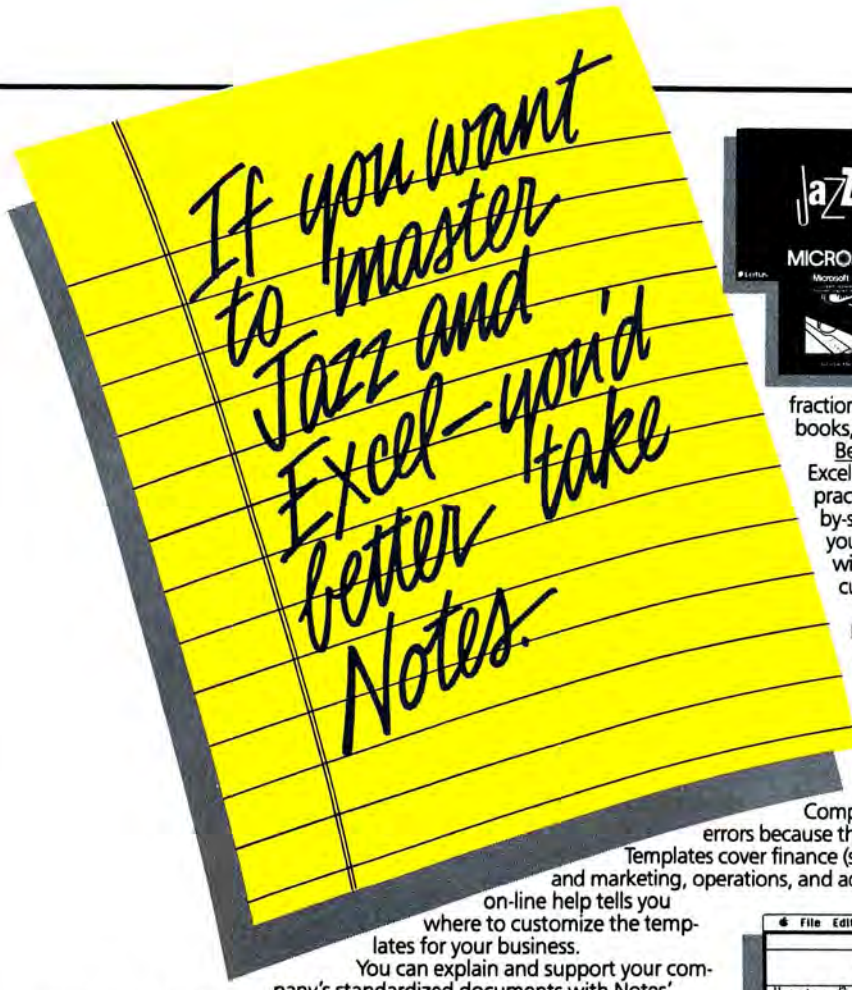

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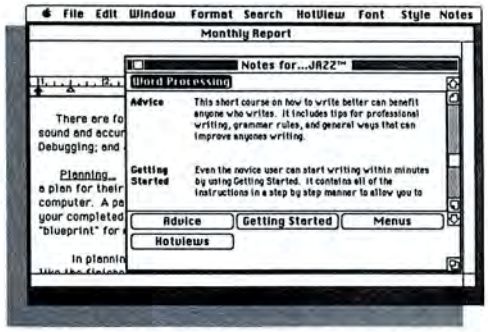

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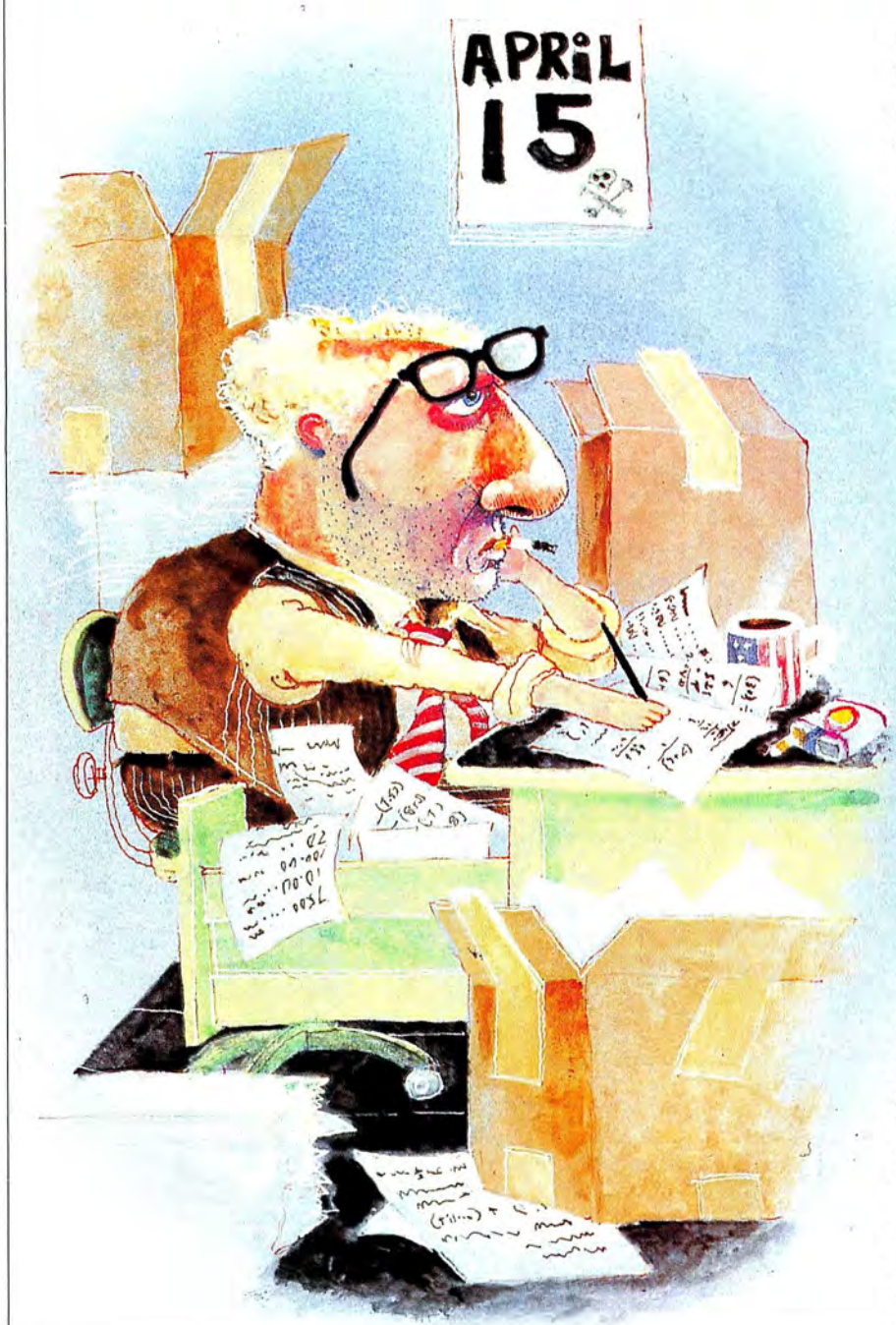


Mixing and matching Mac programs to make April 15th less of a drag.

EVEN OWNING A MAC WON'T LET you avoid the two things we all have to face.

Right.

Death and taxes. Of course, there are some things you can do to improve your chances. For example, never take your Mac into the bath with you. That would be very bad, probably fatal, for both of you. Common sense and planning will tend to keep you alive longer.

Common sense, planning and your Mac can also help you survive tax trauma. Planning for next year (that's the 1986 tax year!) should start now and tax preparation is not something that happens on April 14th. It's an all year 'round project.

Most of us haven't been very good about setting up a tax records database and so we're looking at our 1985 tax forms and a box or file or two full of scribblings and receipts. Is there any hope for us? You bet there is. Get out your favorite spreadsheet or database and start entering data. Now. And keep entering it until the end of the year.

Keep in mind that no Mac program can give you serious tax advice and if any make that claim, regard such information with *great* skepticism. Don't take this article as advice on

RICHARD DEL ROSSO

IT'S TAX TIME!

BY STEVEN BOBKER

how to fill out your tax forms. It is simply a guide to creating and keeping tax records and using commercial programs to fill out the forms more easily and more accurately. It can't and doesn't claim to offer advice on the tax laws or on what you put on the forms. Sorry to be so pedantic about that, but taxes are a topic often subject to fantastic claims. Ultimately you are responsible for the tax forms you sign. No one else.

Let's start evaluating. How complicated is your tax situation? Look at past year's records. (You do have them, right? You should keep all your tax records for seven years.) Do you use Form 1040EZ? Is all your income from one or two jobs, reported on W-2 forms? Do you rent and have few deductible expenses? If your situation pretty much fills that bill, don't bother with the Mac as a tax tool. It'll cost time and money that need not be spent. The IRS has made taxtime for you about as easy as it can be. Using a computer to complicate simple things is counterproductive.

Looking at the other extreme, are you a person with complicated taxes who has always had them professionally prepared? If you fall into that category and you're satisfied there's no reason to stop now. And a good professional should always save you more than you can on your own. Indeed, a good tax professional should be worth far more than the fee charged. Your record keeping can be computerized, but before you go ahead with that, talk to your tax pro. Very few have Macs and they may require your information in a specific, non-Mac-compatible format. Be sure that your record keeping program can produce acceptable and usable hard

CURSORS! IT'S TAXTIME!

copy before you enter reams of data.

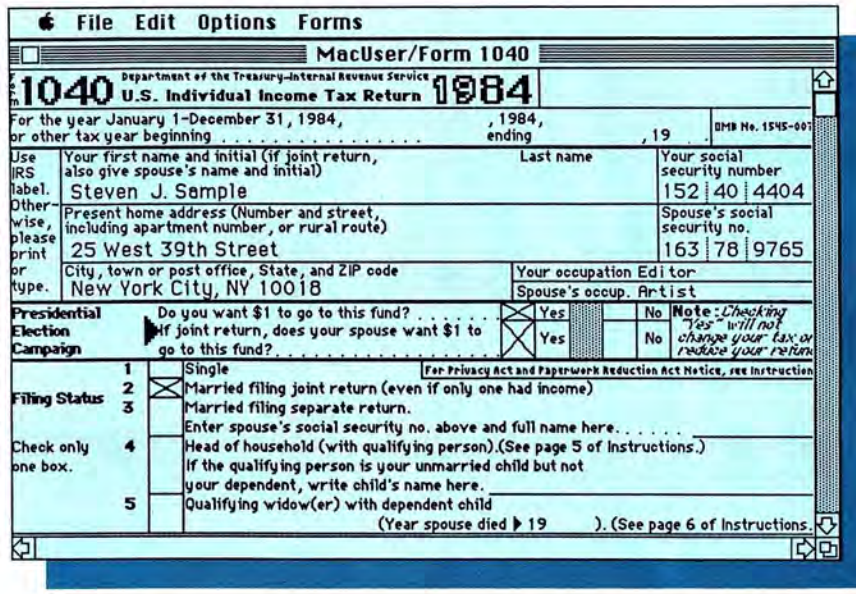
Most people, however, fall between these extremes and are faced with a somewhat involved tax situation that they usually deal with themselves. This is where the Mac can help the most.

Keeping the Books

Tax records are best kept on a spreadsheet or database. The database should be able to do complex reports, sorting and simple math. Several programs meet those specifications; two of the most common and popular are *Multiplan* and *OverVUE 2.0*.

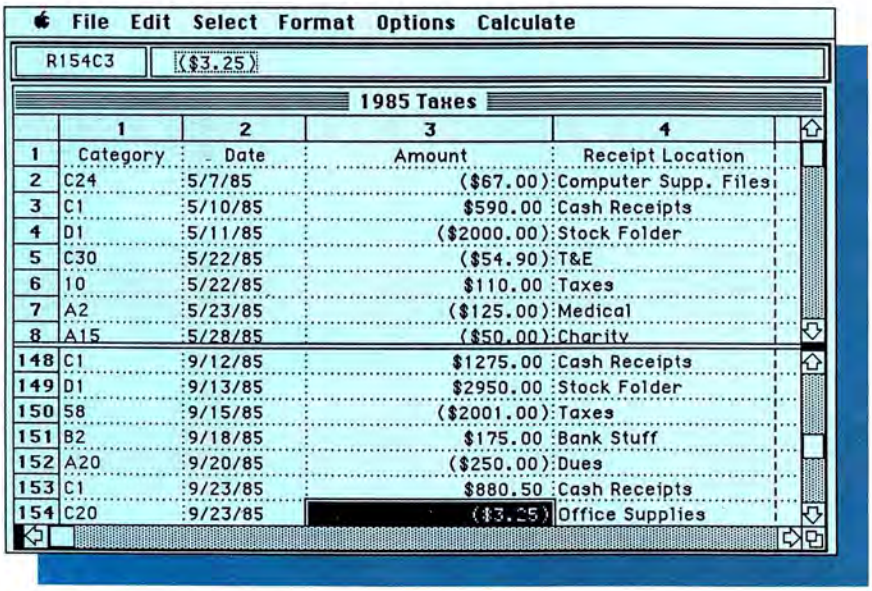
Many people keep their tax records on *Multiplan*. That's a good choice since it is easy to find books detailing its use as a tax record keeper and templates are available both commercially and in the public domain. The public domain templates can fill simple needs, but look to the commercial templates for more complicated situations. They usually link all the forms, including the obscure ones, and are more reliable. It is advisable to spot check all templates against the actual forms. You're the responsible one if they are wrong.

Using *Multiplan* involves two steps: record keeping and form preparation.



***MacInTax* shows the actual forms right on the screen. Clicking on the check boxes puts the X's in them.**

The two are distinct and the records should form a separate file. Indeed, since each entry in *Multiplan* will take up a row and the number of rows is limited, you should set up several linked files. You can have an income file, and files for each of several kinds of expenses. Tax record keeping on *Multiplan* should be simple. In each file create columns for the date, amount, source, where the receipt will be stored, notes and, most important, the category number. The category number is vital because it allows the file to be sorted and summarized for transfer to the tax forms.



	1	2	3	4
1	Category	Date	Amount	Receipt Location
2	C24	5/7/85	($67.00)	Computer Supp. Files
3	C1	5/10/85	$590.00	Cash Receipts
4	D1	5/11/85	($2000.00)	Stock Folder
5	C30	5/22/85	($54.90)	T&E
6	10	5/22/85	$110.00	Taxes
7	A2	5/23/85	($125.00)	Medical
8	A15	5/28/85	($50.00)	Charity
148	C1	9/12/85	$1275.00	Cash Receipts
149	D1	9/13/85	$2950.00	Stock Folder
150	58	9/15/85	($2001.00)	Taxes
151	B2	9/18/85	$175.00	Bank Stuff
152	A20	9/20/85	($250.00)	Dues
153	C1	9/23/85	$880.50	Cash Receipts
154	C20	9/23/85	($3.25)	Office Supplies

***Multiplan* is a lot more than a spreadsheet program. It's a good place to keep your tax records. Be sure to assign each entry (row) a category code. When preparing taxes select the Category column and Sort (from the Edit menu). All items of the same category will be grouped together. The numbers in parentheses show money paid out, the others are income. The Receipt Location column is also very important. If the return is audited those papers are vital and you must be able to produce them. Just having a shopping bag full of receipts isn't enough!**

While the category numbers can be any numbers chosen at random, preplanning will make the final transfer to the tax preparation packages and forms much easier. The best approach is to set the categories up based on the line number of the form where the data will eventually be entered. Just use the line numbers for lines on Form 1040, prefix the letter to the line number for lettered forms, and assign an unused letter as a prefix for numbered forms. All amounts should be coded to reflect where they are first entered on a tax form. And remember to keep a list of the codes with your program materials. Until the actual returns are ready for filling in, the list of codes will be the most valuable piece of hard copy you have.

Good programs and templates will take the values you retrieve from your summaries and move them forward and back through the chain that has Form 1040 at the top.

Enter data frequently, at least every week, and more often if convenient. The most important point is to update the records regularly. Missing a deduction means literally throwing

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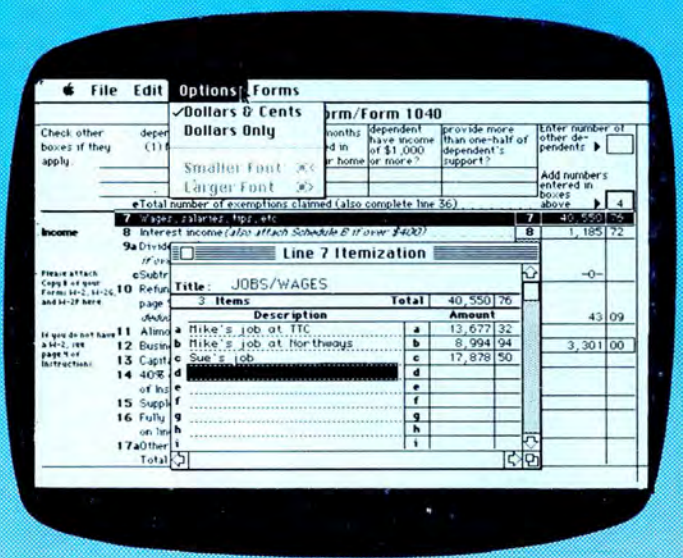
THE INCOME TAX PROGRAM



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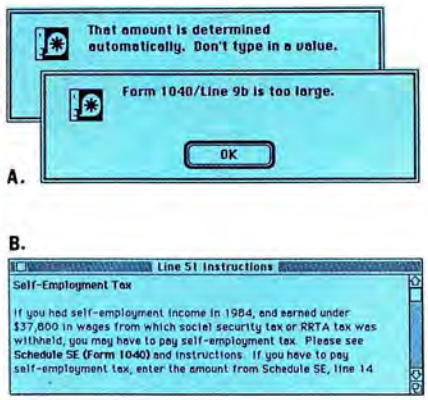


A. *MacInTax* does not allow users to enter illegal values or any values at all in fields that it calculates. B. Help is available at the double-click of a mouse. This box was displayed when the text area of Line 51 on Form 1040 was double-clicked.

money away. Make it a habit to back your data up and keep your backup in a safe place. This data disk will be one of your most valuable disks.

Getting your records ready is simple. Select the category column and select the Sort command in the Edit menu. It doesn't matter how the sort is accomplished. All that matters is that all the items in the same category are grouped together. Then sum each group, either manually or using *Multiplan*'s math capabilities.

ProVUE's *OverVUE 2.0* database can perform the same functions. Many will find *OverVUE* even easier to use than *Multiplan*. It has much better report generation ability and will summarize and total categories instantly. If the record file is large *OverVUE*'s sorting speed will astound you. It's quick. (See "Over the Top with *OverVUE*," **MacUser**, November 1985.)

There are other, equally acceptable methods of keeping records. Whatever you do, remember that you must also keep receipts and other backup documentation. Organizing and filing this material so that it can be easily accessed is as important as keeping totals.

Number Crunching

Sometime in early 1986, that mass of data, diligently filed, kept and organized, has to be reduced to the correct numbers on the proper IRS forms. There are several programs and template packages that will help in this task. Some are easier to use than others.

Let's take a look at last year's versions of three of the best tax preparation programs and packages. We'll have to look at last year's programs because the 1985 rules have not been finalized at the time of writing and the 1985 forms are not yet available. All three publishers will be issuing upgrades and new versions in January 1986, as soon as the publishing process allows. And all the programs promise to be enhanced versions of last year's models.

The best of the crop is *MacInTax*. This program features linked forms, automatic calculation, built-in, easy to access help files, and sensible methods of data entry. An important plus is the ability to print IRS-approved tax forms. The output of your ImageWriter or LaserWriter can be submitted to the IRS. There's no need to recopy the material to tax forms. That's a real time saver.

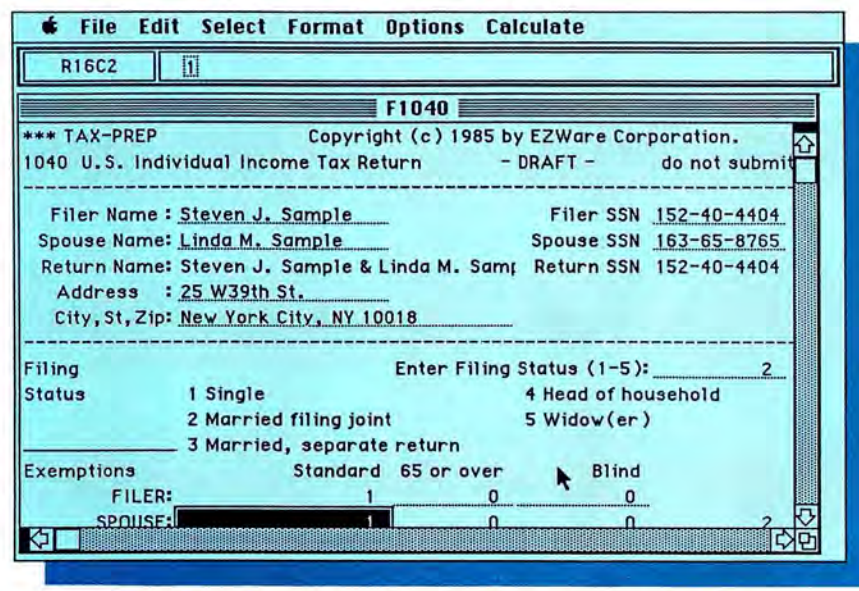
Be warned though that printing is not quick. ImageWriter printing proceeds at the rate of full-page graphics printing (that's exactly what it is), while LaserWriter printing proceeds at a glacial pace. Up to ten minutes a page (for the first copy) is what this version takes; the update has been extensively worked on and the time required should be cut by half.

MacInTax has good error checking procedures built in and it will not allow the entry of "impossible" data or data in places where it obviously can't go. The program will also highlight places where data is missing.

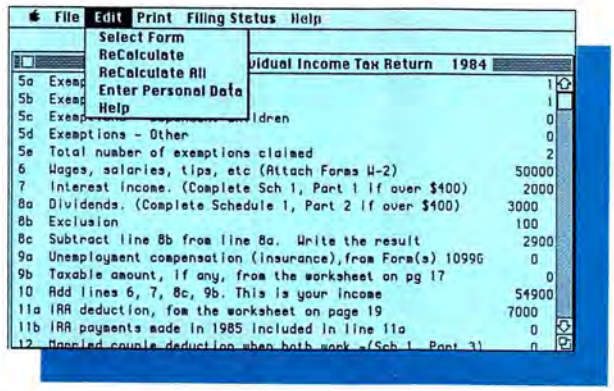
Estimated values can be entered so calculations can proceed even if final figures are not complete. These values will carry the suffix "est" as a reminder. The "est" suffix will also be appended to any values calculated from estimated values.

The help features are particularly well designed. Double-clicking on a line of a form brings whatever help information is available to the screen. If there is no help file for that line, users are informed by a dialog box. However, the help files are surprising complete. They don't give tax advice (the designers were smart enough to avoid that trap), but they do point users in the direction of detailed government tax information. Users no longer have to guess which IRS document they should turn to for help.

One of the major problems with last year's edition was a paucity of forms. This resulted from a late start on program development. The publisher claims the 1985 edition will have a very complete set of forms and may even have state tax forms for California and New York. This year's



***Tax-Prep* uses *Multiplan* as its base. This template will print onto a blank Form 1040, putting all values into their correct spaces.**



Tax Wizard **provides worksheets like this one. Data must be manually transferred to the actual tax forms. The ReCalculate All command forces data to checked and upgraded through the user entire set of forms and schedules.**

upgrade will be extremely cheap for registered owners of last year's version. Future upgrades will be priced at approximately half the list price, a price typical of all these programs. That's not unreasonable since all the forms and tables must be changed.

MacInTax is very easy to use, follows the Mac interface closely and is about as pleasant to use as a program dealing with taxes can be. The 1985 edition should be worth a good look.

Very close behind *MacInTax* are *Tax-Prep* 85 and *Tax Wizard*. *Tax-Prep* is a set of *Multiplan* documents and users must supply their own copy of that program. The documents all link together and all calculation fields are built in. The package is easy to use and is so well designed that it is easy to lose track of the fact that you are actually working in *Multiplan*. The package's authors are true *Multiplan* experts.

Form 1040 data is set up so that an ImageWriter output will print into all the right places on an official Form 1040. Another option is to print the data onto a sheet of blank paper and use the transparent Form 1040 overlay provided with a copying machine to get a filled out, finished copy. All the other forms and schedules can be printed out directly on heavy color-bar paper, a format that is IRS approved.

Data entry follows *Multiplan* conventions, using the Enter key to move backward and forward in a document. Even if you don't have *Multiplan* experience this is an easy package to work with.

A particularly nice feature is the consistency checker. This document, called XCHECK, compares all values copied from one form to another to be sure the values were copied correctly. Since data is often linked over many documents, having this function on call is reassuring.

Tax-Prep's manual is the best and most complete in any tax preparation program. It begins with an excellent tutorial and has a complete reference section. Even first time *Multiplan* users should have no trouble using this program.

Tax Wizard is similar in many ways to *MacInTax*. Data entry is simple, and the program has an efficient, easy to use help function. Data need only be entered once, even if it is used in several places. Users are directed to transfer to the other forms as required and all the forms are autolinked. That means that data generated on any particular form or schedule is automatically carried to the appropriate lines of other forms and schedules whenever that form or schedule is loaded. The few exceptions to autolinking are clearly indicated and instructions are explicit. A ReCalculate All command will force the recalculation and updating of all forms.

Tax Wizard's biggest drawback is that all the numbers it produces must be copied onto the tax forms. There is no way to automate that procedure. *Tax Wizard* can only produce simple reports that mirror its screens. That's a very big flaw, since not only must the material be copied over, but it must be very carefully checked.

If *Tax Wizard* could produce finished tax forms it would equal *MacInTax* in all respects. The 1985 edition may have enhanced printing capabilities, so be sure to take a good look at this program.

One problem common to all these programs is speed. Recalculation, especially when the return encompasses many forms, is slow. There's no way around that and all suffer equally.

WHAT ABOUT ACCOUNTING PROGRAMS?

Tax records can be kept on accounting programs, but unless you already have one and know how to use it, the costs in time and money are likely to be higher than with the methods discussed in the main article. Accounting programs come in two distinct flavors: business and home.

Business level accounting programs were discussed in detail in the December *MacUser*. They all have several features in common. Set up is much more involved than with *Multiplan* or *OverVUE*. And they are expensive. The least you'll pay is several hundred dollars (about *OverVUE*'s price, but *OverVUE* is far more versatile and can be used for many more things) to well over $1000. And the good ones tend to be the expensive ones.

The home accounting programs are another story. They are certainly inexpensive enough. The two major contenders are *Dollars & Sense* by Monogram and *The Home Accountant* by Continental/Arrays/Haba.

Dollars & Sense has had reliability problems in the past and trusting your tax records to a program that you are not 100% sure of, is unwise. However, it might be a reasonable choice if you intend to use its *Forecast* accessory to do tax planning.

The Home Accountant is a fine program with a fatal flaw as tax record keeper. It does not come with a backup disk, cannot be copied, and requires users to work with and on the master disk. If that disk fails, users must send it to the publisher and pay for a replacement. That will take time that is simply not available when dealing with taxes. Don't use this program for tax purposes until the publisher changes its attitude toward backups. You can't afford to.

The Bottom Line

The bottom line is you gotta pay your taxes. People who don't have the very bad habit of winding up in jail.

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(continued on page 109)

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RETHINKING THINKTANK

Think ThinkTank's *great for outlining? It's even greater than you think!*

BY SHARON ZARDETTO AKER

"MAN ORDERS HIS AFFAIRS IN hierarchies," states Lawrence Peter, author of the Peter Principle. (So, in fact, does woman.) And, although Dr. Peter was referring to the hierarchical structure of our lives—moving from kindergarten to college, going from mail clerk to corporate vice president—the statement can be taken as a more general truism. After all, there are few things in life that cannot be broken down into components of varied importance. So, we plan, we organize, we think in a hierarchical manner: "First, I'll do this; then I'll do that; next comes the other thing." And we are certainly aware that this, that, and the other thing are each composed of items with their own priorities.

ThinkTank is a program that's perfect for structuring hierarchies.

The mechanics of *ThinkTank* are deceptively simple. Type a list of "headlines"—let's say the major points of a report you have to write.

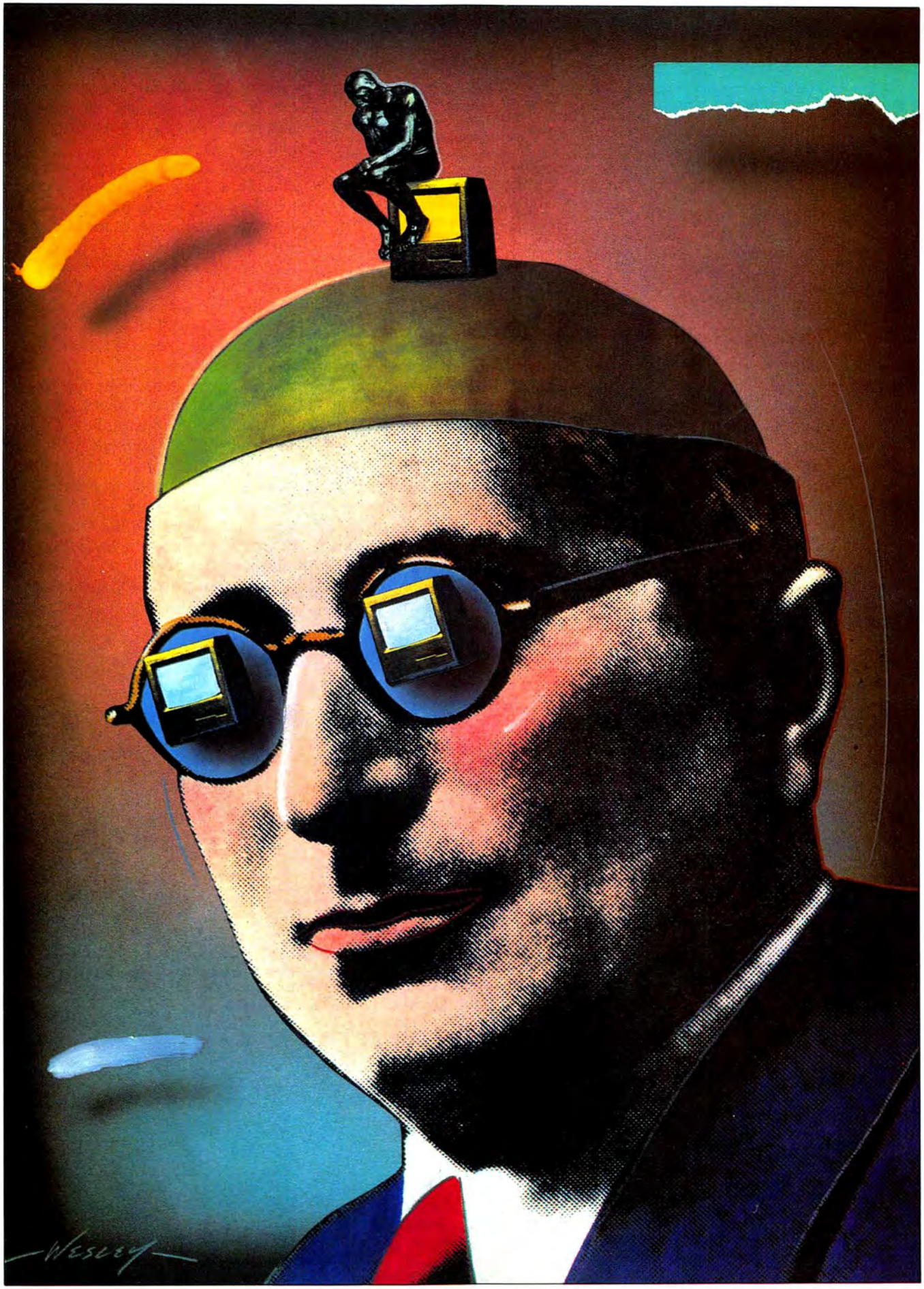
Most users of *ThinkTank* on any micro tend to talk about it the way most Mac owners talk about their machines—with enthusiasm, and even affection. That's because Mac and *ThinkTank* have a lot in common: ease-of-use and elegant design hide the real power behind the product.

Under each headline, enter any subheadlines that apply to each point. And, under those, add sub-subheadlines, and so on. Want to add a paragraph or two of comments to any of your headlines? Open a window for that headline and start typing. Want to store a diagram that pertains to a subhead? Open a window and paste in a graphic.

Now, review your major points; hide all the subheadings so you can scroll through only the main headlines. (In *ThinkTank* terminology, "collapse" the headlines.) To see the subheads for any point, you can expand just that headline—to all its subordinate levels, or only to the next one. This expanding and collapsing of headlines is the first major advantage of *ThinkTank* over a word processor for this kind of outlining—there's no need to scroll through pages of text when you want to look at just the highlights.

No matter how carefully something is organized from the start, it will almost always have to be reorganized. If the first subhead under Point 2 really belongs under Point 3, just drag it there; all its subheads come along with it. You can drag, or Cut and Paste, until the structure suits your purpose.

As a basic outliner, *ThinkTank* is obviously a writer's tool. Whether the writing is for books, essays, term papers, magazine articles, or reports to the shareholders, *ThinkTank* will help organize your thoughts in the most effective manner possible. But because of *ThinkTank*'s other functions —alphabetic sorting, customized printing, graphic storage, text windows, slide show option—it is much more than "just" a writer's tool.



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RETHINKING THINKTANK

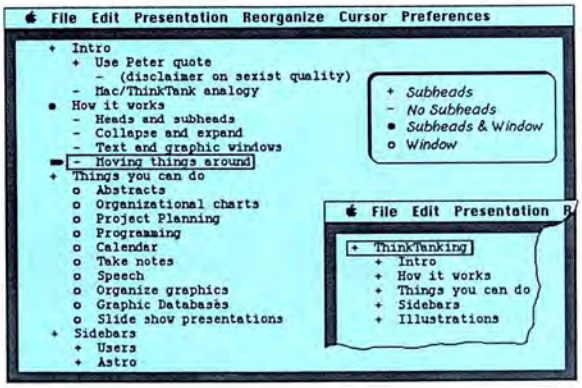

Figure 1. *ThinkTank*'s main headlines (inset) can be expanded to show all the subordinate headlines. The leader characters for each headline indicate what is connected to it. When you drag headlines, the black pointer appears and the headline, along with any subordinate headlines, is boxed in gray.

ties, this document serves as a handy database. Use the Find function to look up all the articles about programming, or fonts, or hardware reviews, or games. Since the Find function looks through text windows, too, you can look up the comment "Best article I've ever read!"

The same technique can be used to archive professional journals, reference books, or any other printed matter you store on your bookshelves.

You can design an outline to keep track of any kind of collection. Drowning in audio or video tapes? Organize them by category, sorting by artist or title in each group. Wondering what happened to your favorite *Star Trek* episode "The Trouble with Tribbles"? If you've archived your tapes and labeled them properly, *ThinkTank* can tell you that "Tribbles" is the third item on tape A12.

Perhaps command channels in your business are getting a little fuzzy. Just who is supposed to answer to whom? As an organization gets bigger, keeping it organized can get much, much harder—and employees, especially new ones, can find the supervisory structure confusing. Keep an organizational chart in *ThinkTank*, and make printed copies available to all concerned. It's a simple matter to add new people, or move them around in the outline as they move around in the company.

Whether hiring subcontractors to build a new house, arranging the overhaul of the company's headquarters, or designing a training program for new employees, there are a lot of things that need to be done—by everyone involved. Using the new house as an example, start with three headlines: Items, Contractors, and Dates. Under items, list the things to be accomplished; make copies of each item and place them under both the appropriate contractor and the target date. There is now a triple checklist available: the overall plan, individual assignments, and project completion dates. The triple list is easy to handle. Search for "wiring", and you'll see where it fits in the main plan (after plumbing, before dry wall); who is responsible for it (Snafu Electric), and when it has to be finished (May 23). Or, work solely with one section of the outline—check if things are on schedule, or print out a list of responsibilities for each participant.

Peter Winer, author of the Mac version of *ThinkTank*, points out that Pascal programming structure is nearly identical to *ThinkTank*'s hierarchical structuring. By saving the outline in the proper format, the file can be transferred directly to your programming environment.

Creating and maintaining a personal calendar is a less obvious application for *ThinkTank*, but an extremely useful one. Make the first level months, the next weeks, and then days; or, divide the months directly into dates. The subheadings under the days can be divided into time slots, or used as a general to-do list—or both. If something doesn't get done on Monday, drag it down to Tuesday. You can assign a priority number to each to-do item as you type it in, and let *ThinkTank* arrange them in order—it sorts any sublevel of headlines without disturbing the rest of the outline. (Since sorting is done alphabetically, use the same number of digits in numeric headings: 001, for example, if other numbers need three digits.)

Print out your daily or weekly schedule; open a text window to make

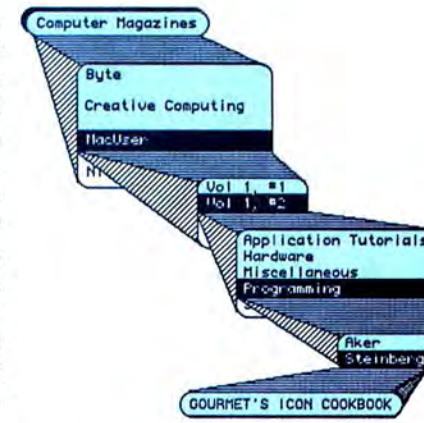

Figure 2. Use *ThinkTank* to set up a database of magazine articles. You can write a brief description of the article in a text window opened from the lowest-level headline.

THE EVOLUTION OF *THINKTANK*

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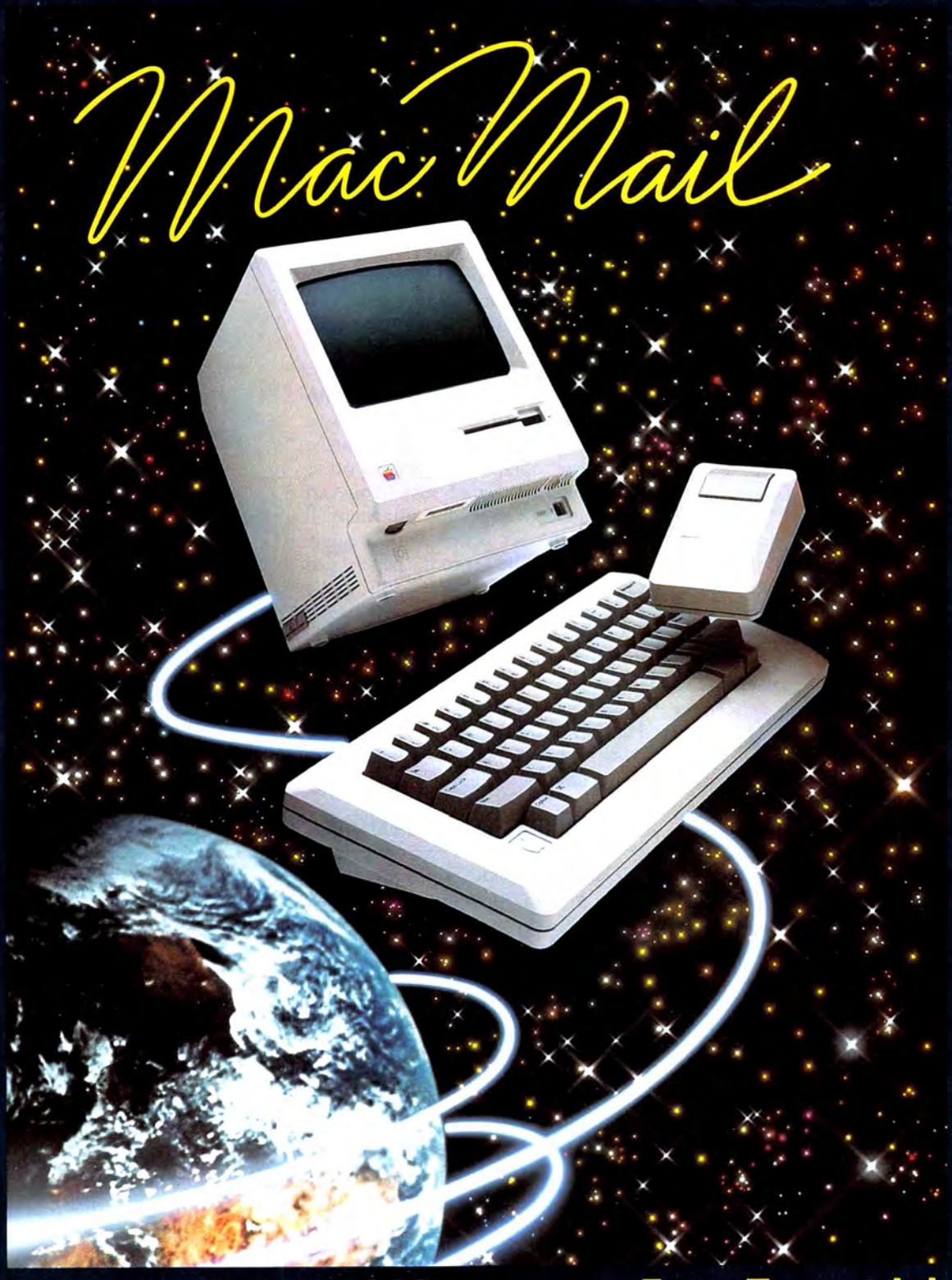
ThinkTank 512, version 1.1: Enhanced slide show. Choice of monofonts on screen—Monaco or Courier—in many sizes. Printing options expanded to include any installed font or size. Tab and Shift Tab can be used to change headline levels; new leader characters. Works with *Switcher*.



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RETHINKING THINKTANK

notes about things you want to bring up at the 3 o'clock meeting; cut items that have been attended to.

Type in scribbled notes from a lecture and arrange them into more logical order from which to study; add a text window where needed to enter important related information from a textbook.

When working on a research paper, take notes from your reference works. Enter the name of the book under general topic headings; use subheads to identify chapters or pages from which the information was drawn; open a window to type comments, or copy a quote. Let "Notes" be a major headline with all this material under it; make "Sources" a second major headline, listing the books you've used, with a window to store the information you'll need for the bibliography.

And, for those on the other side of the lectern, *ThinkTank* is perfect for designing lesson plans or a whole curriculum; you can even use it to create tests and exams—multiple choice questions are just multi-level headlines.

For anyone other than an extemporaneous speaker, it helps to write down a speech before giving it. The advantage of preparing it in *ThinkTank*, aside from the organizational feature, is that you can then print out only the headlines, or subheadlines to any level, and use these as notes to which you can refer during the speech.

If you store a lot of graphics in various Scrapbooks, you can organize and archive them with *ThinkTank*. You can paste an entire Scrapbook into *ThinkTank* with one command; with a little (OK, a lot) of traveling back to the Finder to activate different Scrapbook files, you can load them all into *ThinkTank* graphic windows. Browse through your pictures and label them; print out the graphics, or just the titles, from different Scrapbooks. You can rearrange your pages and put them all back in the Scrapbook with a single command; the sorted pages can replace the current Scrapbook, or be added to it.

Since you can also Paste any graphic directly from the Clipboard, you can create databases of *MacPaint* pictures, too. (Get *Art Grabber* from Hayden to do this—you can open the *MacPaint* document without quitting *ThinkTank.)*

And Even Presentations

ThinkTank's SlideShow option turns Mac into a presentation partner. "Slides" prepared in *MacPaint* or *MacDraw* will augment a talk, lecture, seminar, or any type of report. Set up the order of slides by dragging their headline titles to the appropriate spot. Pictures can stay on the screen for a predetermined time, or change at a click of the mouse; you can add the headline title to the slide, and use a "direction control" that lets you move backwards and forwards in the show.

Improve a talk by showing cutaways of your product to prove its quality, or a graph that shows your company's increasing market share, or the storyboards for your artsy film that needs backing.

Since a picture's time on the screen can be set for sixtieths of a second, clever planning can give you animated visuals. A plain pie chart can be replaced by an exploded version, perhaps in two stages, to show the explosion—or just pull out the slice in question. Replace one bar chart with another so some of the bars seem to grow.

ThinkTank's possibilities haven't been exhausted yet; you can use it as a background tool for basic outlining, an upfront graphic showoff, or just about anything in between.

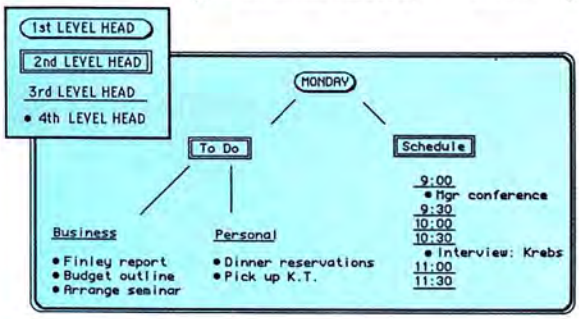

Figure 3. You can keep an extensive calendar in *ThinkTank*; you can start with a month, or even a year, and break it down into minutes.

CODE NAME: ASTRO

Living Videotext, makers of *ThinkTank*, now have a companion program that will format your outline into a document for the word processor of your choice: *Word, MacWrite, Jazz,* or *MS Works.* (You can also turn it into a plain text file.) The program, code-named "*Astro,*" is only in its initial stages as of this writing, but will be finished and on the market by the time you read this.

Astro will let you define "settings" for your outlines: how far headlines are indented; their font, size, and style (plain, boldface, underlined, or italics); and how they will be spaced. You can have headlines numbered in different ways, according to a variety of standard outlining formats, or not at all. Paragraphs from the text windows are formatted separately from headlines; you can control text, font, size, spacing, and justification.

THINKTANK 512 REPORT CARD

Overall Rating ****

Follows Mac Interface:	***
Printed Documentation:	****
On-Screen Help:	None
Performance:	*****
Support:	***
Consumer Value:	****

Best Feature: Ease of use.

Worst Feature: Inconsistencies with Mac interface.

Comments: Fast and intuitive organizational tool that lets you store text blocks and graphics under outline heads and subheads.

List Price: $245. Requires 512K. Published by Living VideoText, Inc., 2432 Charleston Rd., Mountain View, CA 94043.

I N T R O D U C I N G T E M P O

How Adding Macros Gives You More Speed, Less Mousing Around

Finally – the first true macros for the Macintosh!
Fly through complex strings of commands! Integrate programs automatically!
Make Jazz™ sing, Word™ dance, and Excel™ jump for joy!

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What's a macro? A macro records any sequence of commands or keyboard entries once and then replays them all quickly forever after. A single keystroke will recall the most complex series of commands. And you can create up to 450 Tempo macros in every application.

Go beyond simple record and playback. You get powerful features that will enhance nearly every Macintosh program. Programs like Jazz™, Excel™, MacPublisher™, MacDraw™, Helix™, OverVUE™, File Vision™ and nearly every other ™ designed for the Macintosh.

Automate lengthy commands. Just turn Tempo on while you perform a series of commands or keystrokes once, and *voilà!* you've made a macro. Format spreadsheets. Add boilerplate. Get creative!

Build vertical market applications by integrating unrelated programs with Tempo. You can create a single macro to automatically move data between an unlimited number of Macintosh programs.

Not just for the "power user." Even if you only use Tempo for tasks like printing out a document with one command instead of three, you'll save time in nearly every Macintosh application.

Only Tempo lets you...

- ☑ Edit Your Macro
- ☑ Link Programs Together
- ☑ Pause for Text Entry
- ☑ Create Dialog Boxes
- ☑ Pause for Interval
- ☑ Branch with Logic
- ☑ Suspend Replay
- ☑ Cancel Replay
- ☑ Set Replay Speed
- ☑ Replay in Real Time

Fantastic Features Make the Difference!

Pause for text entry. Tempo will stop while replaying the series of commands so you can enter information. You can even *create your own dialog box!* That way, your Tempo macro can walk somebody through a program they've never used before.

Pause for Time. Either hours, minutes or seconds or until a given clock time, when the macro automatically starts up again. Works great with modems. Or for reading lab data at regular intervals.

Logical Branching! A Tempo macro will read a spreadsheet cell or a database entry or anything else you can copy into the clipboard, and *branch to another macro* based on the contents. It uses simple "greater-than" and "equal-to"-style Boolean logic, and actually lets you *program your programs*.

"Live through the Launch." One macro can launch a hundred programs. Now there's beauty! You can take information from your accounting program, move it to a spreadsheet, compare it to last month's results, build a graph from it, and modem it to an analyst. All with a single keystroke!

Real-Time Replay. Play back at the same speed you recorded. You can create "self-running demos" for nearly any Macintosh software.

Much, Much More! We haven't even covered *editing* your macro after you've created it, using standard Copy, Cut and Paste functions. Or *suspending* or *cancelling* action in the middle of a macro. And much more still.

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2. If you're *not absolutely happy* with what Tempo can do for you and your Mac, return it for a complete refund. We'll guarantee your satisfaction!

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For 128K and 512K Macs!

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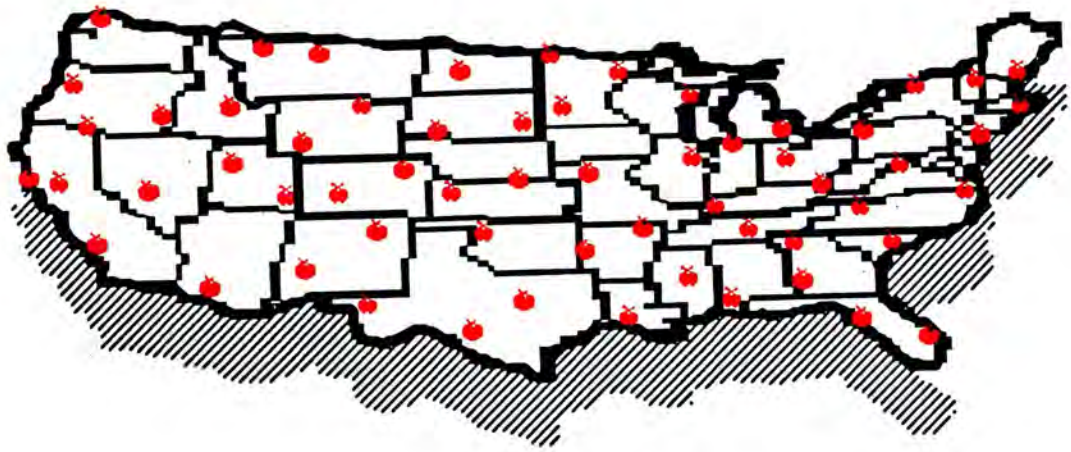

Talking About MAUG!

"Maug might be Ali Baba's cave as far as I am concerned. And the treasures strewn in front of me look every bit as fabulous as those in the Arabian Nights."
—Jeffrey Young, *Macworld*

"The undisputed best spot to hunt for Macintosh software is the Macintosh section of the CompuServe Micronetworked Apple Users Group (MAUG) SIG."
—John Markoff, *Byte*

"Dare I assert that all that is good about the hacker ethic is alive and well and living on CompuServe?"—John J. Anderson, *Creative Computing*

"Wondering where to get a ramdisk for your Fat Mac? Well, at the risk of sounding like a broken record, you can download it from CompuServe if you are a member of MAUG. More likely by now the question may be, why aren't you a member of MAUG?"—John J. Anderson, *Creative Computing*

MAUG: Better Than Ever!

MAUG (the Micronetworked Apple Users Group) has expanded into three huge areas featuring thousands of software programs, files and reviews that you can download into your own Apple computer. Whether you own a Macintosh, an Apple II or an Apple III, you too will treasure discovering MAUG!

Many exciting new events are planned such as on-line conferences with celebrity guests. In the past, MAUG has featured real-time talks with Steve Wozniak, Bill Atkinson, Mark Pelczarski, Doug Clapp and other stars from the world of Apple computing. You just never know who you'll meet on MAUG!

What Is MAUG Anyway?

If your computer has a modem peripheral and can use the telephone line you can join in on all the MAUG excitement! Presently three huge electronic bulletin-board areas await your joining. Each area has room for hundreds of public messages, thousands of programs to share and a real-time conference line. The three MAUG areas include:

- The Macintosh Users Group Forum: A lively area for Macintosh owners to meet and share thousands of programs and files. Subtopics include hardware and software, games and graphics, music and business. Whether you've a Fat Mac or a skinny one, a Lisa or a Macintosh XL, you'll find MAUG as indispensable as your mouse!

- The Macintosh Developers Forum: Whether you're developing hardware or software for the Macintosh you'll be in on instant updates to the *Inside Macintosh* Software Supplement, informal support direct from the Mac Team in Cupertino, as well as being able to meet hundreds of your peers for in-depth information exchanges.

- The Apple II And III Users Group Forum: MAUG started in 1979 about the Apple II. And, with us, it's been a neverending love affair. These 8-bit, wonder machines are as exciting as ever and MAUG proves it with hundreds and hundreds of messages related to hardware and software, games and graphics, power business uses and more — not to mention the thousands of programs and files available.

How To Join MAUG!

MAUG is available on the CompuServe Information Services network. To buy a CompuServe Starter Kit, see your nearest computer dealer. To receive a CompuServe brochure, or to order direct, call or write: CompuServe, P.O. Box 20212, 5000 Arlington Centre Blvd., Columbus, OH 43220
1-800-848-8199 (In Ohio: 1-614-457-0802).
Once on CompuServe the command GO PCS-51 will take you to our front door.

MAUG!

We think it's the nicest place your computer can take you!

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"It's refreshing to see people able to dream big without pricing to match!" **— The MACazine, April '85**

"The company will maintain a $39.95 price policy for everything. Check it out." **— John Dvorak, InfoWorld, June 17 '85**

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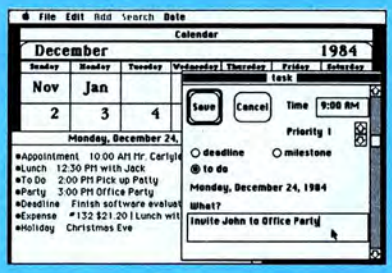
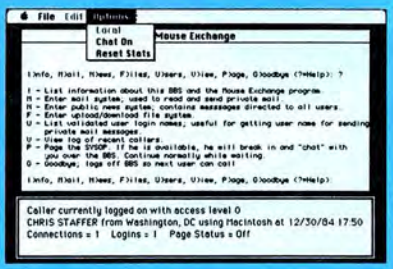


Day Keeper™ Calendar. This program helps you organize your day to day appointments, goals, expenses, and customer billing. It makes personal time management easy with flexible reporting and sophisticated searches. Day Keeper is designed for the individual who needs easy and complete time accounting. *Works on the 128K Macintosh, and with 'Switcher' — takes advantage of the larger screen on the Macintosh XL.* "One of the finest application programs on the Mac; a bright, breezy bit of programming whose very friendliness and usability belie the underlying complexity of the programming and power of technique." **— Neil Shapiro, Sysop MAUG.** "Day Keeper is a pure calendar-oriented program, a single application = lower cost...the programmers were able to focus all attention to the detail of 'the calendar,' so the application itself exhibits a jewel-like polish in its operations" **— The MACazine, May '85.**

Mouse Exchange™ BBS A remote bulletin board system that has security for private mail, plus a public news system. Upload and download files in ASCII, XMODEM, or MacBinary. It uses multiple windows. *Works with the 128K Macintosh, requires an Apple, Hayes, or US Robotics modem.* "...(Mouse Exchange BBS) is already a classic in telecommunications." **— The MACazine, April '85.** "Almost all of the Mac boards that are up use this package." **— John Dvorak, Infoworld, June '85.**



Mouse Exchange™ Terminal. This program is a simple, yet sophisticated terminal emulator from the people who brought you 'Free Term' on Apple's software supplement. It emulates multiple types of terminals, has a built-in screen editor, and easy-to-use macros and dialer functions. Upload and download in ASCII, XMODEM, and MacBinary. *Works on the 128K Macintosh, and with ALL modems.*

Quick & Dirty™ Utilities Volume One and NEW! Volume Two. Both disks are full of useful desk accessories and application tools. Volume One has 16 different utilities, including VT52 and XMODEM terminal desk accessories, super note pad, font manager, disk cataloger, and much more! Volume Two includes an editor desk accessory, a BASIC desk accessory, a pie & bar chart creator, mass disk copier, desk accessory maker, and many other goodies! *Some individual utilities may require 512K RAM.* "Now, let it be said that 'Quick & Dirty' has nothing to do with how these utilites act or are programmed. Instead, it seems to mean that they're quick to use and they get the job done without many flourishes but with a good, workmanlike attitude." **— The MACazine, April '85.** "Quick & Dirty Utilities is a disk chock full of the handiest programs you have ever bought...you'll wonder how you got along without (them)." **— MacUser, Premiere Issue '85.**

NEW! Twelve-C™ Financial Desk Accessory. This desk accessory exactly emulates the Hewlett-Packard 12C Financial Calculator, including programming! Whether you're in business school or on your way to your first million, you'll find this to be the perfect analysis tool. A must for people in the world of finance, real estate, and investment. *Works on the 128K Macintosh.* "Dreams of the Phoenix has the answer for all of us who just can't give up that special financial calculator." **— MacUser, Premiere Issue '85.**

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MUNCH!
GOBBLE!
817
601
101
416
300
4011
700
816
100
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716
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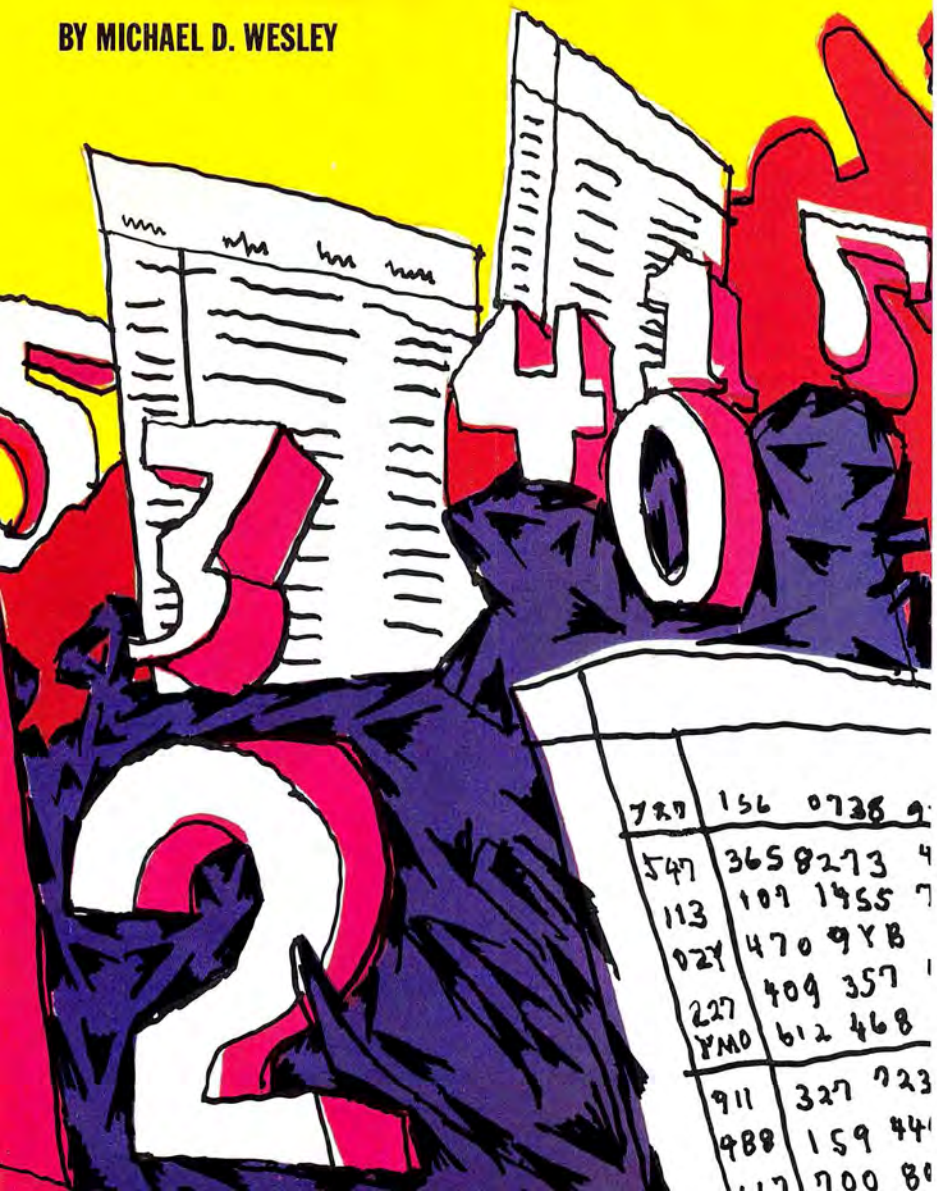
2001
007

GARY PANTER

CRUNCH!

Feed your Mac a breakfast of numbers, charts, tables and words.

BY MICHAEL D. WESLEY



CRUNCH IS ONE OF THE ALL-TIME great names in software. It conjures up exactly the right image for an integrated spreadsheet: a program that devours numbers and churns them out in a variety of tasty formats. In the name alone you can almost hear the hungry processor's sharp teeth biting down on loan amortizations, chewing on financial analyses, and grinding away on charts and graphs. *Crunch* implies all the speed and power that a Mac user who craves information could ever want. It's a great name—for a very interesting software package.

Crunch combines four basic applications—number crunching, databasing, charting, and word processing—built around a worksheet of 250 columns by 9999 rows. It has a slew of built in mathematical and statistical functions and can link worksheets. A section of the worksheet can be reserved as a database—a table where information can be sorted or pulled out according to specified criteria. Tables and other related groupings of information can be displayed and printed in a variety of graph formats. And a notepad feature allows for simple word processing. This puts *Crunch* head to head against *Excel*, *Jazz*, *Quartet*, and other integrated programs.

Biting Down on *Crunch*

The presentation of *Crunch* is unusual, from the manual that looks like a high school textbook on the outside and a spiral bound paperback inside, to a screen filled with three consecutive "bars" at the top: the usual menu bar, an unusual icon bar and the entry bar where text and formulas are typed in. The three bars take up quite a lot of space, leaving room for only 16 rows in the display window, although the icon bar can be hidden from view, thus expanding the display by two rows.

The icon bar itself is a very convenient feature. The icons are clear and what they do is usually obvious (an eraser to clear the contents of a cell, a $ for money displays, a pie chart to display a pie chart, and so on). There are icons for most of the commonly used menu functions. The opening page of the manual briefly describes all 21 functions represented in the icon bar and lists the page numbers where more complete information can be found.

MUNCH! GOBBLE! CRUNCH!

Action	Times (in minutes and seconds)	
	Crunch	Excel
Format an area of 50 rows X 250 columns (12,500 cells)	00:01	00:01
Multiply 1257 x 1.02 – repeat across 250 columns (total of 249 multiplications).	00:18	00:02
Multiply 1257 x 0.95 – repeat down 50 rows (total of 49 multiplications).	00:06	00:01
Multiply results of previous action (50 rows of numbers) x 0.99 – repeat across 250 columns (12,500 cells).	9:15 Out of memory after 9,161 cells filled	1:03 Out of memory after 6,375 cells filled
Multiply 5974 x 1.04 – repeat down 9,999 rows.	11:23 Out of memory after 7,718 cells filled	1:35 Out of memory after 6,872 cells filled
Add 0.97 to 405.3 – repeat down 9,999 rows.	7:05 Out of memory after 7,316 cells filled	1:38 Out of memory after 6,704 cells filled
Clear (erase) values	2:00 7,316 cells	00:45 6,704 cells
Find the average of 5000 values (4 digits or higher) and return control.	00:40	00:04
Sort Database of 2000 items in ascending (A to Z) order.	00:57	00:29

To compare *Crunch*'s speed in calculation against *Excel*, several benchmark tests were run on both programs. A blank worksheet was created before each large-scale action to avoid slowdowns that might result from large open areas of an existing worksheet. All the values used to perform the calculations were identical for both programs. As can clearly be seen, *Crunch* is dramatically slower than *Excel*.

Chewing on *Crunch*: Numbers

The *Crunch* worksheet functions in much the same way as other spreadsheets. Information is entered in spaces called cells. Cells occur at the intersection of columns, named by letters from A to IP, and rows, numbered from 1 to 9999. Each cell can contain text, numbers or formulas. If text extends beyond the limits of a cell it can be confined to a single cell, with only a portion of it displayed, or it can be carried over and displayed in following cells. When text is run over, the cells under the text cannot contain any other data. Numbers too large to be displayed in a cell are replaced by a series of arrows, although the full value is shown in the entry bar.

The columns default to a set width, but this can be adjusted by column, over a range of columns, or for the entire worksheet. A column can be widened by selecting any cell in the column, then clicking on the double arrow icon in the icon bar. Shrinking a column is not as easy. You have to use the menu choice Column Width... to set the new width as a number of spaces. It would have been more convenient to vary the size of a column by picking up the boundary line and moving it.

In operation, the *Crunch* worksheet closely resembles *Multiplan*. Cells are selected by clicking on them, by pressing Tab or Return from within another active cell, or by entering the location of the cell (A1 for example) in a small box at the left of the entry bar. The latter option makes it very easy to jump the display accurately from one area of the worksheet to another, or to select a large range of cells. The worksheet can also be scrolled using standard Mac scroll arrows and bars.

Active (selected) cells that already contain data can be edited in the entry bar in standard Mac fashion. A circle with an X in it appears in the entry bar and serves as an undo button for changes made to a cell's contents. Unfortunately this is the only Undo feature in the program.

The contents of cells can be assigned a variety of formats. Formats for numeric values include scientific notation (1.6645E+9); display with commas, (1,664,500,000); dollar format, ($1,664,500,000.00), thousands (1664500K) or millions (1664.5M). Dates are calculated as the number of days since December 31, 1899, but they can be shown in a variety of standard formats, and the program can perform date arithmetic (TODAY + 7 for example). Text can be shown in boldface, italic, or underline styles, in any combination. There are a variety of fonts available as well, but only one font can be displayed in any window. All other display formats can apply to single cells, a range of cells, or the entire worksheet.

Up to six windows can be open at one time, including up to four graph windows. The worksheet area can be split into two smaller windows for viewing widely differing areas of the same worksheet side by side.

A nice feature of *Crunch* is the ability to lock titles in place. Selecting Show Titles from the Special menu locks the column of the active cell as a border to the left of the worksheet. The row containing the active cell is locked as a border above the sheet. In this way, titles are held in place but you can scroll through a large area of related values (See Figure 1).

Work areas can be assigned a name, and the contents treated as a single object. A column that contains rental receipts from a building can be given the name Rent. Calculating a 10% increase in Rent affects all the cells in the named area. The name is created by saving the cell in a special window called the Directory. The Directory is a phone book style listing of all the special areas in the worksheet (such as graphs and links between spreadsheets).

Formulas are used to perform calculations on values in individual cells or across a range of cells. Formulas can refer to cells by location or by name. *Crunch*'s built in functions automatically execute a variety of arithmetic (SUM for example), algebraic (ABSolute value), trigonometric (SINe, COSine, TANgent), statistical (MEDIAN, MODE), financial (Net Present Value, Internal Rate of Return), logical (IF, AND, OR) and date (DATE, TODAY) functions on specified cells. *Crunch* has a very complete assortment of standard functions.

Using formulas unlocks the real power of electronic spreadsheets. For-

mulas often refer to a cell location, rather than a specific number. For instance, SUM(A1:A10) adds the contents of cells A1 through A10, whatever those values are. Changing the value of any cell in that range will change the sum, and the formula will recalculate on the basis of the new value. This makes it easy to do "what-if" projections. For example, it is easy to determine instantly what will happen to cash flow if there is a 10% increase in utility costs from January 1, or the exact impact on revenues if sales perform above (or, God forbid, below) anticipated levels.

A Fill command copies the contents of a cell across a selected area, either Right across a row or Down a column. In this way, numbers that repeat, such as monthly rent, can be quickly copied over a large area and doesn't have to be re-entered repeatedly. A growth factor can be applied, so that the value of each cell is 10% more than the value of the previous one, for example. And mixed text and numbers can be spread across an area so that the number automatically increases one but the text stays the same (Quarter 1, Quarter 2, etc.).

Using Fill to copy a formula leaves everything intact but the cell reference. This changes according to the new position of the formula. For example, the formula SUM(A1:A180) would add the contents of all the cells between A1 and A180. Clicking on the Fill icon or selecting Fill from the File menu will paste the formula across a highlighted range of columns, but the formula in column B would be SUM(B1:B180), column C would sum C1 to C180, and so on.

The contents of an area can also be moved from place to place using Copy and Paste. This is necessary for transposing a value from one range to an area that is not adjacent to it. *Crunch* makes a slight but annoying error here. Every Paste action brings up a dialog box asking whether the new value should be pasted over the existing contents or should push any existing values to the side. It's annoying because this should only have to happen when the cell being pasted into has a value already, not, as is the case with *Crunch*, when a cell is empty.

One worksheet can be linked with another one, so that changes to a specific value on, say, a sales projection worksheet, will automatically update related values on a cash flow analysis sheet. The two worksheets are kept as separate files on disk and are used independently, but a formula in one can call a value from the other.

The link is established by naming the appropriate cell, identifying it as a link in a dialog box, then storing it in the Directory. When you are closing a worksheet, the program will check for any changes in linked cells. If the value of a linked cell has been changed, the program will ask you to insert the linked file so the change can be recorded and the linked file updated.

Visual *Crunch*ing

Graphs can be drawn by selecting an area on the worksheet with click and drag, then selecting a graph type from a menu or clicking on its icon. The selected data is immediately graphed in a new window. Because the graph is specific to the cell's location, not its contents, changing the value of a cell in the graphed range will cause the graph to be redrawn. The revised graph incorporates the new value.

Only cells with numeric values should be selected for graphing. The program will automatically format the nearest text as labels. If a graph is being drawn by columns, for example, the labels will be taken from the nearest column to the left of the selected area that contains text, even if there are blank areas between the labels and the values on the worksheet. If the graph is drawn by rows, *Crunch* looks to the nearest row above the selcted range. *Crunch* can display four basic chart types—pie, bar, line and scatter—with a variety of options for customizing the look and format of the final graph. Up to four graphs can be open at one time.

Graphs are not automatically saved with a worksheet. With the graph window active, the graph must first be named and the name entered into the Directory. Otherwise, closing an untitled graph window will eliminate that particular graph. Recreating a lost graph is easy, however. Simply reselect the area to be graphed and click on the appropriate graph icon. A new graph will appear which can be saved.

Because *Crunch* creates graphs using the Mac's built in QuickDraw primitives, a *Crunch* chart can be pasted into *MacPaint* or *MacDraw* for custom touches before printing out.

Word *Crunch*ing

Selecting Show Notes from the File menu opens a text window for simple word processing. The window can be expanded to full size with click and drag, and the text simply fills the area available to it. The font and style of text in the Notes area can be changed, but font changes affect all of the text. The Notes are saved automatically with the worksheet. They can be printed at the same time as the worksheet, or independently.

The Notes window has little in the way of formatting the shape of text. There is no control over margins, for example. Without carefully placed spaces and carriage returns, text in the Notes window will simply spread across the width of the printer.

Searching for *Crunch*

Any area of the spreadsheet that is at least two columns wide may be defined as a database, but only one area in the worksheet can act as a database at a time. Information held in the database area can be sorted in ascending or descending order on any column. For example, a table that records monthly product sales by region can be sorted to quickly identify how products are faring within particular areas. Be careful about sorting on areas that contain formulas with cell references in them. Data can become very confused because the references are no longer where they used to be.

Databases can also be queried for values that meet a defined set of criteria—for instance, all regions with sales above $50,000. *Crunch* cannot do a wild card search. The criterion must be exact. A cell outside the database is set aside as a query cell, where the search criterion, >$50,000, is entered. Select the cell and click the "?" icon or choose query from the Data menu. Items that don't match the query criterion are concealed behind a gray box. Anything left open

(continued on page 131)

Make your

✓denotes Mac XL compatibility.

SOFTWARE

Altsys
✓Fontastic *(create your own fonts)* ..... $27.
Ann Arbor Softworks
Animation Toolkit 1 ..... 31.
Apropos
Financial Planning *(reqs. Multiplan)* .... 51.
Investment Planning *(reqs. Multiplan)*... 51.
Arrays/Continental
Home Accountant ..... 52.
Assimilation
✓Mac·Tracks ..... 22.
✓Mac·Memory·Disk ..... 22.
✓Mac·Spell·Right ..... 69.
ATI
Teach Yourself Multiplan ..... 29.
MacCoach Training ..... 39.
Jazz Training ..... 39.
Batteries Included
The Mac BatteryPak ..... 27.
Blyth Software
✓Omnis 3 *(requires 512k, external drive)* 245.
Borland International
✓Sidekick *(unprotected)* ..... 44.
BrainPower
✓PowerMath *(requires 512k)* ..... 52.
✓StatView *(statistics package)* ..... 99.
Casady Company
✓Fluent Fonts *(two-disk set)* ..... 29.
Central Point Software
Copy II Mac *(includes MacTools)* ..... 20.
Chang Labs
Rags to Riches Ledger ..... 105.
Rags to Riches Receivables..... 105.
Rags to Riches Payables ..... 105.
Creighton Development
✓MacSpell+ *(requires 512k)* ..... 55.
DataFood
✓DrawForms *(requires MacDraw)* ..... 30.
✓MacForms *(requires MacPaint)* ..... 42.
Desktop Software
✓1st Port *(communications software)* .... 48.
✓1st Merge ..... 48.
✓1st Base ..... 95.
Digital, Etc.
✓Maccountant ..... 139.
Dilithium Press
PC to Mac & Back ..... 79.
Dow Jones
Straight Talk ..... 45.
Spreadsheet Link ..... 56.
Market Manager PLUS..... 109.
Dreams of the Phoenix
✓Day Keeper Calendar ..... 27.
✓Mouse Exchange BBS..... 27.
✓Mouse Exchange Terminal ..... 27.
✓Quick & Dirty Utilities Vol. 1 ..... 27.
✓Twelve-C Financial Desk Accessory.... 27.
Electronic Arts
Pinball Construction Set..... 27.
Financial Cookbook ..... 32.
Deluxe Music Construction Set ..... 32.
Enterset
✓Quickpaint ..... 29.
✓Quickset ..... 29.
✓Quickword ..... 32.
1st Byte
Speller Bee..... special
KidTalk ..... special
Smoothtalker *(version 2.0)*..... special
Forethought
✓Typing Intrigue..... 29.
✓Factfinder ..... 84.
✓FileMaker ..... 108.
Great Wave Software
The Art of Fugue *(Bach)* ..... 12.
Instrumental Favorites ..... 12.
ConcertWare+ ..... 39.
Harvard Associates
MacManager *(business simulation)*..... 29.
Desktoppers *(new desk accessories)* .. 29.
Hayden Software
✓DaVinci Buildings ..... 29.
✓DaVinci Interiors ..... 29.
✓DaVinci Landscapes ..... 29.
✓DaVinci Building Blocks..... 46.
✓DaVinci Commercial Interiors..... 114.
✓Art Grabber with Body Shop ..... 29.
Turbo Turtle ..... 35.
I Know It's Here Somewhere ..... 35.
MusicWorks ..... special
Hayden:Speller ..... 45.
Score Improvement System for the SAT 57.
VideoWorks ..... special
Ensemble ..... 155.
Hippopotamus Software
Hippo Computer Almanac ..... 21.
✓Hippo-Lock *(file security program)* ..... 68.
Hippo-C - Level 1 ..... 79.
Hippo-C - Level 2 ..... 219.
Human Edge Software
✓Mind Prober ..... 26.
✓The Management Edge..... 127.
Ideaform
✓MacLabeler *(print disk labels)* ..... 29.
Innovative Data Design
✓Paste-Ease *(requires MacPaint)*..... 35.
✓MacDraft *(requires 512k)*..... 139.
Kensington
✓Graphic Accents ..... 29.
✓Type Fonts for Text ..... 29.
✓Type Fonts for Headlines *(reqs. 512k)* 42.
Layered
✓Front Desk ..... 77.
Linguist's Software
✓Tech *(1000 different symbols)* ..... 69.
✓MacCyrillic ..... 69.
✓MacKana/Basic Kanji..... 69.
✓MacKorean..... 69.
✓SuperGreek ..... 69.
✓SuperHebrew..... 69.
✓SuperFrench/German/Spanish..... 69.
✓SuperGreek/Hebrew/Phonetics ..... 119.
Living Videotext
ThinkTank 128k..... 75.
✓ThinkTank 512k..... 125.
Lotus
✓Jazz *(requires 512k, external drive)* ... 375.
Magnum
✓McPic - Volume I..... 28.
✓McPic - Volume II ..... 28.
✓The Slide Show Magician ..... 34.
Manhattan Graphics
✓Ready Set Go 2.0 *(requires 512k)* .... $65.
Mark of the Unicorn
Professional Composer *(reqs. 512k)*... 249.
Microsoft
Entrepreneur ..... 29.
Learning Multiplan and Chart..... 37.
Chart ..... 72.
Logo..... 75.
Basic *(version 2.1)* ..... 87.
Multiplan ..... 107.
File ..... 111.
Word ..... 111.
Fortran..... 179.
Excel ..... 225.
Business Pack..... 342.
Miles Computing
✓Mac the Knife - Volume 1 ..... 21.
✓Mac the Knife - Volume 2 ..... 25.
Mindscape
The Perfect Score: SAT..... 47.
Monogram
✓Forecast ..... 40.
✓Dollars & Sense..... 81.
Nevins Microsystems
Turbocharger *(requires 512k)*..... 55.
New Canaan MicroCode
Mac Disk Catalog ..... 25.
Odesta
✓Helix *(requires 512k, external drive)* .. 219.
Organizational Development Software
✓Consultant *(idea management)* ..... 119.
Paladin
✓Crunch *(requires 512k)* ..... 165.
Palantir
✓MacType *(supports Dvorak keyboard)*.. 26.
✓MathFlash *(math flash card drills)*..... 26.
✓WordPlay..... 26.
Accounts Receivable *(requires Basic)*.. 69.
General Ledger *(requires Basic)*..... 69.
Inventory Control *(requires Basic)*..... 69.
inTouch *(communication to emulation)*.. 79.
PBI Software
✓Icon Switcher..... 14.
✓Icon Fun & Games Library ..... 14.
✓Icon Business Library..... 14.
Peachtree
✓Back to Basics General Ledger..... 88.
✓Accounts Payable..... 88.
✓Accounts Receivable ..... 88.
ProVUE Development
✓OverVUE *(version 2.0)*..... 149.
QED Information Sciences
Typing Made Easy ..... 36.
Reston Publishing
Construction Estimator *(reqs. Multiplan)* 45.
Rubicon Publishing
✓Dinner At Eight (recipes to wines)..... 35.
Scarborough Systems
Mastertype ..... 25.
Sierra On-Line
✓MacOneWrite *(cash disbursements)*... 137.
Silicon Beach Software
✓Accessory Pak 1 ..... 24.
Simon & Schuster
The Mac Art Department..... 24.
Paper Airplane Construction Kit..... 24.
Typing Tutor III ..... 31.

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Mac more merry

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Epstart ..... $27.
Jetstart ..... 27.
Toshstart ..... 27.
TIstart ..... 49.
Laserstart ..... 59.
Decision Map ..... 79.
Software Publishing
PFS:File/Report ..... 100.
Springboard
Art a la Mac Vol. 1-People and Places 23.
Art a la Mac Vol. 2-Variety Pack ..... 23.
State of the Art
Electric Checkbook ..... 45.
Symmetry
QuickDisk *(requires 512k)* ..... 21.
T/Maker
Click Art Personal Graphics ..... 29.
Click Art Publications ..... 29.
Click Art Letters ..... 29.
Click Art Effects ..... 29.
ClickOn Worksheet ..... 46.
Telos Software
Filevision ..... 99.
Think Educational
Mind Over Mac ..... 29.
MacEdge II *(math & reading)* ..... 29.
Videx
MacCalendar ..... 51.
Warner Software
The Desk Organizer ..... 55.

GAMES

Aegis Development
MacChallenger *(flight simulation)* ..... 23.
Activision
Hacker ..... 27.
Mind Shadow ..... 27.
Ann Arbor Softworks
Grid Wars ..... 22.
Blue Chip
Millionaire *(stock market)* ..... 30.
Tycoon *(commodities)* ..... 30.
Baron *(real estate)* ..... 30.
Squire *(personal finance, reqs. 512k)* ... 30.
BrainPower
Think Fast *(improves recall)* ..... 23.
Chipwits ..... 26.
Broderbund Software
Lode Runner ..... 24.
Cyborg *(sci-fi text adventure)* ..... 24.
Ancient Art of War ..... 27.
CBS
Murder by the Dozen ..... 25.

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through January 31, 1986

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With the selection of **VideoWorks,** Mac's complete animation package, you can choose to receive either **MusicWorks** *(compose & listen to your songs on the Mac)* or **M.U.D.** (MacroMind Utility Disk—*a series of useful & creative desk accessories)* at no extra cost.
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- **SmoothTalker** ..... $57.
- **KidTalk** or **Speller Bee** ..... free

Creighton Development
MacCommand ..... 21.
Epyx
Rogue *(great graphics)* ..... 24.
Temple of Apshai Trilogy ..... 24.
Winter Games ..... 24.
Gamestar
Championship Star League Baseball ... 22.
Hayden Software
Masterpieces ..... 24.
Word Challenge II ..... 24.
Sargon III *(9 levels of chess)* ..... 29.
Perplexx ..... 24.
Infocom
Seastalker *(junior)* ..... 24.
Cutthroats *(standard)* ..... 24.
Enchanter *(standard)* ..... 24.
Hitchhiker's Guide *(standard)* ..... 24.
Planetfall *(standard)* ..... 24.
Wishbringer *(standard)* ..... 24.
The Witness *(standard)* ..... 24.
Zork I *(standard)* ..... 24.
Zork II *(advanced)* ..... 27.
Zork III *(advanced)* ..... 27.
A Mind Forever Voyaging *(advanced)* .. 27.
Infidel *(advanced)* ..... $27.
Sorcerer *(advanced)* ..... 27.
Suspect *(advanced)* ..... 27.
Deadline *(expert)* ..... 29.
Spellbreaker *(expert)* ..... 29.
Starcross *(expert)* ..... 29.
Suspended *(expert)* ..... 29.
Invisiclues (hint booklets) ..... 6.
Magnum
Gypsy *(the Computer Oracle)* ..... 23.
Mark of the Unicorn
Mouse Stampede *(highly addictive)* .... 23.
Miles Computing
MacAttack *(3-D tank simulation)* ..... 27.
Harrier Strike *(3-D flight simulation)* ... 27.
Mindscape
Balance of Power ..... 30.
Déjà Vu *(murder mystery)* ..... 33.
Mirage Concepts
Trivia *(hours of fun)* ..... 19.
Origin Systems
Exodus: Ultima III *(fantasy adventure)* .. 38.
PBI Software
Feathers & Space ..... 21.
Strategic Conquest ..... 29.
Fokker TriPlane Flight Simulator ..... 35.
Penguin
Crimson Crown ..... 24.
Transylvania ..... 24.
The Quest ..... 24.
Pryority Software
Forbidden Quest ..... 24.
Gateway *(sci-fi fantasy adventure)* ..... 25.
Psion
Psion Chess *(3D and multi-lingual)* ..... 31.
Scarborough Systems
Run for the Money ..... 29.
Make Millions ..... 29.
Sierra On-Line
Frogger ..... 24.
Championship Boxing ..... 24.
Ultima II *(role-playing adventure)* ..... 35.
Silicon Beach Software
Airborne! ..... 21.
Enchanted Scepters ..... 24.
Soft-Life Corp.
Mac-Slots ..... 25.
The best one-armed bandit going!
Spectrum Holobyte
GATO *(submarine simulation)* ..... 26.
Telarium
Amazon ..... 27.
Dragon World ..... 27.
Farenheit 451 ..... 27.

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this Xmas.

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Monkey Business *(arcade action)* ..... $21.
Delta Patrol *(arcade action)* ..... 21.
Unicorn
Futuria *(sci-fi adventure)* ..... 24.
Utopia *(science fantasy game)* ..... 24.
Animal Kingdom *(ages 6-12)* ..... 27.
Science and language arts program.
Mac Robots *(pre-school program)* .... 27.
Videx
Funpak ..... 23.
MacCheckers/Reversi ..... 28.
MacGammon/Cribbage ..... 28.
MacVegas ..... 34.

HARDWARE

Assimilation
Mac-Port-Adaptor ..... 69.
Mac-Epson-Connection ..... 75.
Mac-Daisywheel-Connection ..... 79.
Mac-Turbo-Touch ..... 79.
Numeric-Turbo ..... 129.
Compucable
Mac to Hayes Smartmodem cable ..... 16.
Mac to Epson FX/RX/JX printer cable .. 16.
Mac to Apple modem cable ..... 16.
Mac to Hayes Transet 1000 cable ..... 16.
Creighton Development
Proprint ..... 39.
Proprint *(w/one cable)* ..... 54.
Proprint *(w/two cables)* ..... 139.
Cuesta Systems
Datasaver AC Power Backup ..... call
Keeps mac operating. 90 watts.
Curtis Manufacturing
Diamond *(6 outlets)* ..... 28.
Emerald *(6 outlets; 6 ft cord)* ..... 34.
Sapphire *(3 outlets; EMI/RFI filtered)* ... 44.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 50.
Epson
AP-80 *(Imagwriter compatible)* ..... call
FX-85 ..... call
FX-185 ..... call
LQ-1500 *(letter quality dot matrix)* ..... call
Hayes
Smartmodem 300 ..... call
Smartmodem 1200 ..... call
Smartmodem 1200 Package ..... call
Includes modem, software and cable.
Smartmodem 2400 ..... call
Smartcom II *(communications software)* 86.
Transet 1000 ..... call
IOMEGA
Bernoulli Box *(5-megabyte storage)* .. 1315.
5-meg Cartridge ..... 39.
Head Cleaning Kit ..... 57.
Johnathan Freeman Designs
Universal Printer Buffer ..... 175.
Kensington
External Disk Drive Cover ..... 8.
Mouse Pocket ..... 8.
Mac Dust Cover ..... 9.
Mac XL Dust Cover ..... 9.
Imagewriter Dust Cover ..... 9.
Wide Imagewriter Dust cover ..... 9.
Mouse Cleaning Kit w/Mouse Pocket ... 16.
Universal Printer Stand ..... 17.
Disk Case *(holds 36 Mac disks)* ..... $19.
Disk Drive Cleaning Kit ..... 19.
Tilt/Swivel ..... 22.
Polarizing Filter ..... 31.
Surge Suppressor ..... 32.
Starter Pack *(includes Tilt/Swivel)* ..... 53.
A-B Box ..... 60.
Control Center ..... 61.
Modem *(300 baud)* ..... 86.
Koala Technologies
MacVision *(digitizer)* ..... 169.
Kraft
QuickStick ..... 45.
Microcom
MacModem *(Hayes compatible)* ..... call
Microsoft
MacEnhancer ..... 159.
Mitsuba
Super 5 External Drive ..... 239.
Mouse Systems
A+ Optical Mouse ..... 59.
N² Products
Mac to Modem cable *(6 feet)* ..... 19.
Mac to Printer cable *(6 feet)* ..... 19.
Paradise Systems
Mac 10 *(10 megabyte hard disk)* ..... 769.
PBI Software
Switch Box ..... 36.
Systems Control
MacGard *(surge protection)* ..... 55.
Video 7
MouseStick ..... 39.

DISKS

BASF 3½" Disks *(box of 5)* ..... 12.
Sony 3½" Disks *(box of 10)* ..... 22.
Fuji 3½" Disks *(box of 10)* ..... 22.
MAXELL 3½" Disks *(box of 10)* ..... 22.
Memorex 3½" Disks *(box of 10)* ..... 24.
Verbatim 3½" Disks *(box of 10)* ..... 24.
3M 3½" Disks *(box of 10)* ..... 24.

MISCELLANEOUS

American Tourister
Mac Carrying Case ..... 69.
Automation Facilities
Floppiclene *(ten cleaning disks)* ..... 20.
Refill Kit *(ten disks)* ..... 10.
Clean Image Ribbon Co.
Clean Image Ribbon Kit ..... 12.
Computer Coverup
External Disk Drive Cover ..... 4.
Imagewriter Cover ..... 8.
Wide Imagewriter Cover ..... 8.
Mac & Keyboard *(two covers)* ..... 10.
Diversions
Underware Ribbon ..... 10.
Underware Colorpens ..... 10.
ColorPack *(includes Colorpens)* ..... 19.
Environmental Software Company
The Clutch *(holds 8 disks)* ..... 9.
MacAttire
High quality rip-stop nylon dust covers. Available in navy, burgundy or silver-gray.
External Drive Cover ..... 7.
Numeric Keypad Cover ..... 7.
Imagewriter Cover ..... 11.
Wide Imagewriter Cover ..... $13.
Mac & Keyboard Cover ..... 15.
Laserwriter Cover ..... 17.
Mac XL & Keyboard Cover ..... 20.
I/O Design
Imagewriter Color Transfer Ribbon ..... 10.
Imageware ..... 39.
Imageware wide ..... 45.
Macinware ..... 49.
Innovative Concepts
Flip & File *(holds 25 disks)* ..... 9.
Flip & File *(holds 40 disks)* ..... 18.
Innovative Technologies
The Pocket Pak *(holds 6 disks)* ..... 10.
The Easel *(holds 20 disks)* ..... 14.
Kalmar Designs
Teakwood Roll-top Case *(holds 45 disks)* 14.
Teakwood Roll-top Case *(holds 90 disks)* 21.
Microsoft Press
Microsoft Multiplan: Of Mice and Menus 13.
The Printed Word ..... 14.
Macinations *(intro to Basic)* ..... 17.
Moustrak
Moustrak Pad *(standard 7"x9")* ..... 8.
Moustrak Pad *(large 9"x11")* ..... 9.
Pacific Wave
Flip Sort Micro *(holds 40 disks)* ..... 12.
Flip Sort Micro *(holds 60 disks)* ..... 15.
Ribbons Unlimited
Imagewriter Color Ribbons ..... 5.
Imagewriter Ribbons Six Pack ..... 27.
Imagewriter Rainbow Six Pack ..... 27.
Smith & Bellows
Basswood disk case *(holds 90 disks)* .. 18.

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PRINTING THE LIGHT FANTASTIC!

Would you rather buy a LaserWriter or a car? Both are expensive; but both take you places you've never been.

by Richard Herbst

KEVIN MCPHEE

THE STORY OF PRINTERS IS REALLY THE story of interfaces, because potentially, every printer can run from a Macintosh. This statement is not to be taken lightly. Included within the metaphor are such exotic devices as plotters, typesetting machines and digitizers. They are all printers. They are all controllable devices designed to take orders from a computer and they are all potentially valuable to you. Take a step back from your Macintosh for a moment and behold a compact, very powerful computer that can be configured to run just about anything. The immediate bounty to you is the ease in doing it.

This article will treat a relatively small number of printers. The emphasis is on alternatives to the LaserWriter and the ease with which widely different machines can be brought under the exquisite control of the Macintosh.

Your printing needs should dictate which printer you buy. In a business situation where heavy correspondence and form work takes place, letter quality printing is necessary and a daisywheel printer is the cheapest solution. If the size of the business warrants greater expenditure and premium quality printing is important, there is no substitute for a laser printer. If general purpose work such as record keeping, ledgers, billing, forms generation and memos take up the major part of your computer's time, a good dot-matrix printer is a cost-effective way of producing acceptable quality correspondence plus graphics capabilities in some instances. If you use the system exclusively for word processing, then a fast dot-matrix machine, such as an Epson LQ-1500 might be considered. On the low end, the best buy is still the ImageWriter because of its graphics capabilities and price. The ImageWriter does have its drawbacks. It does not handle paper as well as some printers, pushing it through the machine rather than pulling it. It is slow in high quality print mode, and registration is difficult with forms.

Drive Carefully

Open the system folder on virtually any application disk and notice the little TV sets, particularly the one marked ImageWriter. This is an icon for what is called in printer lingo a driver. It is a small program that configures your Mac's output to a specific printer. Every printer needs one and many of them are different. The important thing is that interfaces, or drivers are available for most popular printers.

The Great Interface-Off

The best way to start is the economical way. Users of *Microsoft Word* have a folder full of printer drivers bundled with the disk. Included are drivers for the Apple Daisywheel printer, the NEC 7710, the Brother HR-15, 25, and 35 series; the Diablo 630 (which also happens to be a standard interface for a variety of other printers); as well as a typewriter (TTY) interface. Version 1.05 of *Word* also supports the LaserWriter.

There are four basic types of computer printers: laser, thermal, impact and ink jet. Typesetting machines and plotters are in their own special categories and will be treated later.

PRINTING THE LIGHT FANTASTIC

Hewlett-Packard's LaserJet comes with only one font, but accepts others (in cartridges that go in the slot at the top right). It is easy to hook up to the Mac.

Apple's LaserWriter is the most powerful computer Apple sells. It hooks to the Mac via AppleTalk and is required if you want to print top quality graphics.

Laser Printers

Apple, Hewlett-Packard, Canon and QMS (Quality Micro Systems) manufacture laser printers based on Canon's LBP-CX laser engine. They vary in price, features and application. The HP LaserJet, the Canon LBP-8A1 and the QMS SmartWriter, all very similar systems, are dedicated machines. They connect to one and only one computer, their output relying upon the use of the computer's CPU. They are unable to accept files from machines on a network.

Compared with Apple's LaserWriter, the HP LaserJet and QMS SmartWriter offer a substantially lower priced solution to getting laser quality printing. Presently a software interface doesn't exist for the Canon machine but Softstyle, Inc., of Honolulu, Hawaii, produces a very effective one for the Hewlett-Packard machine called *LaserStart* and the SmartWriter will print from *Microsoft Word* using the Diablo 630 driver included on the *Word* disk. As office machines they are cost-effective.

The LaserJet comes with only one font in the machine, Courier 12. The only option is underlining. A selection of some 30 cartridge based fonts is available. The cartridges, it should be noted, are expensive, running anywhere from $225 to $330 each and are usually restricted to 12 point size. Some, but not all, offer the option of portrait (vertical page) configuration or landscape (horizontal) configuration.

The SmartWriter is delivered with seven resident fonts in three different point sizes and also offers a catalog of cartridge-based fonts.

Both the LaserJet and the SmartWriter have 128K of memory severely limiting their graphics capabilities. The LaserJet is limited to half page graphics with text at a resolution of 75 dots per inch or quarter page graphics at a resolution of 150 dots per inch. Ap-

TODD WEINSTEIN

WHAT MAKES THE LASER WRITE

What's a laser? Glad you asked that. A laser is a device containing a crystal or gas whose atoms, when stimulated by focused light waves, concentrate and amplify these waves to emit a very intense beam of light at a precise wavelength. Light from, say, a tungsten bulb is an incoherently spread (not tightly focused) beam spanning a range of different wavelengths. Light from a laser is "in-step," perfectly linear and cohesive. For this reason, it can be controlled to within a few microns. With this kind of accuracy possible, incredibly fine graphics can be created.

Laser printers create images by sending streams of digitized characters onto an ionized drum via a rotating mirror and a compensating lens system. The laser beam "etches" an image on this positively charged surface, neutralizing the areas it strikes. When the drum is brought into contact with a positively charged flux of black toner, the neutral areas accept a film of toner where the laser image has struck and reject it elsewhere. Paper rolled across the drum receives a negative charge momentarily attracting the charged toner particles and an image is transferred. The point of contact is very hot. A pair of rollers at 200° Celsius, fuse the toner particles to the paper's surface. This is roughly similar to the xerographic effect but infinitely more precise due to the accuracy of the solid state laser.

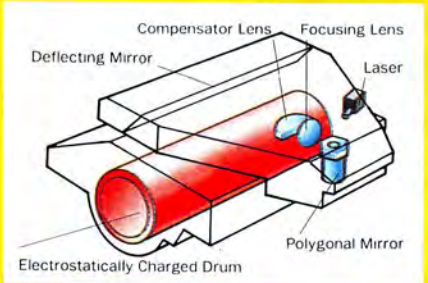


Fig. 1: The drum is given an electrostatic charge

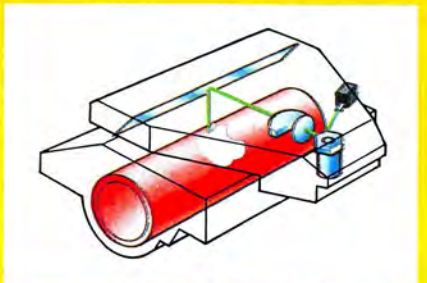


Fig. 2: The laser beam is then fired and deflected onto the drum where it draws the image by neutralizing the positive ions

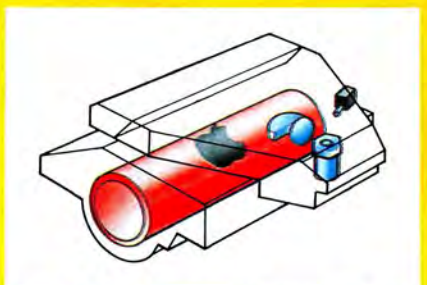


Fig. 3: As the drum's surface passes the toner container, the positively-charged toner will be attracted to the 'neutralized' areas and collect on them

ple's LaserWriter, however, with 1.5 megabytes of RAM, and PostScript delivers enhanced full page graphics at a full 300 dots per inch for incredible clarity and appearance. The LaserWriter, LaserJet and SmartWriter print text at 300 dots per inch.

The LaserWriter is a different kind of animal. An intelligent device, it has a powerful computer of its own on board with 500K of ROM for storage of a wide selection of built-in fonts and print enhancements. It is designed to be used on a local area network, available to all computers connected. Its computer converts files to PostScript which then generates both enhanced characters and graphics. The LaserWriter retails for $6995 although it is generally available from stores for somewhat less. The cost makes it more economical working for a group of machines rather than for one.

Hewlett-Packard is offering a new LaserJet+ with 512K of RAM. They are offering a board upgrade to owners of the 128K LaserJet for $1495. QMS's SmartWriter retails for $3850 and offers more resident fonts.

Think Small—Ink Jets

The ink jet printer (actually there are two generic types) travels accross the surface of the paper without touching it and literally emits a jet of ink. One configuration is a continuous stream pulsed to coordinate with ASCII commands for characters. (Remember the first time you "wrote" something on the side of a dusty car with a garden hose?) The two types of ink jets are the single nozzle variety and the multiple nozzle array type.

The single nozzle or continuous stream system directs the droplets of electrostatically charged ink at the paper in much the same way as a television tube or CRT creates an image on a phosphor screen. A series of electromagnetic coils, digitally controlled, deflects the stream of droplets hitting the paper. Continuous stream ink jet printers are fast but do not produce high quality output.

The multiple nozzle array method is very similar in appearance and function to a dot-matrix print head (except, of course, that the head never touches a ribbon). In the Hewlett-Packard ThinkJet printer, a vertically aligned row of 12 nozzles functions as do the striker pins in an impact printer. An envelope feeds liquid ink to microscopic channels or tubes in the print head by capillary action. When a character command is sent to the printer, a tiny, precisely controlled current momentarily heats an appropriate channel (or channels) causing an ink bubble (or bubbles) to form. The bubbles burst and precisely directed droplets of ink are sent out the nozzles to the paper.

This type of ink jet printer can print up to 150 characters per second. Its advantage over the faster continuous-stream ink jets is its accuracy.

For general use, the HP ThinkJet printer should be considered for its speed and portability. The unit takes full sized continuous form paper yet measures only 8 inches by 11.25 inches by 3.5 inches and weighs only 6.8 pounds. It is fast and quiet, but has

NEC's Pinwriter uses a new 24-pin head design to produce NLQ output. It can also print in multiple colors when the proper software is used.

Epson's LQ-1500 is a high-speed , near letter quality (NLQ) printer. It can produce output virtually indistiguishable from a daisywheel printer.

Hewlett-Packard's ThinkJet is tiny, light and quiet. It is capable of letter quality output. Softstyle's software mates it to the Mac.

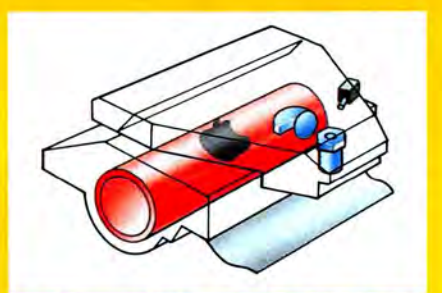


Fig. 4: Negatively charged paper is then fed into the drum . . .

Fig. 5: . . . where it attracts the positively charged toner and forms an image on the page

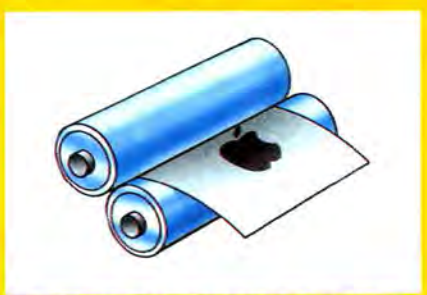


Fig. 6: Finally, the paper holding the toner is passed between heated rollers which "fix" the toner on the page

PRINTING THE LIGHT FANTASTIC

one serious drawback which cannot be attributed to Hewlett-Packard. Default margins of 0.9 inch on the left and 1 inch on the right are built into the printer to allow the print head room to accelerate to speed. Softstyle's interface, *JetStart*, adds an additional 1 inch default to the left margin of *MacPaint* documents reducing the available print area's width by 21% to about 5.5 inches. This added default does not occur with other software such as *MacWrite*.

Heavy Metal

Impact printers include dot-matrix and daisywheel machines. The dot-matrix is a vertically aligned set of solenoid actuated wires that strike a ribbon placed next to the paper. The ImageWriter places 9 pins in a row in a vertical space of about ¼ inch to perform its character formation. Other, more exotic dot-matrix printers use up to 24 strike wires for near letter quality printing. The Epson LQ-1500 is an example of a near letter quality printer that can perform with the Mac. The closest an impact printer can come to letter quality is a daisywheel printer, so named because the characters are mounted on flexible plastic arms that radiate from a central hub like the petals of a golden flower.

Daisywheel printers are for correspondence. They produce letter quality type at a much slower rate than either laser, dot-matrix or ink jet printers, and are restricted to standard keyboard characters — no graphics. Fonts can be changed by changing daisywheels but the practical range is 10- to 14-point type.

Thermal printers operate in much the same way as a dot-matrix or ink jet printer. Characters are generated by a digitally controlled print head. Striker wires are heated within the print head and upon receiving the digital code, approach, but do not touch the chemically treated paper which turns a dark color when heated. As might be expected, thermal printer output is far from elegant. While thermal printers can be extremely fast, the combination of poor quality type and the need for specially coated paper makes them impractical for normal use.

NEC has a neat little dot-matrix machine called the Pinwriter, that prints in color. The two-part software called *Colormate* includes an interface for driving the machine and an application providing *MacPaint*-like primitives plus type for creating not very sophisticated, but certainly colorful printouts from the Macintosh. The Pinwriter can produce up to 16 colors, 8 of them at a single pass. The application which was developed by Softstyle for NEC is likely to be enhanced beyond the "cheap paint" stage.

The Eyes Have It

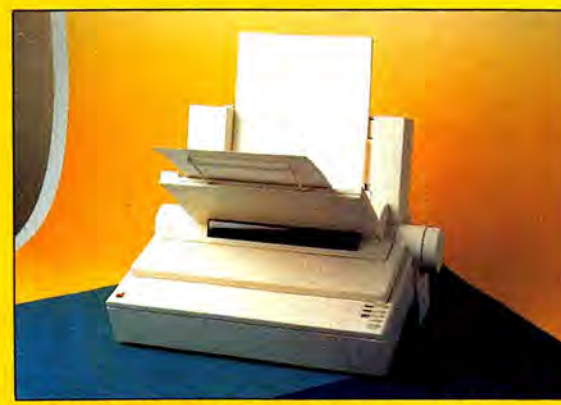
If your eyes could talk to you here is what they would say: The brain must "translate" computer generated characters into English (or the language of your choice) in the form in which they were learned, typeset quality. The more deviation from basic letter recognition the brain must deal with, the more tiring the project. This is the basic argument for creating color printouts from a software palette on a black and white screen. People fall asleep in front of TV sets but can read several hundred pages of a book at a single sitting. Low quality type, color or low resolution visual recognition of any kind is hard work which the brain tends to avoid. So go out there and get a good printer!

IMAGEWRITER II

Apple's recently introduced ImageWriter II is far more than an upgrade of the ImageWriter. The original was a solid, run of the mill printer tailored specifically to the Mac's requirements. It was adequate, but not a standout.

The ImageWriter II adds speed, style, feature and panache. Its list price is the same as the old unit. It is a true system printer in that it will work with all current Apple computers. Its top speed is considerably higher than that of the ImageWriter. Printer speeds are statistics notoriously prone to being "bent" in whatever direction an ad person wants them to, but it is safe to say that the ImageWriter II is faster than the ImageWriter in every mode.

The new styling is more than pretty; the sloped design makes it easier to read material as it is printed, and directs the output so that those annoying paper buildup jams are a thing of the past. Pinfeed paper now loads automatically once the tractor width is set.



Apple's ImageWriter II has it's sheet feeder option attached here. This printer can print in up to 7 colors and is faster than the original ImageWriter.

Seven-color printing is now possible. All that is needed is a special color ribbon and proper software (which is under development by several third party firms). A $225 (list price) sheet feeder snaps onto the top (see photo) so that ordinary letterheads and forms can be used. Mac users will also have the option to add an AppleTalk connector module (no price yet, available "soon"), while Apple II users can add a 32K memory module that will function as a print buffer.—*SB*

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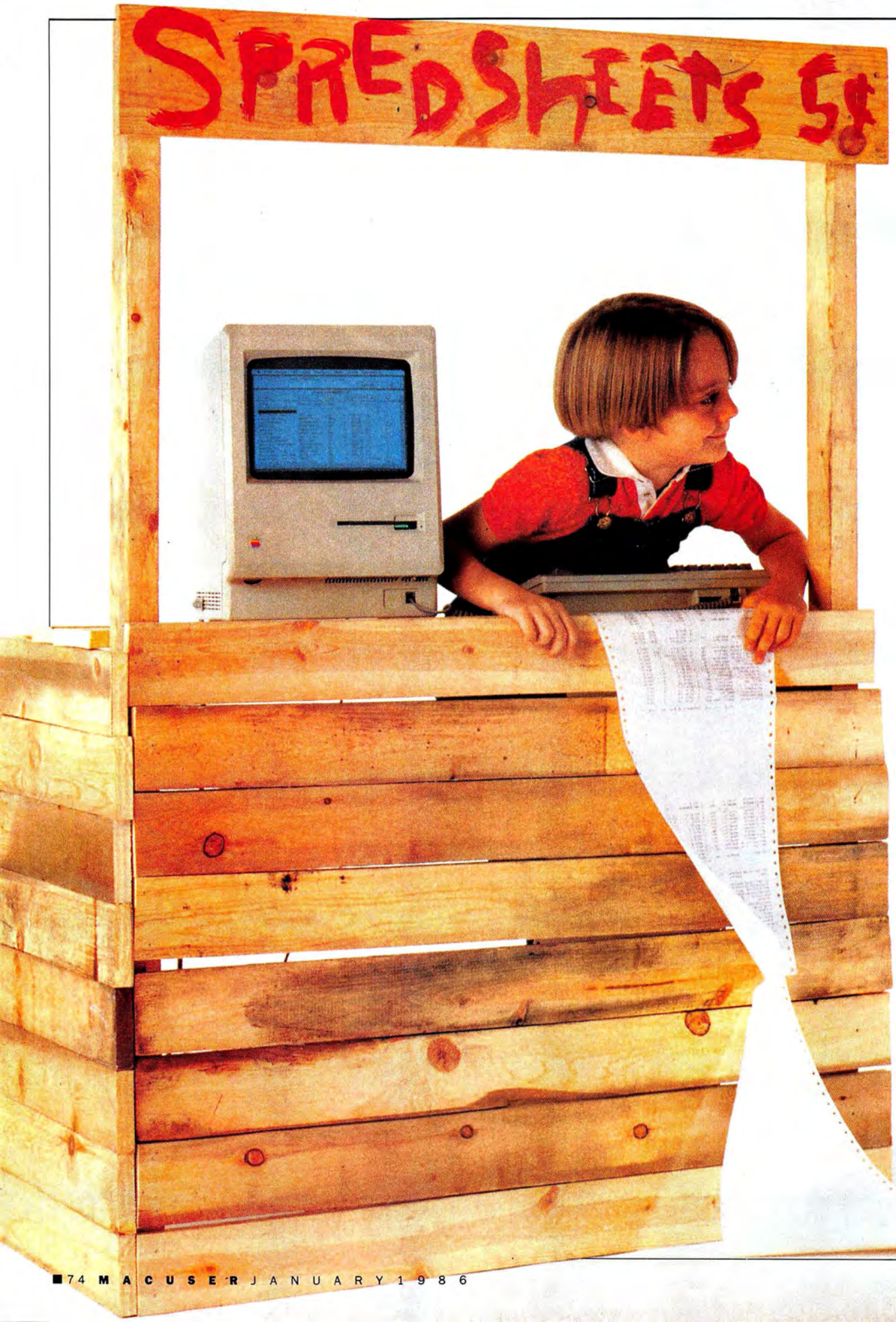
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HAROLD SINCLAIR

MAC• ING MONEY

A small business guide for the entrepreneur in "the rest of us".

IS THERE ANYONE AMONG US WHO truly feels comfortable with his or her current income? (All right, J.P., put down this article *now*. We're going to explain to our readers how to turn their Macs into cold, hard cash, so you can just go play golf or take a sail on the yacht while we do.) All it takes is a Macintosh, a basic add-on like a digi-

BY TRACIE FORMAN HINES AND DAVID BIEDNY

tizer or a LaserWriter, and a healthy dose of old-fashioned American capitalism.

Typesetting and Resume Services

A resourceful Macintosh/LaserWriter owner has a powerful advantage over standard typesetting shops. The turnaround time required for a job done on a Mac is much shorter than what a professional shop could provide. A second advantage is that a small, home-based business has a lower overhead, and so can charge lower prices, than larger competitors.

Word processing services are an easy first-time business to set up, especially in areas with a high concentration of students or job-seekers. Fliers posted at strategic locations, along with classified ads if you have the money to spare, are sure to bring in enough clients to launch Mac owners on their road to riches.

A LaserWriter makes a world of difference in creating commercially acceptable typeset. Although the cost of this device is prohibitively high for most individuals, timesharing can let a group of friends or associates share the purchase and maintenance costs. Before investing in a LaserWriter timeshare, make sure that details like ownership and the location of the equipment is spelled out to all those concerned.

Using a Mac with *MacWrite* and/or a page layout program such as *PageMaker* or *ReadySetGo,* a resume can be prepared complete with graphic accents in an hour or two, while typesetting shops usually require 24 to 36 hours to produce the same product. Granted, the output quality of a LaserWriter isn't comparable to high end type machines, but a report with graphs and charts created in *Microsoft Chart* and printed out on the LaserWriter will definitely get the message across and can be prepared without having to contract a freelance artist or maintain an in-house art department.

Before taking on any resume clients, prepare a few dummy copies, each using a different type size and font. This gives customers an easy reference, saves you lots of time explaining the different formats available, and besides, it gives a small business a polished, professional image.

Letterhead and logo design is a natural for the Mac: *MacPaint* and *MacDraw,* and a host of clip-art type programs, can produce workable commercial graphics in record-breaking time. To get around resolution limitations of the printer, designs can be drawn in a large scale and then either reduced on printout using the LaserWriter, or optically reduced with a stat camera. Most urban areas possess a stat shop or two (look in the Yellow Pages under Photographic Services, Photo Stats or Copying), and a number of print shops also offer stat services. A corporate logo created in one of the Mac drafting programs and statted down to a business card size is virtually indistinguishable from a professional drawing, and can be produced in a fraction of the time.

To get those first vital customers, canvass your friends' businesses or make up a few dummy logos and distribute them to local deli's, travel agencies, real estate offices and other small businesses, where you have a good chance of being able to meet with the owner. Do your homework first, though—you should go into those first meetings armed with hard facts about similar services in the area. Cut the competition's price or offer some other service, like a free box of stationery with every business card order, to attract your first clients.

Time, of course, is money, and the time savings achieved by using the Mac translate to lower cost per job, and a higher job load potential, which in turn provides exposure to a higher number of clients and reduced costs for those clients

The Creative Edge

Small businesses don't have the advertising or promotional budgets that their larger competitors do, making them a good target for an entrepeneur willing to cut costs as much as possible. If you own or have access to a LaserWriter, the possibilities for starting a small advertising or promotions firm are great – if you're aggressive enough to sell the service to enough clients.

Most of the page layout programs on the market work well for producing black-and-white ads in sizes standard for newspapers and magazines, and ready-made *MacPaint* art is available from a number of sources.

Local newspaper ads, promotional fliers, posters and even restaurant menus can be produced easily and cheaply with a 512K Mac and LaserWriter. Just add your own creativity and personality – and the emotional stamina to canvass the neighborhood shops—and soon you'll have a productive, and possibly lucrative, sideline.

Newsletters take more time to prepare than ads and fliers, and in general return less cash per hour invested. Still, for most small publishers, writing a newsletter on a favorite subject is a labor of love. Want to share your expertise on computing, gardening, cooking or anything else? Here's your chance to do it.

Most newsletters have no advertising and are supported entirely by their subscribers. Because overhead costs are limited to copying and mailing expenses, this is an excellent shoestring business. The number of subscribers and cost of each subscription runs the gamut from tiny club publications with circulations in the dozens, to pricey, business-oriented newsletters targeted to a particular industry.

Finding subscribers is the tricky part. If your newsletter is aimed at the local computer market, visit a few users' groups with your first issue. If you're publishing a pet fanciers' journal, potential subscribers can be found at dog or cat shows. Reaching beyond a localized market will require at least a few ad dollars, strategically placed in newspapers or magazines catering to your target audience. There are no hard and fast rules for self-publishing; but the startup cost is so low that if you've ever wanted to try your hand at writing – or want an outlet for extra creative energy – it's almost a shame not to give it a try.

Another form of self-publishing is more seasonal: personalized letters from Santa, with the child's name inserted at strategic points. Add a handwritten signature and some colorful stationery, and you've got a business that can be started with a few classified ads in parent-oriented magazines.

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designing and selling your own greeting cards. In all honesty, the Mac isn't the *perfect* tool for folded cards (even the LaserWriter can't print on two sides of a piece of paper), and it doesn't accept the sort of cardboard used by large companies like Hallmark. Still, the Mac is a perfect tool for laying out art for cards and postcards that don't need to be printed on heavy card stock. The final artwork can be taken to an offset printer, who has the resources to print the work out on heavy paper.

Marketing cards is easy enough. Start by approaching the card and gift shops in your area. If the shop owner isn't interested in buying the products outright, offer a consignment deal, in which the artist takes a predetermined cut of whatever money is made on the sale. The store owner puts up no money and so has nothing to lose; the artist gains a retail space.

Using the tee shirt transfer ribbons now available for the ImageWriter, creating customized shirts is an easy business venture. A few catchy slogans can be printed onto fabric, saving would-be tee shirt barons hundreds of dollars over the costs of silkscreening or producing a heat transfer.

Investing in a digitizer expands the business even farther. We've all seen those ads for personalized tee shirts, in which all the customer has to do is send in a photo and payment to receive a shirt with the same image. Place a small classified ad in magazines with a targeted audience (such as young women, parents or pet owners) to get started.

Information Services

Most businesses maintain client listings for advertising mailings and market research. For many of these companies, the time and cost of maintaining an in-house computer installation isn't economically feasible. Enter the Mac owner with experience on a particular database program to create and maintain mailing lists, product inventory lists, and a multitude of other data-intensive situations. Students with Macs are usually happy to find work that they can do in their own time and space, and can be employed to do data entry as well as more advanced work, such as database design and programming. Place a classified ad in the business section of the local paper or the classified section of company newsletters and trade journals.

A very lucrative business can be made on programming spreadsheet templates. Thanks to the proliferation of programs like *Jazz* and *Excel,* and their relative difficulty of programming, individuals fluent in these programs can find work creating custom templates for financial institutions, corporations, real estate agencies, and any other businesses in which few people are computer literate. Spreadsheets set up for applications such as loan amortizations, sales forecasting, departmental expenditure studies, cash flow analysis, and more can be used as "primitives." Ever since *Lotus 1-2-3* appeared for the IBM PC, the employment sections of most urban area newspapers started brimming with job opportunities for spreadsheet wizards (and even apprentice wizards), paying very attractive salaries and providing a good deal of upward mobility. Microsoft's *Excel* is a promising contender for the most powerful spreadsheet around, and will definitely spawn a new flock of jobs in the corporate marketplace. Becoming the resident computer whiz at an investment firm can work out nicely, indeed.

Notwithstanding the Mac's widely touted ease of use, many people with particular applications requirements need to have their hands held while going beyond the confines of *MacWrite* and *MacPaint.* Training sessions in particular programs or real life applications can be organized for individuals or groups: ten people may be happy to pay $10 apiece for a couple of hours of training in that layout program, while the instructor earns a hundred dollars for two hours work. User groups and Mac newsletters are good places to advertise training services, as well as neighborhood computer stores, campuses, business supply centers, adult-education centers, and computer classified sections.

In the same vein, there's a strong demand for custom system design. Computer consultancy is expected to be one of the fastest growing careers of the next decade. For companies with a tried and tested method of managing the paper flow, turnkey systems are the only solution that makes any sense. Using programs such as *Omnis 3, Excel, MacLion,* etc., full turnkey database and accounting systems can be designed from the ground up (this type of business has existed in the IBM world for years, and many individuals make a *very* good living from dBase II programming). This business involves a certain amount of networking to find the first clients. Start by getting friendly with the owner of a computer store, who'll probably know which businesses in the neighborhood use Macs. If that doesn't work, there's still the classified section of the newspaper and in trade magazines that cater to specific businesspeople, like doctors, lawyers, accountants, and retailers.

Graphic databases and digitizers can be combined to offer specialized inventory and tracking systems not easily created with any other microcomputers. For example, an individual versed in programs such as *Microsoft File* or *Helix* can offer custom graphic database systems to museums, art galleries, photographers, and anyone else that needs to combine visual images with text references. A database can be created for a video studio, with information regarding the date of production and shelf location of a particular video tape, along with a scene or two from the action. A hardware store can be sold on a system that would catalog all those different nuts and bolts, each record containing a picture of the part described. Even insurance companies can prove potential customers: clients could put their insured property on a visual database for easy retrieval. All in all, the graphic quality of the Mac makes it a natural tool for anyone who needs to use a visual reference. A flair for sales is essential here; if you're not much of a salesperson, either hire one (on a part-time, commission-only basis to start) or try another business.

The ideas mentioned in this article are just the tip of the iceberg for resourceful Mac owners who'd like to see some return on their hardware investment, but who'll never make a living as computer programmers. Who knows? With a little extra energy and imagination, you could just turn your Mac into a real cash machine!

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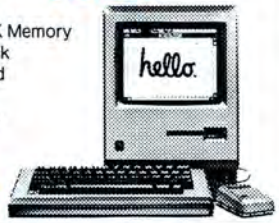

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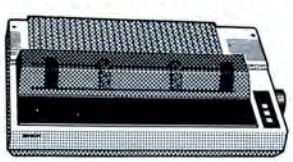

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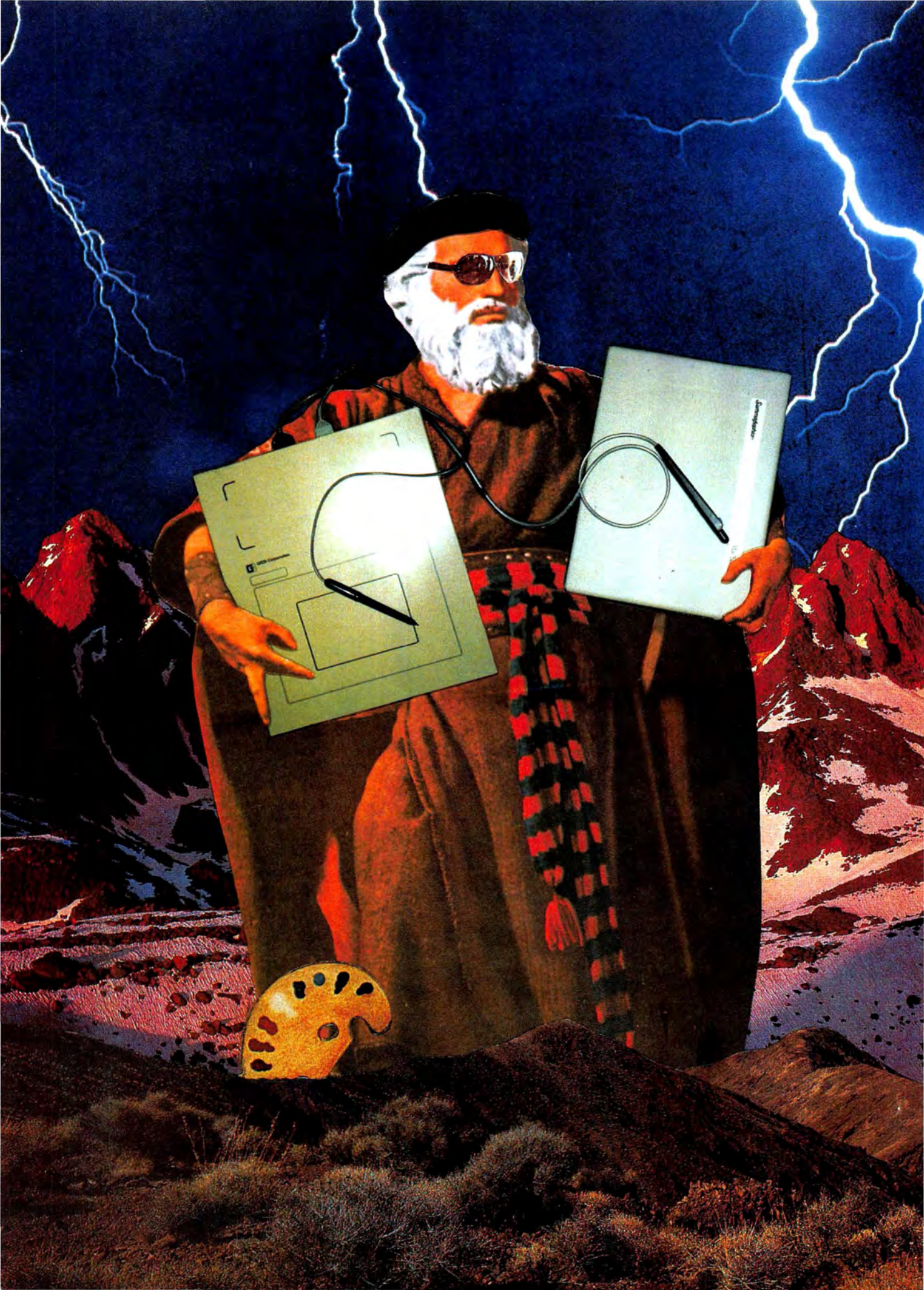

TAKE TWO TABLETS...

. . . for the ache you develop in your arm after drawing with a mouse. Graphics tablets, that is.

DRAWING WITH A MOUSE HAS BEEN compared to drawing with a wet brick. Years of fine art training go down the tubes as soon as you put your hand on a mouse and try to draw by sliding it around the little pad. For many artists, many years and classes were spent manipulating some sort of pen-shaped object with a tip on the end of it. Artists learn how to use traditional implements so that they can forget about them and creativity becomes primary. While drawing with a mouse requires a person to learn all over again, moving a cursor with a stylus and tablet is picked up quickly.

There are lots of way to get graphics "into" your computer. Input devices range from the keyboard (such as using I, M, J, and K to move a cursor up, down, left and right) to paddles, joysticks, touch tablets and light pens. You can even nod your head and move your feet at your computer, which may be a great way to work out, but not to draw. For computerized drawing and painting nothing beats a graphics tablet.

Graphics tablets have been used with professional design stations for years and most every system configured for TV and advertising graphics comes equipped with one. Many schools are teaching computer graphics with Macintosh stations and the graphics tablet has become an integral part of the curriculum.

A graphics tablet stylus is a pointing device. It points or moves over a tablet that has an imbedded grid of wires. The stylus picks up X and Y coordinates from this grid and sends the information back to the computer and the screen. A major difference between

BY AME CHOATE FLYNN

TAKE TWO TABLETS...

Drawing done with MacTablet

a mouse and a stylus is that when you draw, the mouse is moved with your entire arm; a stylus allows for more discreet, less-tiring hand motions. You move your hand very naturally.

Contrary to popular opinion, it is not difficult to get accustomed to drawing on a surface removed from the display area. One answer to "isn't it difficult?" is to remind the questioners of the ease they had playing their first video game. They didn't stop and say "How do we do this thing," but just started shooting down invaders from space, ghosts and other alien creatures. A graphics tablet where you draw "down there" and see it "up on the screen" works on exactly the same principle. Actually, one of the best things about the tablet is that you don't have to keep interrupting your work to recenter the mouse.

The advantages of using a tablet with *MacPaint* are clear—those paintbrushes are *really* paintbrushes once a stylus is controlling the action. The artwork accompanying this article was all drawn with a stylus. While it could have been done with a mouse, the use of a stylus made the creation much simpler. To illustrate the point, consider the difference between playing the piano in a normal fashion, and with heavy winter gloves. Sure, a good pianist could probably get some sound, but generally speaking, one would probably do better *sans* gloves.

Graphics tablets also allow the user to trace over existing artwork, something extremely difficult to accomplish using a mouse. For object-oriented programs, drawing with a stylus tends to yield results fairly close to the original conception, especially with irregular shapes that are later smoothed.

A tablet is also a natural adjunct to digitizing cameras and the ThunderScan. It's a perfect way to "work into" an already existing picture.

There is more to a graphics tablet than drawing—this article was written with a stylus manipulating the word processor cursor.

The Macintosh was tablet-less for the first part of its life. Then, Summagraphics debuted the MacTablet early in 1985. GTCO (pronounced GeeTee-Co) followed with its Macintizer by mid-summer. Both companies are long-time professional graphics tablet producers.

Comparing the two is not just a case of "a graphics tablet is a graphics tablet." Each system has a slightly different method of getting information from the artist's hand to the computer.

Summagraphics MacTablet

The MacTablet can be plugged into the Macintosh printer port or the serial port. The mouse port is still intact, so both the mouse and the MacTablet can be connected at the same time. Summagraphics recommends that they not be used simultaneously as this will confuse the computer, but you won't have to keep unplugging the mouse to use the tablet and vice versa. The tablet comes with a tilt bar that can be attached to rest the hand at an angle. Documentation on both installation and use is complete and straightforward.

Once the tablet is installed there's a slight modification that must be made to the startup disk. The MacTablet driver installs as a desk accessory. A *MacTablet Installation Program* disk is included with the tablet package. Simply open the "MacTablet Install" icon and add the program as a desk accessory to whatever startup disk you wish to use it with. To use the MacTablet desk accessory, pull down the Apple icon, select the MacTablet desk accessory and then identify which port the tablet is connected to and click on start.

The stylus contains two switches, each of which performs the same functions as the mouse button. One is a small button on the barrel of the stylus. The other is inside the barrel and is activated by pressing down the point of the stylus. Either can be used, according to preference.

MacTablet's size is 9 × 6 inches. The small sizes not only corresponds to the Macintosh screen but lets you move the tablet into any position that is comfortable. Since it doesn't have to remain on the computer desk, many artists drop it in their lap or prop it up against the edge of the desk while they're working.

The surface of the MacTablet is slightly textured in order to meet European reflectivity standards (no glare on the work surface). If the seminubby surface feels uncomfortable, put down a sheet of mylar that is cut to fit over the active area.

The MacTablet will let you trace over materials or drawings if you wake up without that "creative edge." You can just tape your source down to the tablet or position a magazine or a book that can be up to a half-inch thick and start copying it. This is a very effective way of getting a logo from stationery to your computer.

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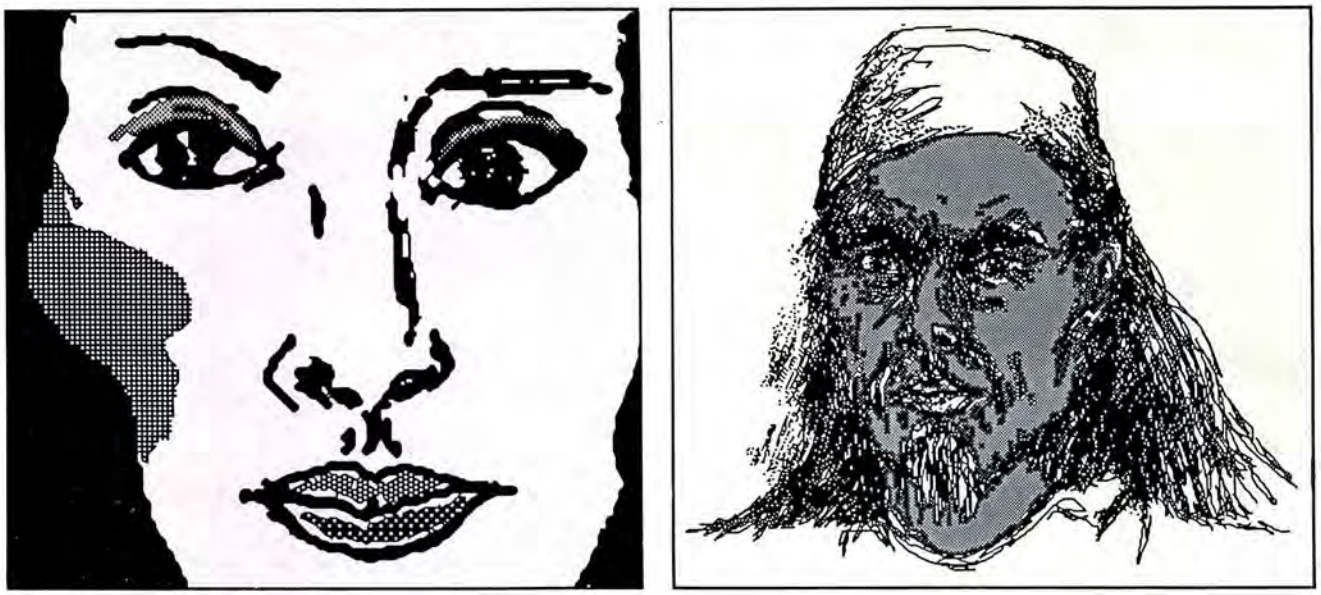

Drawings done on the Macintizer

The MacTablet works with all software written for the Macintosh under Apple Computers' developer's guidelines.

Other accessories are available for the MacTablet. Three and four-button pucks can take the place of the stylus. A puck gets its name from its remarkable resemblance to a hockey puck and the buttons can be used with software that calls for special functions. Refills are available for the stylus and are easy to change.

GTCO's Macintizer

The Macintizer tablet plugs into the mouse port and replaces the mouse. The Mac's serial ports are thus available for other uses. With a slight adjustment to the control panel and a simple installation, the Macintizer is ready to go. No other software modification is necessary.

The most obvious difference between the Macintizer and the MacTablet is the size. The Macintizer is larger—18 × 15.5 inches to be exact. Not all of this area is active tablet. The Mac keyboard has a special place to sit at the back of the tablet. However, there is still room for two alternate working areas. These are designated by color coded rectangles and small boxes that correspond to the working area colors. To transfer from one area to another, just click the pen in the appropriate small box. The central 4.5 × 6.9 inch area has a one-to-one correspondence to the Mac screen. The larger area, 6.9 × 10.3 inches, allows materials to be reduced by 33% when traced. Larger movements over a smaller area provide better control while drawing.

The Macintizer has many of the same "bells and whistles" as the MacTablet. It's difficult to rhapsodize about graphics tablets because a good one is supposed to be transparent to your work. It would be a detriment if either tablet was obtrusive and "got in the way" of working with the Macintosh.

The Macintizer stylus does not contain an "on-board" button. All information is given to the software by clicking or pressing the stylus tip. It communicates with the tablet from half an inch above the surface so you can trace through a thick magazine.

The tablet's surface is smooth and is made of Lexan. It needs only an occasional cleaning for years of maintenance-free operation. The grid inside the tablet is spaced at ½-inch intervals and uses a proprietary method to gauge the distance from the pen to the Macintosh screen coordinates.

Optional equipment includes a puck with a transparent window that contains crosshairs (like a gun sight) for precise tracing that can be used in place of the stylus. A mouse cable is available if you want to use your mouse alternately with your Macintizer.

Care and Feeding

Graphics tablets are relatively easy to maintain. There are a few points which should be taken seriously, though. Disks and graphics tablets don't mix. Why? A graphics tablet works on electromagnetic principles. Magnetic fields wreak havoc on all magnetic media. Unless you want to use your tablet to quickly free a disk of all data, keep it away from the graphics tablet. Place your external disk drive away from the tablet and never put disks on the surface even when the tablet is not in use.

The tablet area should be kept clean, and be kind to the stylus. Don't drop it, bang it or use it to draw pictures on the wall. Keep track of your cables and don't let them get tied in knots.

Anything that can be done with a mouse can be done with a graphics tablet. The mouse ball doesn't get dirty and its little feet don't wear out.

More to Come

Two other tablets are in the process of designing and de-bugging but were not available for review at press time. Kurta Corporation and Koala Technology both have tablets for the Mac. The Kurta Penmouse + stylus is cableless (yes, the tablet has a wire). So, if your Macintosh desk is starting to resemble a plate of spaghetti, keep your eye out for further developments.

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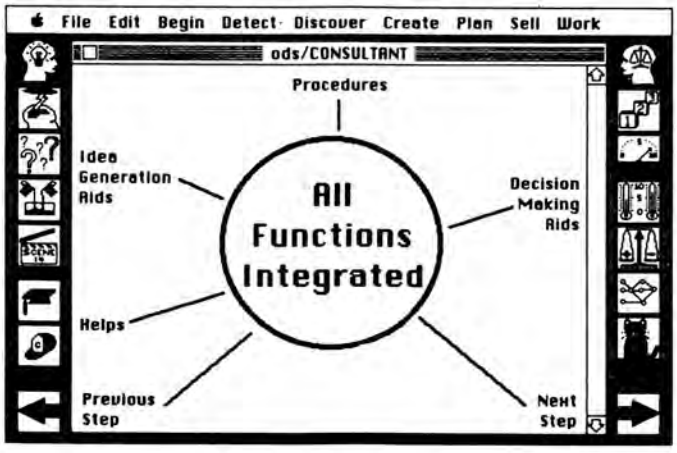

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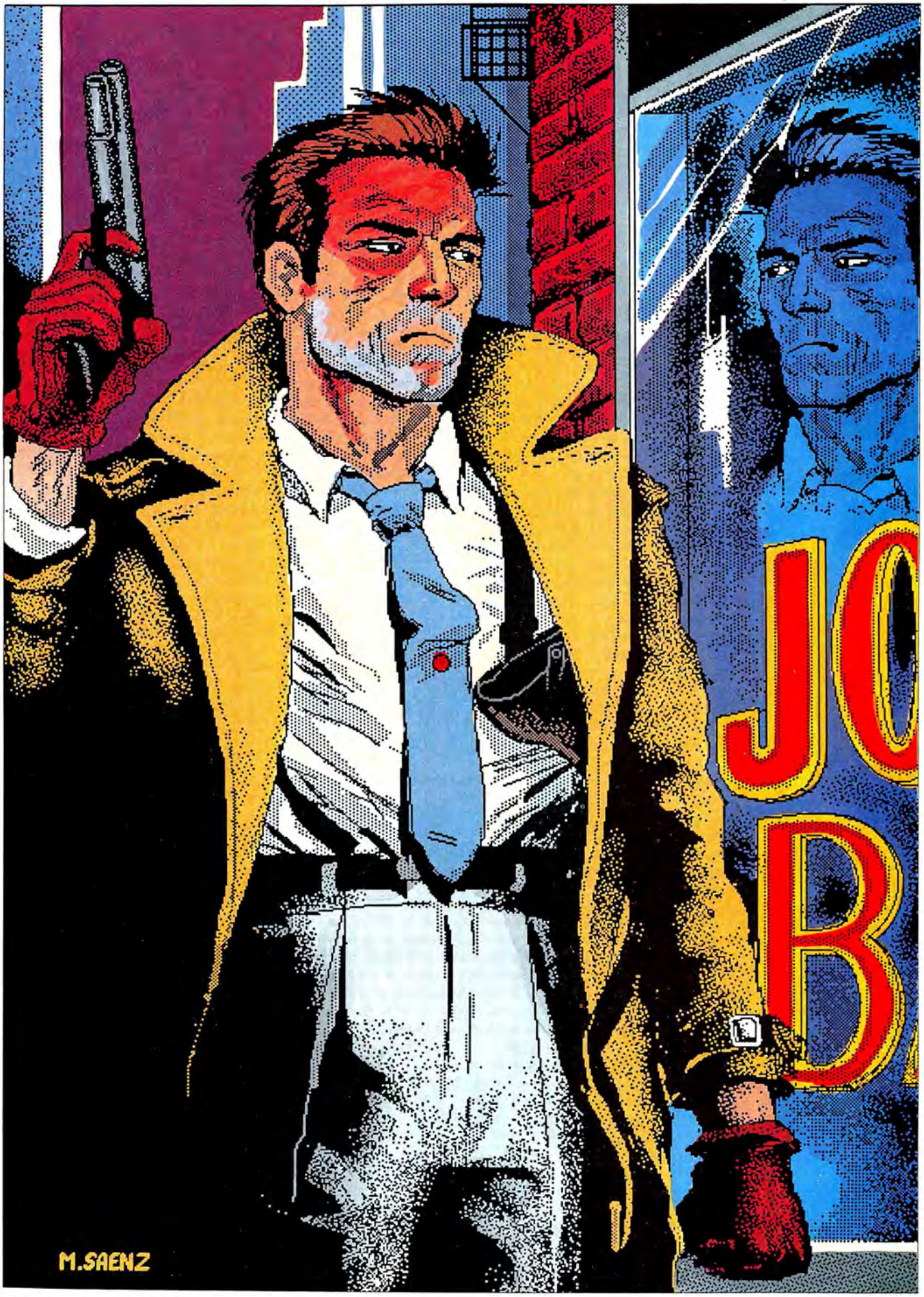

MICHAEL SAENZ

YOU'VE NEVER SEEN ANYTHING LIKE DEJA VU BEFORE

You've never seen anything like Deja Vu: A Nightmare Comes True

BY TRACIE FORMAN HINES

MY HEAD CLEARED SLOWLY. Through the haze I could vaguely make out my surroundings. I squinted, stretched, and found that my arm was sore and stiff, as if I had just gotten some sort of shot... Slowly my eyes came into focus and I found myself in the stall of a filthy men's room john.

I noticed a trenchcoat on the hook in the stall and tentatively reached for it...Did I really have such abominable taste in clothes? I couldn't remember! Still, I thought, maybe there would be a wallet or driver's license, or some clue as to who I was or how I got there.

I pointed to the coat, clicked once, and dragged the item into my inventory window. Well, whoever it belonged to, it was mine now. I clicked on it again and moused to the OPEN button on top of the illustration of my surroundings. The coat opened to reveal a wallet and a handkerchief with the initials "J.S." on it. John Smith? Taking the coat had revealed a gun and holster in the stall. I shrugged and dragged it to my inventory window. After all, whoever had left me in that stall might still be around somewhere.

Upon leaving the men's room I found myself in a deserted bar. The body of a man was slumped over a desk, the telephone receiver still clutched in his hand. Sickened, panicked, I stumbled out of the bar—I still can't remember how— and made my way to the nearest police station. But when I opened the door, I found myself under arrest, a suspect in the murder of Joey Siegel since my gun had been the murder weapon. Before they could finish their questioning, my mind deteriorated into a muddled goo, the result of whatever had been injected into me. I never recovered—that is, until the dialog box asked me if I wanted to start a new game!

Deja Vu: A Nightmare Comes True, by ICOM for Mindscape (not to be confused with Rubicon's memory-tester, *Deja Vu),* is a piece of computer gaming history: It's the first adventure game designed with the Mac interface in mind, and as such, it's easier to play and enjoy than any adventure game that came before it. *Deja Vu: A Nightmare Comes True* is a complete breakthrough in gaming. See something you want to examine? Mouse over to it and double-click on its picture to get a complete rundown on the object. Want to take it with you? Click on it once and drag it over to your inventory window.

The game screen provides players with everything they need, with no messy sentence parser to deal with or pull-down menus to operate. A small box sits just above the illustration window, allowing the player to Examine, Open, Close, Hit (as in punch), Operate, Go, Speak, or Consume any object shown on-screen simply by highlighting the object in question with a click, then clicking on the appropriate word. It's so simple even a grown-up can do it.

For those who can't, Mindscape provides a highly informative, but slightly overcute, instruction manual that details anything the gamer might need to know.

An additional button, the Self icon, lets players Operate items on their own bodies. This only needs to be done at certain critical junctures. Before you reach that point, you'll probably know what has to be done.

The player starts out in the bathroom stall, with little money, no positive identification, three bullets, and in a drugged state that will eventually lead to insanity if the proper antidote isn't found and used quickly. By visiting various locations, examining or taking items that look interesting, and properly using the objects or information, the player slowly unravels a grisly tale of bribery, kidnapping and murder involving the

DEJA VU: A NIGHTMARE COMES TRUE

late Joey Siegel, his secretary Marcia Vickers, her lover John Sternwood, and Sternwood's overweight wife.

A small map screen, located just to the right of the area illustration window, shows the player all possible exits from that room, each displayed as a small white square. Moving from place to place is easy thanks to the open-ended control scheme that lets each player choose the method most comfortable in a given situation. To leave a room, the gamer could double-click on the door to open it, or click on the door and then on the Open command, or just double-click on an exit square on the map screen. Once the door is open, repeat the procedure to proceed to the new area.

While the story is set in the seamy underside of Chicago in the 30's, the game is sprinkled with light touches of humor that break the plot's thick-as-a-brick tension. Once the player has found the drug antidote, his memory returns (yes, whether you're male or female, your character is a "he") in trickles. Memories of Taco, the hero's childhood pet who sent him to the hospital for stitches, and of the little slut who gave him (and everyone else in the class) his first kiss, are just a few of the humorous sidetracks that round out the story.

A decidedly modern mugger roams the street outside Joe's Bar with a gun, attempting throughout the game to shake down hapless players. Figure out the way to deal with him temporarily and he still comes back for more. He's one of the best characters in the story, but if we say too much more we'll ruin the effect.

Other people our hero is likely to meet include a smelly wino, an angry hooker, and two cabbies whose bad manners could put any New York driver to shame.

Among the most valuable treasures the player finds are addresses. Gamers start out with no knowledge of any location, and the inclination will probably be to hop the nearest cab to the first address found. But the drivers don't understand anything except detailed addresses—just directing them to Joe's Bar or Peoria Street doesn't work. To talk to a hack, click on the Talk button and then on the cabbie. A dialog box appears, along with the prompt, "What do you want to say to the cabbie?". This is the player's cue to type in an address, and it had better be a valid one or the hack won't move. Of course getting there may be half the fun, but if you don't have another address to return to, figure on visiting far longer than you expected to!

Money presents an interesting problem in the story. It seems that no one believes in giving change of a twenty, so the player will probably have to skip out without paying cab fare at least once during the game. Maybe that's why two different cabs cruise the streets.

Weaponry is another story: players start out with three bullets, each of which is needed for a specific purpose. Bear in mind that the gun is indeed the murder weapon, and if the cops find it on our hero, it means a quick 20,000 volts in the electric chair. Guns and bullets can be

The mugger pops up at random intervals to try to shake our hero down for cash. Three possible exits are shown from the area.

PIECING TOGETHER THE DEJA VU PUZZLE

The game has fewer seemingly dead end situations than most other adventure games do. Still, everyone gets stuck at points. If you can't seem to get any farther, here are a few tips to help ease the situation:

Out of Bullets: My, but you're a violent soul! There are two ways to get more bullets: buy them, or find a new gun somewhere. If you buy bullets, don't forget to Open the gun and reload it.

Locked Door: It probably needs a key. Check your inventory, including all wallets, envelopes, and boxes, to find one that might work. (To use the key, click on it, then select Operate, then click on the door or the lock.) If the key doesn't work, try shooting the lock. If it doesn't work on the first try, it won't work at all, so start checking every area for the key that will work.

Locked Safe: This needs a combination, which can be found by carefully examining everything in a particular location.

Need Addresses: There are a total of five addresses you'll find in the game. Four are relatively easy to find—just examine every item you come across. Open desks—and even dead bodies—to get them. The fifth address is only available if you can manage to get the kidnap victim to talk. If all else fails, try Operating items on each other, or on the person in question.

Stuck in a cab: You didn't conserve money carefully enough, or forgot to bring another address along. Let's hope you saved the game before you made this fatal mistake, because there's no way to rectify the situation now.

Killed in the detective's office: You probably won't walk in so hastily next time!

You have all the evidence but are still under arrest: There's something you forgot to do. Try Operating all your objects on each other. Then examine those objects. One combination produces the right result. If you still get arrested, you probably don't have all the evidence.

(nothing personal, but . . .)

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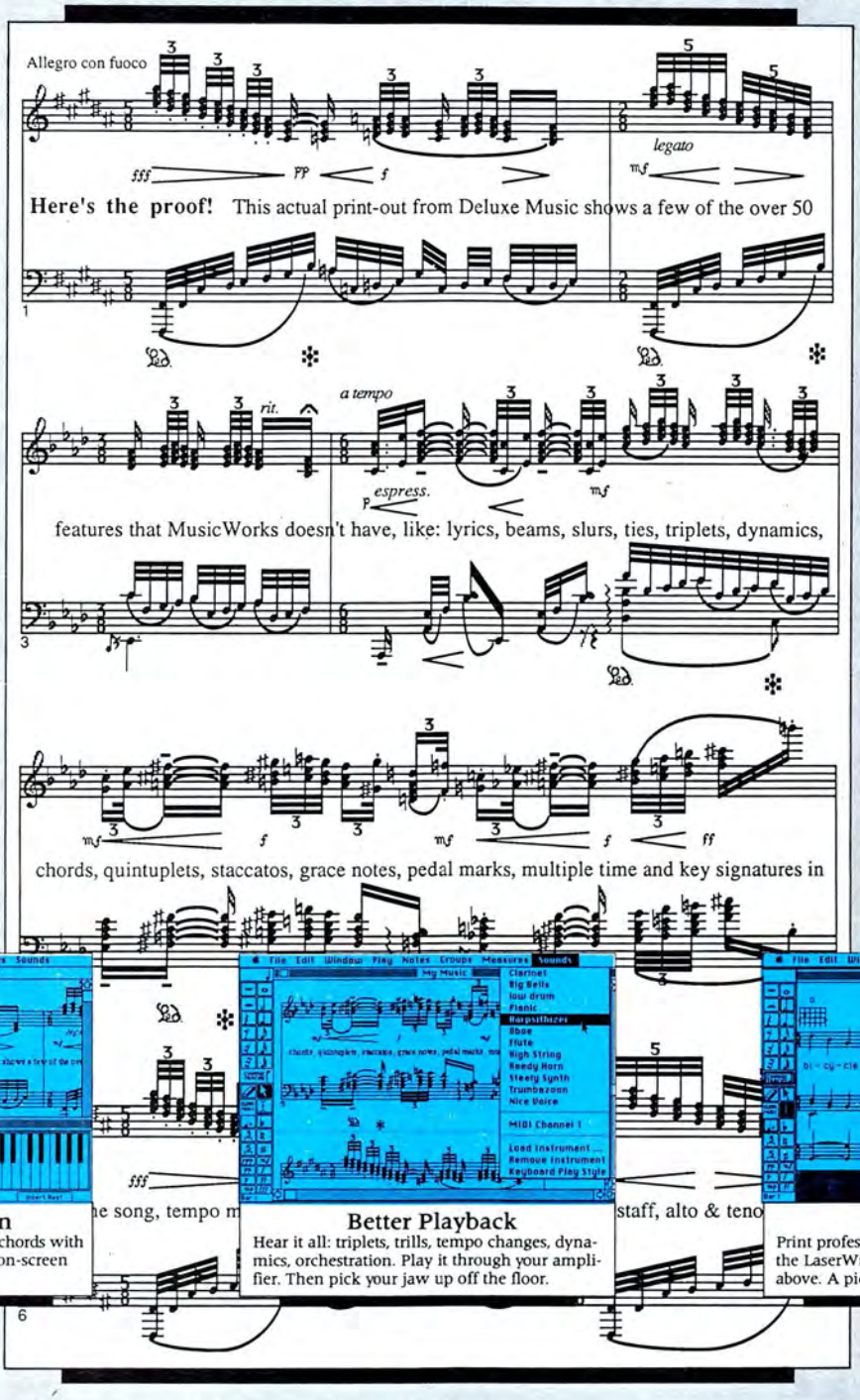

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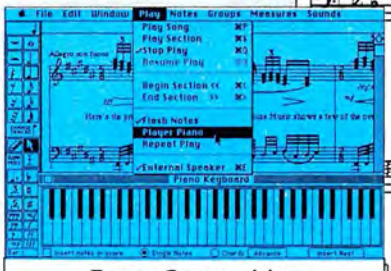

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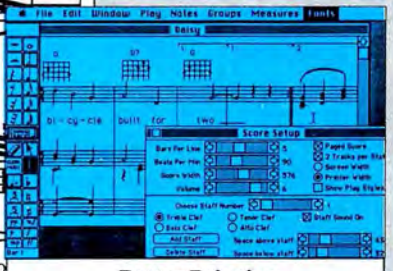

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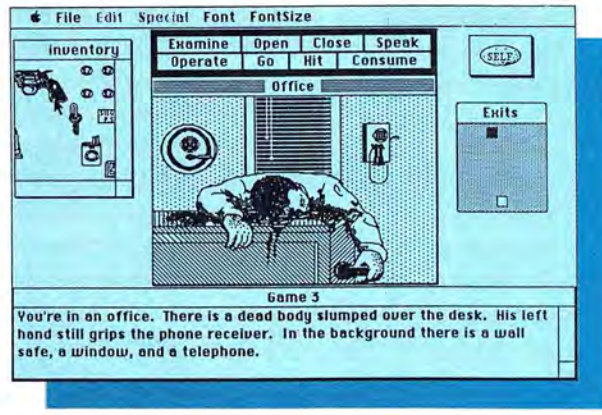
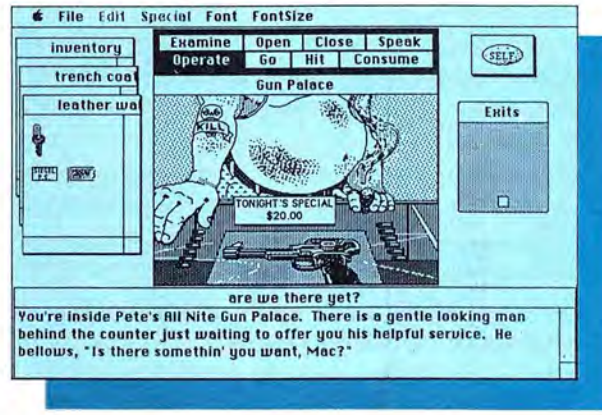


The crux of the mystery lies dead in the office. Here we're trying to escape out the window, which is highlighted black to show it's been selected. Our selection is also shown on the exit box.



Pete's Gun Palace sells extra bullets and guns for those who can pay Pete's price. Here, we've highlighted the twenty dollar bill in our inventory window and are about to Operate it (buy) on the proprietor.

Meeting a disgruntled hooker face to face. When the accompanying text runs longer than the text box can display, a scroll box appears in the right-hand corner of the screen.

purchased at a store, or can be found for free at one point in the game. Just don't get caught without at least one bullet, especially when exploring the vast, alligator-infested sewer system.

Using objects, like keys or guns, is easy. To shoot the gun, for example, the player would first scroll through the inventory window to locate the weapon, click to highlight it, then click the Operate button above the illustration window. Finally, click on the object or creature you want to shoot. Select, Operate, Item—That's about the most complicated syntax required in the game. The entire procedure takes exactly three clicks, making the action proceed much faster than in a more standard adventure game.

Looking inside objects like envelopes is just as easy. Simply click on the envelope and then on the Open button and a new window appears to display the contents of the envelope. To take what's inside, just drag it to your inventory window (if the envelope is already in your inventory, there's no need to do this).

Deja Vu: A Nightmare Comes True offers a special reward to players who manage to unravel the mystery, bring the evidence to the police, and have the real guilty parties arrested (of course you didn't kill Siegel—you're a hero!). After displaying a newspaper headline about the case, complete with text describing the courtroom trial, the program presents players with a personalized Private Investigation certificate. Just type in your name and the ImageWriter prints out a hard copy detailing your achievements.

Deja Vu: A Nightmare Comes True is one of the best things to happen to the Mac since the LaserWriter. Just when Mac-owning computer gamers were starting to envy their friends' huge collection of game libraries, along comes a game truly Mac in flavor, execution, and style. Imitation is the sincerest form of flattery—and the ICOM team pictured in one of the best "About. . ." sequences on disk to date deserves flattery, and success, of the highest order. Let's hope this game sparks a wave of accessable, enjoyable games for The Rest of Us.

DEJA VU: A NIGHTMARE COMES TRUE: REPORT CARD

Overall Rating *****

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

Comments: Sets a new standard in easy to understand adventure games; well-written text; excellent illustrations; good sense of humor.

Best Feature: Extremely easy to learn and use.

Worst Feature: Relatively easy to solve due to limited locations.

List Price: $39.95. Requires 128K memory, external drive optional.

Published by Mindscape, 3444 Dundee Road, Northbrook IL 60062. (312) 480-7667.

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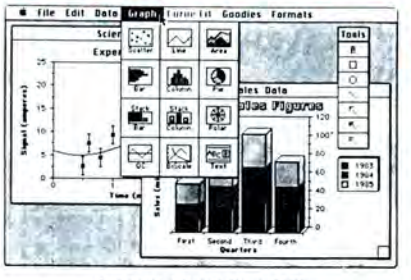

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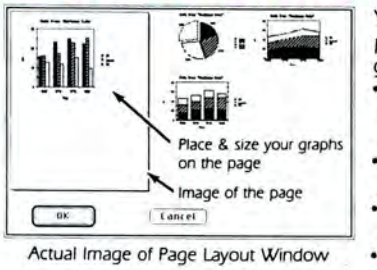

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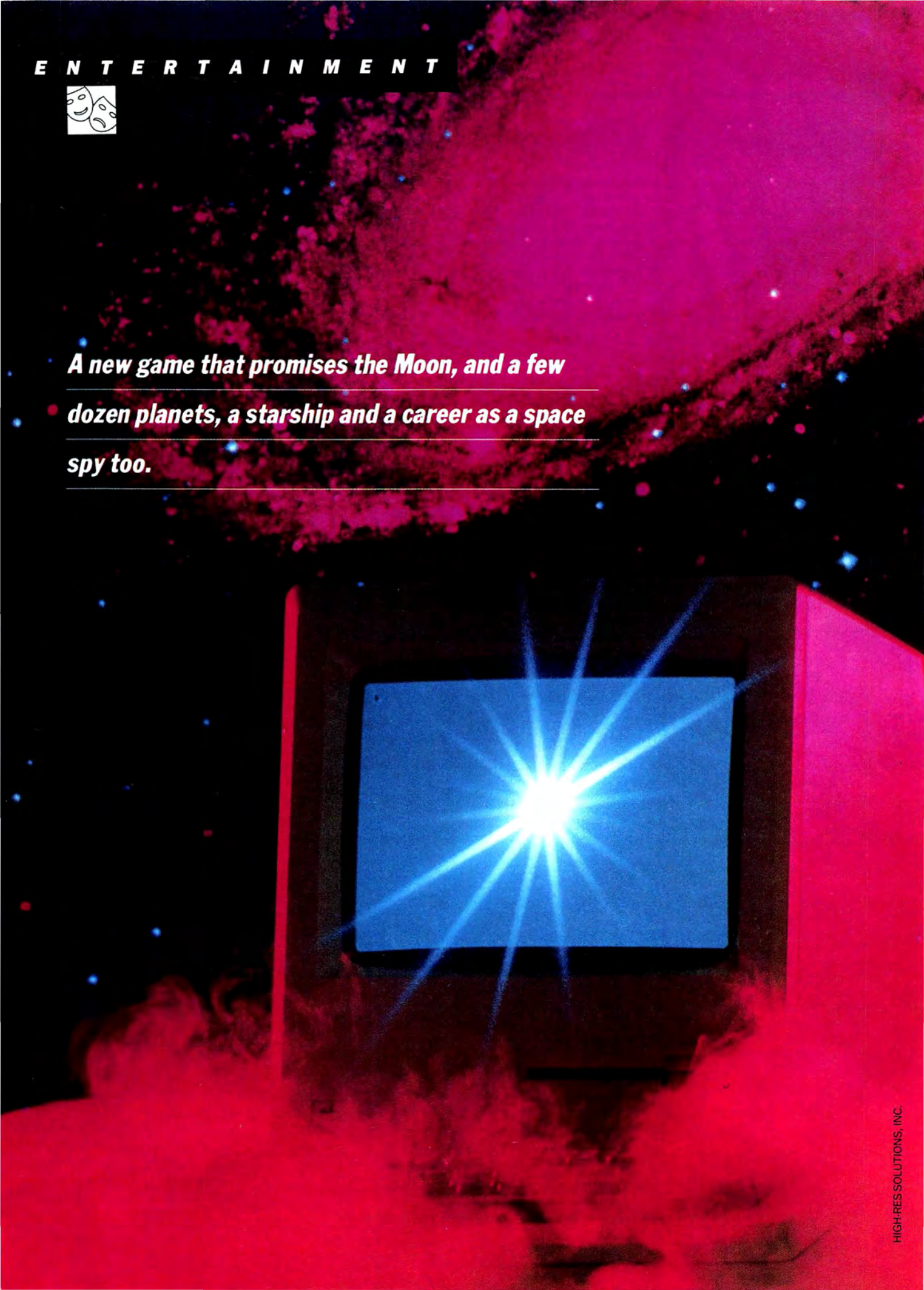

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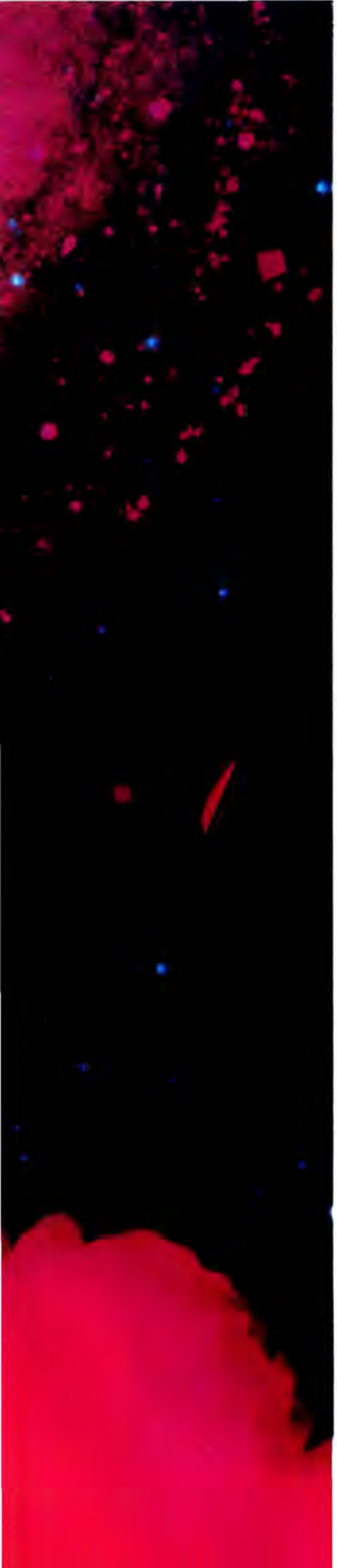


EX MOUSE AD ASTRA!

by Neil Shapiro

THERE WAS NO DOUBT ABOUT IT: The lovely Captain Desmona had stood me up. There I was in the upper bar at Ms. Wiz's in the starport on Zeath within the Prisa System and all I had for company was a bunch of dancing exotics who treated gravity as if it were a trampoline.

Well, I mused, a lot had happened since Desmona and I had met beneath the miles-high Monument on the planet Axia. When I'd seen her last I had been (or at least seemed to be) a novice star trader, ferrying goods and passengers through the Local Group of planets but not yet turning much of a profit.

The Monument had been a beautiful sight, and so had Desmona. She'd hinted something about Zeath and seeing me again. In fact, though she never admitted to it, I wondered if she had recognized that I was an undercover operative for the Federated Worlds. Takes one to know one, I thought.

Here I was on Zeath and no Desmona. Could have been worse. I was lucky I still had a spaceship. That last orbital fracas off Stowe had come as a surprise. It had been our first battle, our first chance to test our weapons, our first chance to spill blood—and our first opportunity to see our own blood spilled. I thought of our marine contingent, decimated now and wondered what the captain of the opposing Morgan-class vessel had thought just before we blew him to the stars. I hoped he had found time for regrets.

Well, at least his cargo had come through intact. We were richer in money than we'd ever been. I stood up. Maybe Desmona would show up later, maybe not. I wouldn't be there. We had some supplies to buy, a new computer, a better hyperdrive, a new missile launcher and even a few good men to replace our losses. I lifted my glass silently amid the tumultous crowd and toasted missing friends.

I was a long way into the game, but the end wasn't yet in sight.

When you play *Universe 2* from Omnitrend, your first reaction is pure panic at the complexity of the simulation. It's like every space game you ever imagined, all rolled into one big, somewhat intimidating package. Yet, once entered into, the complex universe that the game portrays hangs together well as all the different variables of play mesh into a feeling of believability and challenge.

EX MOUSE—AD ASTRA

On three disks, *Universe 2* beckons you to the planets of the Local Cluster. These planets were colonized from Earth long ago when, off in the Tau Ceti region, an alien artifact had been found. The artifact proved to be a hyperspace booster with the ability to push ships thousands of light-years but, as the booster did not go along, travel to the Local Cluster from Earth was one-way.

The planets colonized in this manner split into two factions, the Federated Worlds (FW) and the United Democratic Planets (UDP). Then, about 40 years before the game begins, all contact with Earth and the Home Cluster ceased. What happened? No one knows. Perhaps Earth was destroyed, perhaps the booster was destroyed, maybe they only lost interest.

But, meanwhile, the player is given the role of a "retired" secret agent of the Federated Worlds in command of a trading ship. Although your own crew does not realize it, "retirement" is not really the operative word. Every time you go into low orbit about a planet there's a good possibility that the vidcomm will bring word of yet another secret mission. Even on a mission it's important to maintain your cover as a free trader.

When the game begins you find yourself approaching orbit around the planet of Axia. That planet has both a drydock (orbiting spacestation that sells supplies) and a starport on its surface.

At this point, figuring out what to do will involve a close reading of the over 100-page manual. In fact, it is impossible to even begin playing the game without a rough understanding of this manual. Fortunately, the manual, with but a few exceptions, is clear and orderly. However, *Universe 2* can hardly be described as intuitive on first playing. If you are not willing to study a game, then stay away. If, however, you are willing to invest the time in learning the system, the game does reward that time spent.

The main menu bar allows the player to switch from module to module of the game, each gaming subsection having its own menu structure, dialog boxes and supporting structure. By using pulldown menus, the player is able to go from station to station of the starship.

Your first job is to dock with the Axian "drydock" or spacestation. The player would first choose the Drives menu. Sub-light drives are chosen from the pulldown choices rather than the system-hopping Hyperwarp. The screen clears to show a large viewscreen area with various readouts below it.

At the "Solar" scale, the screen shows a view of Axia's solar system seen from above. A course to Axia is plotted by choosing that planet's name from a menu. Then the drives are started and the transfer orbit is plotted on-screen as the ship moves.

After arriving at Axia the ship and planet both are represented as the same dot in orbit around Hope. So, it's time to change scale via the menu to the "Planetary" choice and zoom in on all the action in orbit around Axia.

The viewscreen clears again and the solar system representation is replaced by a picture of Axia in the center of the screen and dots around the planet represent the various, orbiting objects. Going to the Objects menu and choosing Drydock shows via arrows both the spacestation and your own, now orbiting, spaceship. To dock involves first choosing an approach orbit and then a final docking maneuver.

Once docked, quitting the drives module takes you back to the main menu.

Now in drydock, you can buy the various devices that power, run and enhance your ship. The main menu in the drydock area allows for dozens of items to be purchased in the categories of supplies, parts, labor mart, gear and spacecraft.

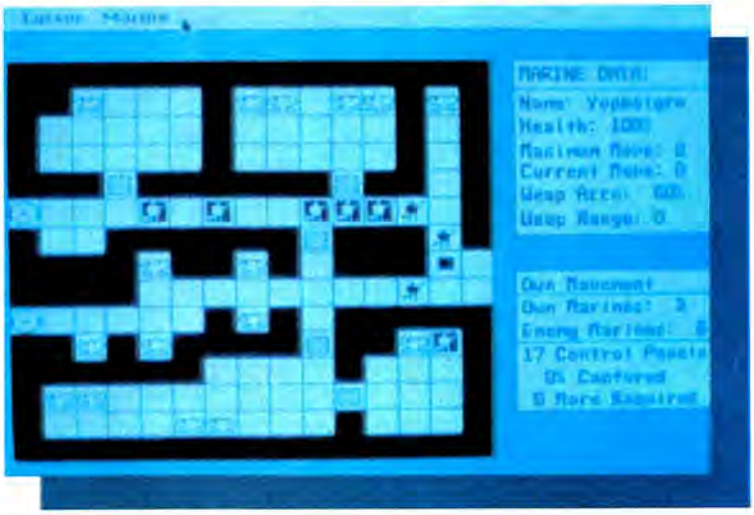
Later in the game you may want to buy better computers and more advanced weaponry. It's even possible to trade in your whole spaceship and buy a newer model (but only after having some monetary successes).

Any Port In A Storm

After you leave a planet's orbiting spacestation it is a good idea to shuttle down to the spaceport on the planet's surface (if the planet has such a facility). At the spaceport, as part of your cover as a galactic trader, you can buy various goods to resell on other planets, sell goods, pickup and disembark passengers. Also, many starports offer adventurous tours of their respective locales.

Load a space shuttle with enough energy to power itself down, a pilot from your crew, ore to exchange for credits, and yourself. The trip down is shown graphically on-screen as a dialog box counts down any damage points sustained from meteor strikes.

Every Starport is different. They all have some interesting sights to see as well as a transaction room. In the transaction room of a typical starport are hundreds of transaction booths —although you are only able to use one. Entering a transaction booth and activating it brings on-screen a flashing, visual cacophony of goods



Marines storm the bridge in combat sequence.

and their prices. At any time the player can decide to buy any of the goods being shown. But don't buy the first thing you see because the third or fourth time you see it, the price could be far lower.

What you buy also depends on your plans. All the planets have various cultural levels and needs detailed in the manual. What is pricey and rare on one world could be barbaric and silly on another. Studying the manual is the only way to become a canny trader.

Once you have your cargo and passengers you will want to do some exploring. Every world has some place to be. On Axia it's the Monument, on Zeath it's Ms. Wiz's and other worlds offer other amusing and not-so amusing scenarios.

Action in these adventure-style tours takes place using the game's text-parser, typing in commands and reading descriptions. The parser is not as sophisticated as some, but the various adventures are enjoyable and quite logical to figure out.

Done with the Starport, the captain will take off in the shuttle back to the ship. From that point on, if he elects to be a trader, this journeying from star to star and planet to planet will continue.

Other Lives, Other Worlds

Trading is not the only route to success, although it is integral to beginning play. But it is also possible to become either a space miner, a stellar buccaneer—or both.

As a space miner, the player uses resource scanners to find planets with mineable ores. If he finds Ore IV, that's as good as currency. Walking into a starport with a cargo of Ore IV is like walking into an Old West saloon with a pocketful of gold nuggets. Other ores may also be mined but will be exchanged for credits at different rates.

Mining involves sending down ore processors. And if the planet has inhabitants who don't want their ore "liberated" it may also involve the sending of marines via assault capsules.

Ship-to-ship combat is also possible for the truly devoted technoswashbuckler. As a loyal FW secret agent you're not advised to attack a fellow FW spacecraft but the UDP craft are fair game. Picture yourself like Errol Flynn and his crew of scruffy English seadogs attacking a fat, Spanish galleon and you've got the general idea.

Both ship-to-ship combat and mining assaults lead to very graphic combat screens. These screens show various individual squads and defenses as icons. The icons may be moved (in the case of marines) and targeted via mouse commands.

All in all, it's the well-rounded captain who's not afraid to experiment with different life-styles who will enjoy the game the most.

Mouse Overboard

There is one problem with *Universe 2* that will annoy most Mac owners. It does not completely follow the Macintosh interface. Many of the menus lead to dialog boxes that are not drawn using the QuickDraw ROM routines and which look "funny." There are also no moveable or sizeable windows in the game. As only one dialog box at a time can be on-screen this lack of windowing does make the game less playable than it might be on the Mac.

Also, there are faults in how the mouse is utilized. For example, when a list of parts is shown in a dialog box it appears like a normal list box. Clicking on a part will highlight that part's name. But to get to the dialog box that details what the part is requires more than double-clicking. In fact, double-clicking is not supported at all in the game. Instead, a menu selection, Detail, must be chosen.

On the other hand, the game makes far more use of the possibility of keyboard commands than any other game we've seen on the Macintosh. Every one of the many menu commands can also be called with a command-keystroke.

Universe 2 was designed to run on other computers such as the IBM PC and the Apple II. Although the user-interface was patterned after the Mac's (the other computers have optional mouse-support choices) it was not exactly followed.

This pan-machine interface will allow Omnitrend to support *Universe 2* through a system of on-line electronic bulletin board structures. Players with all different kinds of computers will be able to logon with their modems to talk about the game and exchange tips and hints. Indeed, it will even (according to Omnitrend) be possible for players to transmit their own game files for other players to use regardless of computer system.

The lack of a true Macintosh interface is a sore spot. But the user-interface they have designed is close enough to the Macintosh that most players will begin to feel at home after playing for a time. Still, because it does not follow the Macintosh interface we give it three MacUser Mice instead of the four it would otherwise receive. We leave it to each individual player to award, or not to award it, that extra mouse.

But all mice aside, if you have been hoping that someday the Macintosh would have available a real dyed-in-the-wool space game that is far more than an arcade—then you have been waiting for *Universe 2*. In all of SpaceTime, this is the most complex and still playable simulation of a future society that we have yet seen.

UNIVERSE 2: REPORT CARD

Overall Rating ***

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

Comments: Science fiction-themed espionage adventure in which the player explores and spies on different planets.
Best Feature: Finely-detailed scenario offering vast numbers of territories and mini-adventures to be explored.
Worst Feature: Ignores the Mac interface completely. Requires a lot of disk swapping, even with external drive, and forces players to sidewind through various sub-menus.
List Price: $69.95.
Published by Omnitrend, P.O. Box #3, West Simsbury, CT 06092. (203) 658-6917.

ALPHA-B

David Levy, chess grandmaster and expert on computer games,

PROGRAMMING A COMPUTER TO PLAY chess and other two-player strategy games is a lot more difficult than mastering the game itself. It requires a thorough understanding of game principles and the ability to program carefully constructed algorithms which search all the possible moves, evaluate playing positions and make the right decisions.

Many zero-sum (non-scoring) two-player games, such as chess, checkers, and reversi (Othello) can be represented in a computer program by a game tree. These trees have nodes to represent game positions or situations, and branches descending from the nodes to represent the legal moves which can be made from those positions. At the lower end of a branch there is a node representing the new position which has been created by making the corresponding move.

Growing the Tree

The program creates the game tree in a systematic manner by generating the possible legal moves from each node of the tree until it reaches a predetermined maximum depth. Each time a node is created, the program generates a list of legal moves from corresponding positions. Each legal move is represented by a new branch in the tree. At the other (bare) end of each branch the program affixes a new node which represents the position that would be achieved after making the move in question.

ENTERTAINMENT

ETA SOUP

shows how to program and use an Alpha-Beta search algorithm

by David Levy

ALPHA-BETA SOUP

When the maximum depth is reached (or the position satisfies some other predetermined set of criteria) the program tags the node as a terminal node. The program then assigns a numerical score to the terminal position. This score represents the merit of the position from the point of view of the player whose turn it is to move in the root position. The whole process is repeated until all the nodes on the tree have been designated as terminal.

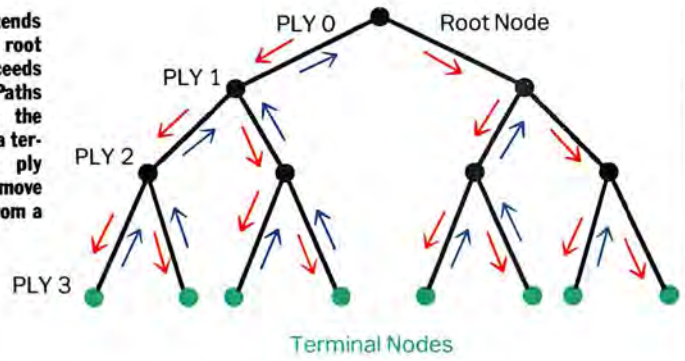


Fig. 1: The search extends downward from the root position, then proceeds from left to right. Paths are retraced when the program encounters a terminal node. Each ply represents a half-move (one player's move from a given position).

Searching the Tree

The program's task is to find the best move at the root of the tree, and in doing so it must assume that both players will choose their best possible move at each juncture. The search process takes place methodically, from left to right as represented in Figure 1.

The program starts at the root of the tree and examines the leftmost descendant node. At every node it then encounters, the program again examines the leftmost descendant node. If there are no more descendant nodes from a particular position, the program moves back up the tree to the "parent" of the current node. When there are no more descendant nodes to examine and no more parent nodes to return to, the program has traversed the entire tree. It then chooses the root move which leads to the position at ply-1 that offers the maximum backed-up score. This is the correct move assuming best possible play for both sides.

Evaluating Terminal Positions

As mentioned above, each terminal node is assigned a numerical score. A high (positive) score normally means that the position is very advantageous for the player in question, while a low (negative) score indicates a bad position. A zero score corresponds to a position in which the chances are equal.

The evaluation process is performed by a section of code known as an evaluation function or scoring function. A simple evaluation function for chess would begin with the traditional material values (pawn = 1, knight = 3, bishop = 3, rook = 5, queen = 9, king = 1000) then add 1/16th of a point for each attack on a square by the player in question, and a further 1/16th for each attack on a square which is in the central 16 squares. (see Figure 3) [More ideas on evaluation techniques for chess programs can be found in Levy (1984).]

Backing Up the Tree

To understand how the alpha-beta algorithm works, it is first useful to consider the simpler "Minimax" method. Here the nodes of the tree are examined in the order above. When all of the descendant nodes from a particular position have been assigned scores, the position itself is given a score. If the position is at odd ply, it is assigned the minimum of the scores of its descendant nodes. If the position is at even ply, the position is assigned the maximum of the scores of its descendants. When all the nodes on the tree have been assigned scores, the program chooses the root move which leads to the position at ply-1 with the maximum score.

This process enables the program to choose the maximum of the minimums of the maximums of the minimums—hence the name Minimax. It arrives at the correct decision, but only after generating and evaluating every single terminal node on the game tree. The purpose of the alpha-beta algorithm is to arrive at exactly the same conclusion but after performing only a tiny fraction of the work required by the Minimax method.

The alpha-beta algorithm is based on the concept that if one refutation can be found for a move, there is no need to look for an even stronger refutation. For example, if you can see that a particular move in chess will cost you your queen, you don't need to waste any time trying to find out if your opponent can enforce checkmate instead. The loss of the queen is a sufficient reason on its own to reject the variation being considered.

The principle difference between this method and the one described above is that at certain points the alpha-beta algorithm will be able to conclude: "I don't need to examine any of the remaining descendant nodes from this position because the node which I have just examined proves that this position cannot possibly lie on the variation which represents best play for both sides".

Rather than giving a traditional flow chart of the algorithm, we are reproducing a high-level language implementation of the Alpha-Beta search (see Figure 2) which is given by Campbell and Marsland (1983). You may convert this easily into a subroutine for your own game playing programs. [More elaborate high-level derivations and descriptions of the algorithm are given in the classic paper by Knuth and Moor (1975), and a traditional flow chart may be found in Whaland's excellent article (1979).]

How Effective Is the Algorithm?

If a game tree has an average of B branches from every non-terminal node, and if the depth of the tree is D ply, there will be a total of B^D terminal nodes on the tree. A Minimax search would require the evaluation of all these nodes. Using the Alpha-Beta algorithm under its optimal condi-

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THE MACINTOSH RESOURCE

tions, the program would need to examine only $2 \times \sqrt{B^D}$ nodes. For a chess playing program, searching to a depth of 4-ply with an average of 36 branches from each node, there are more than 1 million terminal positions. Under optimal conditions, the Alpha-Beta algorithm would reduce the number of terminal nodes examined to around 2000, or a savings of 99.8%. Newborn (1977) has shown that even if the moves in the game tree were randomly ordered, the Alpha-Beta algorithm is still extremely powerful. But no self-respecting program in the mid-1980's would search its game tree in a random manner since so much more can be achieved with good odering.

The ideal conditions for the algorithm exist when the moves from each position are sorted in descending order of merit. In this case, the program will eliminate from consideration the largest possible parts of the game tree. It is therefore useful, when generating the list of legal moves from a position, if the program can perform some sort of preliminary evaluation of the resulting positions and thereby sort the moves before growing the tree to any greater depth.

```
begin m, i, t, w: integer;

    if (terminal (p))                    p is a terminal node
        return (staticvalue (p));

    w = generate (p);                    generate successors
                                         of p, denoted p1,p2,
                                         p3, . . . pw;

    m = alpha;

    for i = 1 to w do

    begin t = -alphabeta(p1, -beta, -m);

        if (t > m)

        m = t;

        if (m ≥ beta)

        return (m);

    end

    return (m);

end
```

Fig. 2: A high-level language interpretation of the Alpha-Beta search algorithm.

Comments: terminal(p) returns the value true if p is a terminal position; staticvalue(p) returns an integer giving the evaluation of position p for the side to move; generate(p) generates all the successor nodes of p and returns the number (w) of successors.

Refining the Algorithm

Many chess programs incorporate a technique called "iterative deepening." The program first carries out a 1-ply search and orders the root moves exactly in accordance with the scores of terminal positions. It then performs a 2-ply search, examining the root moves in their new order, and if a new "best" move is discovered during the search process it is put at the top of the sorted list in the root position. The program then performs a 3-ply search, still examining root moves in their new order, and then a 4-ply search. When each iteration is finished, the program starts a new one provided it has more thinking time at its disposal. The idea is simply to ensure that when the deepest and most time-consuming part of the search begins, the ordering of the moves is as near optimal as possible.

Another trick for speeding up the search is the use of "killer" moves (Gillogly, 1972). When a move is found to refute a particular move or variation, the refutation move (called a killer) is put on a list. The next time the program examines a position at the same depth in the tree, it checks whether the last killer move employed at that depth is still legal, and if so it is examined first. For example, if the program notices that a certain move allows the capture of its queen, it will want to make sure that instead it makes a move which does not lose the queen. The quickest way to do this is to test every alternative move examined to see whether it succumbs to the same capture.

The algorithm may be further improved by making the assumption that the program's next move will not result in the gain or loss of more than, say, one pawn. This is a perfectly reasonable assumption to make in most chess positions, and to do so the program merely sets the initial values of alpha and beta to be one pawn either side of the root position, rather than ±infinity. If the assumption proves correct, the search will be considerably faster, since the algorithm tries to ignore any possibility of finding a score outside this "Alpha-Beta Window". If the assumption is false, the algorithm will indicate that the best play for both sides leads to a score outside the window, and the window itself may then be widened, either to ±infinity right away, or first to an incremental position, such as two pawns either side of the root position.

The quality of a two-player game program is largely a function of the power and speed of its search algorithm. By incorporating techniques such as those described here, you can develop very capable and intelligent game programs.

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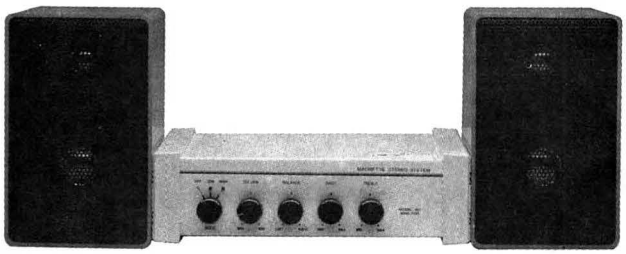

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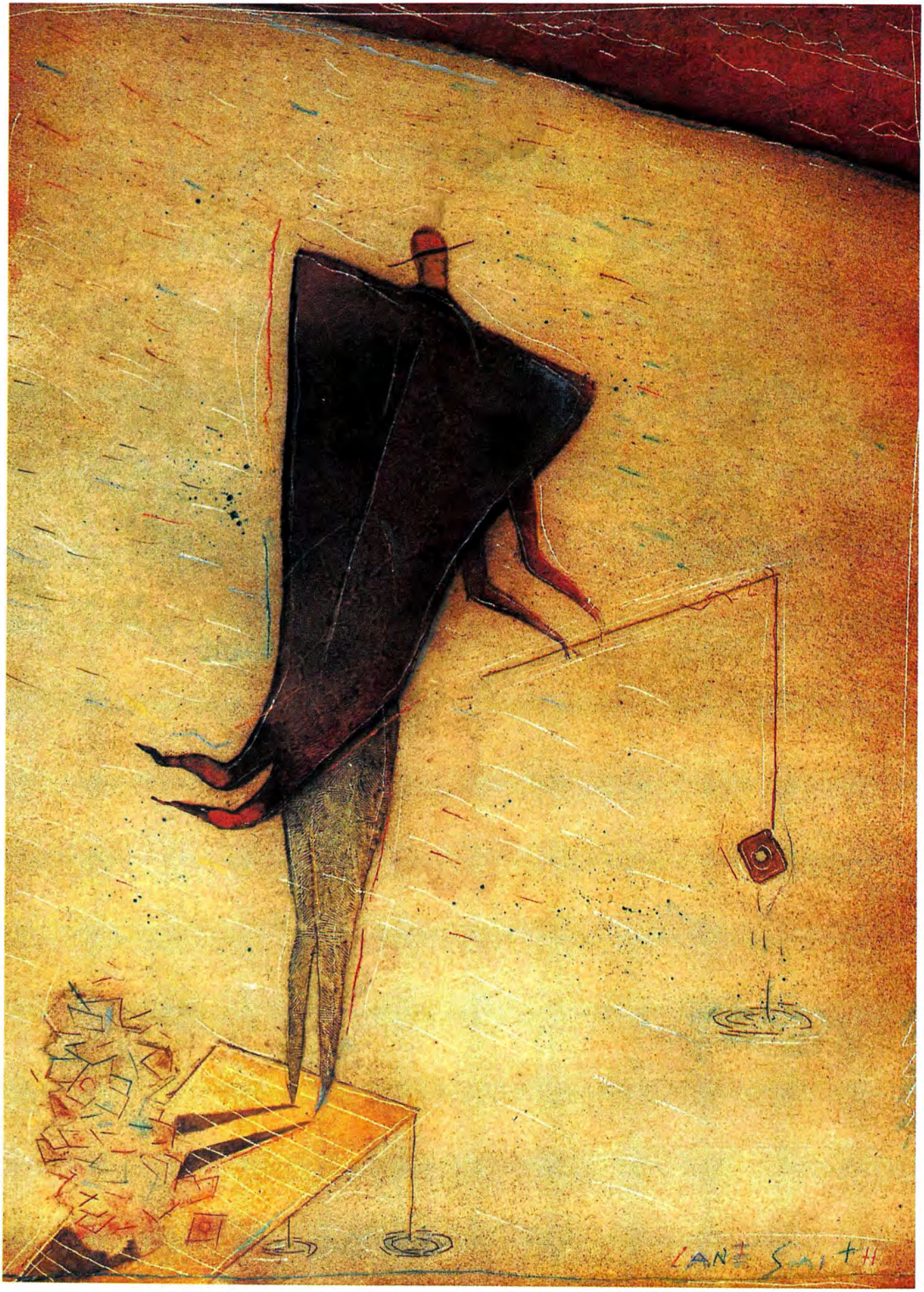


LANE SMITH

by Sharon Zardetto Aker

BASIC: A DIP INTO THE ROM

PART 3

It's often the little things that count most. And are the hardest to learn. Here's some useful odds and ends.

TRICKS OF THE TRADE. PROGRAMming isn't different from any other art (or science, depending on your viewpoint). The pros all have bags of tricks, many learned from experience, many picked up from friends and coworkers. Learning the small techniques necessary to give your work that polished professional look is often hard and sometimes even impossible. But we'll start you down the path by sharing some interesting and useful techniques.

INPUT$ Instead

If "INKEY$ loop" is used to pause a program until the user presses a key, the resulting routine usually looks like this:

```
loop:
   a$ = INKEY$
   IF a$ = "" GOTO loop
```

The INPUT$ function, normally used with file-handling routines, also reads the keyboard. The INKEY$ routine above can be replaced by:

```
a$ = INPUT$(1)
```

which causes the program to pause until a key is pressed. The identity of the key is stored in a$.

Be warned though that this technique disables event-trapping (MOUSE ON, MENU ON, and so on) while the computer is waiting at this line, so be careful where it is used.

Dynamic Variables

Once a variable is defined, it remains at its original value until redefined. Using the statement:

```
seconds = TIMER
```

defines *seconds* as equal to the number of seconds since midnight, as stored in the Mac's internal clock. Any time the variable *seconds* is used in a program, that same value will be called up.

If a "variable" whose value can change is needed—a "dynamic" as opposed to the normal "static" variable—use a variation of the DEF FN statement.

Usually, a function is defined using an argument with the function name:

```
DEF FN name (argument) = definition
```

However, DEF FN can also be used without an argument:

```
DEF FN seconds = TIMER
```

Using such a function in place of a simple variable will always give the

BASIC: A DIP INTO THE ROM, PART 3

current value of TIMER. Figure 1 shows a brief routine that demonstrates the difference between the two concepts.

Timing Things

The TIMER function keeps track of how many seconds have passed since midnight of whatever day the Mac thinks it currently is. If the date or time as shown on the Control panel desk accessory is off, the value TIMER returns will reflect that incorrect information. Usually, though, that doesn't matter because measured time is relative, the result of subtracting a start time from an end time. So comparing the value of TIMER at the beginning of a routine to its value at the end gives the number of seconds that have elapsed. To see fast the Mac is, try this routine.

start = **TIMER**
FOR n = 1 TO 50000: **NEXT**
ending = **TIMER**
PRINT ending-start

The result of this brief routine is 24, the number of seconds it takes for Mac to perform 50 thousand empty loops.

The obvious problem is that TIMER can measure only whole seconds. However, with the right address to PEEK and a little mathematical gymnastics, time can be measured time in "ticks": 60ths of a second.

The PEEK command lets users check the value stored in any memory address; the value held in address 365 is incremented by 1 every 60th of a second. It would be nice to just PEEK the value at the beginning and end of a routine, as with TIMER. Unfortunately, it isn't that simple, because after the value reaches 255, it resets to 0.

To obtain accurate measurements of any time period use a combination of a TIMER event trap and a PEEK. The program listed in Figure 2 will time, in fractions of a second, how much of a delay there is from one key press to the next. Here's what's happening:

• Define a function for the PEEK operation—the address is defined as a double-precision variable when working in binary BASIC.

• Check the starting value for the function.

• Set up an event trap: every second the computer jumps to the subroutine where *seconds* is incremented by 1.

• After the second key press, check the ending value for the PEEK operation and turn the TIMER trap off.

• Calculate the difference between the start and end values of the PEEK operation, taking the absolute value to allow for the "rollover"—if it has passed through zero, the end value may be lower than the starting value.

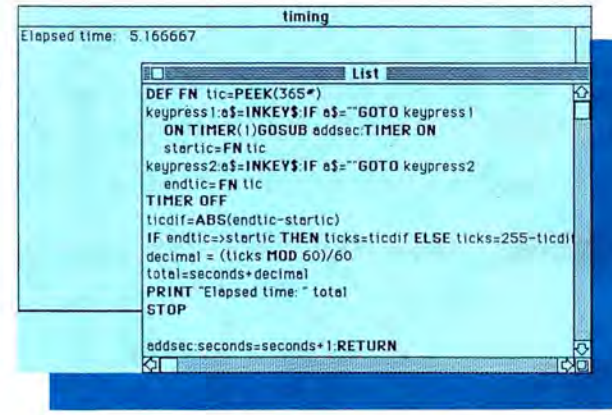
• Determine the number of ticks represented by the PEEK values. If there was no rollover, the number of ticks is the same as the difference between the PEEK values; if a rollover occurred, adjust for that.

• To convert the ticks to decimals, first use MOD 60 to get rid of any whole seconds left in the tick count—they'll be included in *seconds;* then, divide by 60. Why 60? Dividing by 6 converts the 60ths of a second decimal, but since the fractions are represented by integers at this point in the calculation ("8" means 8 tenths), a division by 10 is again necessary to position the decimal point correctly.

• Add the whole seconds and the decimal value together.

Fig. 1: Using DEF FN can give a "variable" whose value changes depending on when it is used.

Fig. 2: Measure times as small as sixtieths of a second with the right routine.



Fontfaces

Changing the appearance of text—font, size or style—is easily accomplished using ROM calls. TEXTFONT and TEXTSIZE are straightforward calls; with them merely use the number of the font, or the point size, that is wanted. TEXTFACE, however, is somewhat more interesting. It has basic arguments that stand for the six standard styles, but style numbers may be added together in order to combine the styles. The basic style numbers are:

Plain text 0
Bold 1
Italic 2
Underlined 4
Outlined 8
Shadow 16

Addition style numbers works like this: Say that your program requires a

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BASIC: A DIP INTO THE ROM, PART 3

TEXTFACE	TEXTMODE(0)	TEXTMODE(1)
0	Hello	Hello
1	**Hello**	**Hello**
2	*Hello*	*Hello*
3	***Hello***	***Hello***
4	Hello	Hello
5	**Hello**	**Hello**
6	*Hello*	*Hello*
7	***Hello***	***Hello***
8	Hello	Hello
9	**Hello**	**Hello**
10	*Hello*	*Hello*
11	***Hello***	***Hello***
12	Hello	Hello
13	**Hello**	**Hello**
14	*Hello*	*Hello*
15	***Hello***	***Hello***
16	Hello	Hello

Fig. 3: Some TEXTFACE calls have poor results unless TEXTMODE (1) is called first.

bold italic heading. Call it by using an argument of 3 with the TEXTFACE call. Three? Sure, Add the argument for Bold (1) to the argument for Italic (2). Similarly an argument of 13 will produce Bold, Underlined and Outlined (1+4+8) text. And an argument of 31 will call the not particularly useful combination of a Bold, Italic, Underlined, Outlined and Shadowed font.

However, working with TEXTFACE ROM calls don't always give the expected results. Take a good look at Figure 3. The surest solution is to always call TEXTMODE (1) before using FACEs 2, 8, or 16, or any FACE that includes one of those numbers (Figure 3).

Fun with Fonts

Figure 4 shows a screen from a "Silly Sentence Generator" that I wrote for my 5-year-old; notice that the letters on the screen don't belong to any font normally callable by BASIC.

When I write "educational" programs for my sons, I use a homemade font with letters that look more like the standard printed alphabet as taught in schools. I use two versions of the font: one is a monospaced (like Monaco) font to make things line up better on the screen for single-letter activities, while the other has proportional spacing for easier reading.

There are programs that let users design fonts easily (I use *Fontastic*, from Altsys Corp.). The real trick is not in designing new fonts, but setting them up so that they get into System files in a form accessible by BASIC.

BASIC's allowed TEXTFONT arguments range from 0 to 11. Normally the list looks like:

System font (Chicago) 0
Application font (Geneva) 1
New York 2
Geneva 3
Monaco 4
Venice 5
London 6
Athens 7
San Francisco 8
Toronto 9
Seattle 10
Cairo 11

This means that only 10 fonts (0 and 1 are repeats of later fonts) can be called by a BASIC program. Each and every font has an ID code embedded in it, and CALL arguments are directly related to ID numbers. So it seems that you are limited to only the standard system fonts. Or are you?

First, know and understand how font IDs work. Each font's basic ID is 128 times its CALL number, so New York's is 256, Monaco's is 512, and so on. Each size of each font stored in a System file has a unique ID that consists of the basic font ID plus the font size: New York 12, for instance, has an ID of 268.

If a special font is designed for use with BASIC, or one is imported from one of the commercial disks available, the ID codes can be changed by using Apple's *Resource Editor, Fontastic* or the *Font Manager* from Dreams of the Phoenix's *Quick & Dirty Utilities, Volume 1.*

Fontastic is a good choice for "fixing" ID numbers since it also allows fonts to be modified (or even designed from scratch) at the same time. *Fontastic* and *Font Manager* are simple to use. Simply assign the BASIC call number desired and the programs will do the rest of the math, leaving *Resource Editor,* which requires the user to calculate each and every value, safely unused.

Adjusting, modifying and generally "fixing" fonts can be addictive and once started, it's hard to stop. Since Chicago is used to create menus, buttons and dialog boxes, adding a few Option characters to it gives plenty of creative opportunities. Figure 5 shows a pictoral menu; the menu bar could even consist solely of pictures. Icon buttons and dialog boxes are also available through this technique.

By the way, have you been using a series of dashes to print that dashed line across a menu—and suffered frustration because it was always indented from the left edge? Use a single hyphen in the MENU statement (MENU 1,3,0,"-"), and make sure the item is *disabled* so it can't be selected.

More to Come

The next problem is how to get all these terrific "new" fonts to the printer . . . but that's one of next month's topics. Meanwhile, there's programming to do and fonts to be, well, played with.

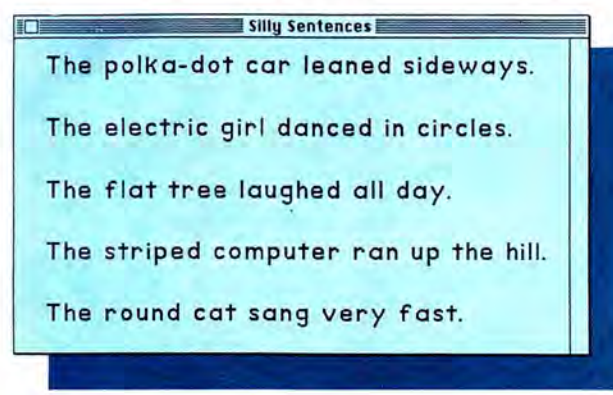

Fig. 4: Call fonts other than the standard ones as long as they are installed in the System and have the proper ID codes.

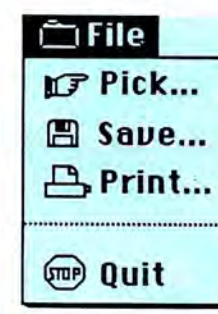

Fig. 5: Altering characters in the Chicago font with a font editor can lead to all icon menus. There is a special technique for adding that dividing line, too.

IT'S TAXTIME!

(continued from page 49)

enough so that you keep at it regularly. Most people get a real shock the first year they manage to keep good, complete records. They often discover that as a reward for their diligence they have many more deductions than they did previously. Not only do deductions no longer slip through the cracks, but lots of things start to be looked at from a tax reduction viewpoint. Better decisions are made, resulting in lower taxes.

And your Mac can be your best friend when the time to fill out the forms and schedules arrives. Tax preparation is easier than ever before, especially for people who aren't comfortable with numbers. Using one of the programs that prints out final forms means the only numbers you'll have to figure out are the dates when you sign the forms.

The tax preparation programs and packages currently available for the Mac will also save time and reduce the chances for mathematical errors in the final returns. The most common errors the IRS encounters on returns are mathematical errors. Mac users shouldn't be among those offenders any more.

Remember to check all these programs in January when their 1985 editions come out. There are sure to be improvements. And with the record keeping you just started, next year's taxes will almost be something to look forward to!

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THE GREAT LANGUAGE FACE-OFF

The experts debate which programming language does it all

Edited by Tracie Forman Hines

There are almost as many opinions as to which programming language is best for the Mac as there are programmers. We asked some of the top programmers in each language to tell us, in their own words, what makes their own choice best for the types of programs they create. Their comments, criticisms and low blows follow:

SHARON AKER ON BASIC

I know this article is one of four in this issue about programming languages, and that the other writers are singing the praises of FORTH, C and Pascal—they are probably also going for the throats of the other three. I don't want to be a cheerleader for BASIC: it doesn't need one. Neither do I want to knock the other languages—they're not all that vulnerable, anyway. Instead, how about a reasonable discussion of pros and cons?

First, an extremely brief look at the other languages:

The criticisms of C are usually limited to two factors: limited string-handling and limited file-handling capabilities. But the main consideration is—do you really need to use the language in which the Unix system was written, the one that took care of the computer graphics for "Star Trek II" and "Return of the Jedi?" C is a developer's language, not something "the rest of us" want to use to write a few games or applications for home use or shareware. And, if you want to create something for wider distribution, that's still possible with BASIC—but, more about that later.

MacPascal asks for more direct comparison with BASIC on the Mac. BASIC has two List windows (MacPascal has one) and up to four program windows in comparison with MacPascal's two. BASIC gives users independent volume control of the four sound channels; window-independent I/O; extensibility of the language (using machine language routines by name); interactive environmental commands; and Clipboard access.

DAVID SHANNON

THE GREAT LANGUAGE FACE OFF

Some of these features are more important than others, and you'd have to balance them against some of Pascal's pluses like automatic variable value display, bitwise operators and record defintion. (If you don't know what they are, you sure don't need them.)

On the whole, BASIC wins the decision.

Clipboard access is probably the most important of BASIC's features, because it lets you import and export items to and from BASIC. You can program an intricate design of precise mathematical proportions and paste it into *MacPaint;* even better, you can draw something in *MacPaint* and use it in your BASIC program. It's easy to get a Clipboard item into a BASIC window; once it's there, it can be manipulated like any BASIC graphic and it can also be saved as a disk file, so it is available later without using the Clipboard at all.

These "interactive environmental commands" involve Mac's menus, buttons, and edit fields. When you want a menu from BASIC, all you have to do is create it: you don't have to write a routine for pull-down, or the highlighting of the items as the mouse is dragged down the list. Items can be checked and unchecked as needed, and items or whole menus can be dimmed. All three types of buttons can be created, and, again, the initial darkening of a selected button is an automatic rather than a programmed function.

BASIC has always been scorned for its lack of speed, and the Mac version is no exception. So, you won't want to do an arcade game in BASIC—but that comes as no surprise. Still, the 2.1 version has significant speed improvements over 2.0. Looping through some simple assignment statements 1000 times, for instance, took 14 seconds in 2.0 and only half that in 2.1.

A BASIC compiler is being developed, which will provide any missing speed in program execution. In the meantime, if you want to get into development and distribution, there is a "run-only" version of BASIC available. You can't write or edit programs with it; what you can do is distribute it with your program so anyone with a Mac can run it.

Sharon Zardetto Aker has written extensively about BASIC in MacUser, other magazines and books.

BOB PEREZ ON C

You've decided to wallpaper your guest room. You know what color you want, you have an idea of which walls to paper, and you have a budget. If you're like most people you go to the Yellow Pages and turn to "Wallpaper Hangers." You discover that there are several outfits to choose from.

There's one outfit called "Pascal PaperHangers" and another called "Paper Assemblers" and, finally, a franchise of outfits bearing the name "C'ing Is Believing PaperHangers, Inc." You decide to call a representative from each one for an estimate.

You start by calling the Pascal PaperHangers and discover that there are only two of them. When one of them arrives at your house you learn that she's a student, trying to earn extra money on the side.

"We've never been really taken seriously, but we do some good work", she tells you.

The price quote's not bad, though—better than you'd expected. As you look her over, you notice that she's carrying one of those little cartoon posters that depicts a couple of men standing behind a counter, laughing uproariously, with the caption, "You want it WHEN??" Skeptically, you ask her how soon she can have the job done.

"No problem. Get it done in about three weeks."

"Three weeks??"

"And I'll need plenty of room to work. Can I move in?"

"Sorry," you say as you escort her to the door, "but I'm looking for something a little quicker and leaner than that."

"I can call in my friend Lisa to help. She's a lot faster, but she uses some expensive extra equipment that you'll have to provide."

You call Paper Assemblers next and again learn that there are only two to choose from. You ask one to come out for an estimate and are surprised to hear his knock at your door as you're hanging up the phone.

"Fast," you register.

"I can have the job done this

	C (many types)	Excel	Lisa Pascal	MacForth-1	MacForth-2	MacForth-3	MacPascal	MDS Assembler	Microsoft Basic	Neon	Rascal
Minimum Suggested System	512K, 2 drives	512K, 2 drives	MacXL + any Mac	128K, 1 drive	128K, 1 drive	Info not available	128K, 1 drive	128K	128K, 1 drive	512K	128K, 2 drives
Create Stand Alone Applications	✓		✓			✓		✓		✓	✓
Editor Features	✓	✓	✓				✓✓	✓	✓	✓	✓
Execution Speed	✓✓✓		✓✓	✓✓	✓✓	✓✓		✓✓✓✓		✓✓	✓✓
Interpreter		✓		✓	✓	✓	✓	*	✓	✓	
Full Mac Toolbox Built In	✓		✓		✓	✓		✓			✓
Technical Support, User Groups	✓	✓		✓	✓	✓			✓		✓
Link to Assembly Language	✓		✓		✓	✓		NA			
How easy is it to BOMB	•••		•••	•	•	Info not available		•••		••	•••
Debugging		✓✓✓		✓✓	✓✓	✓✓	✓✓✓✓✓	*	✓✓✓		
Best Use	Development	Business Templates	Development	Hacking, Exploring	Hacking, Exploring	Development	Learning to Program	Short Programs, Hacking	Short Programs	Hacking, Exploring	Hacking, Exploring
Applications	Desk Accessory	NA	128K, 1 drive	NA	NA	128K, 1 drive	NA	Desk Accessory	NA	128K, pushing it	Desk Accessory

* The debuggers (TMON, MacNosy, etc) are at the assembly language level. These programs act as a source level debugger for assembler.
Anyone doing development will need inside Mac.

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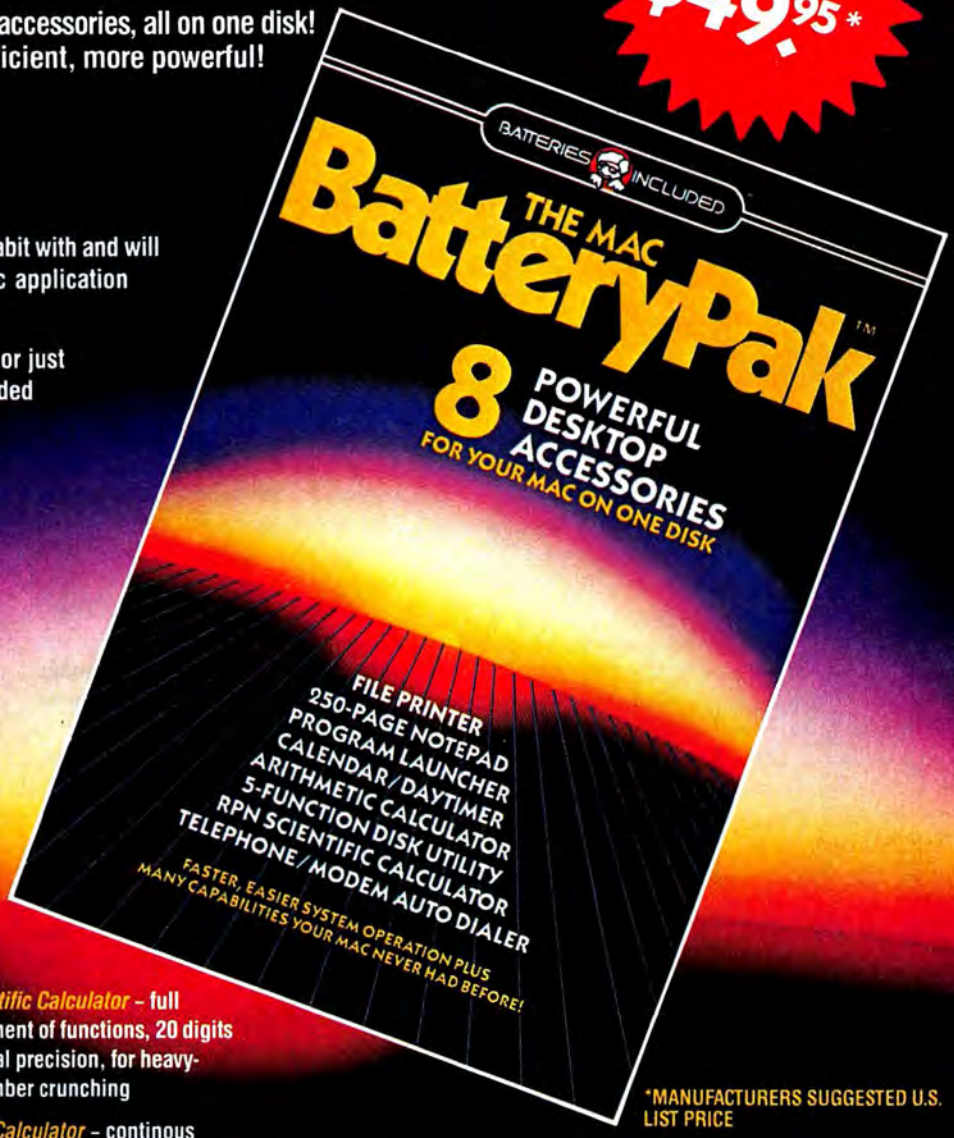

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THE GREAT LANGUAGE FACE OFF

afternoon," he tells you as you reach for your checkbook.

Amazed, you discover that his price quote is nearly identical to the Pascal PaperHangers'.

"What's the catch?"

"None whatsoever. We do the finest work in town at the best price, and unquestionably faster and more efficiently than any of our competitors. Just ask the Hertzfelds or the Atkinsons . . . we did their houses."

Impressed with the references, you hire him on the spot.

"Now, what sort of paper did you want?," he asks.

"Something simple and elegant, navy with subtle stripes, perhaps. Do you stock anything like that?"

"We don't carry anything in stock. You'll have to provide me with the exact specifications for the paper including thickness, weight, International Wallpaper Association-approved paper colors and patterns, as well as the exact amount of paper you'll be needing, give or take a square centimeter."

"Uh, international what?"

"I'll also want precise measurements of all areas to be papered, including corners, mouldings, closets, etc. Precise, to-scale drawings are okay, blueprints are preferred. You can use my equipment to mix the glue after you've determined how much you'll need. You will be sticking around, I take it, to give me step-by-step, error-free instructions detailing exactly how you want me to cut each piece and telling me exactly where each of the several hundred pieces of paper will go?"

"Uh, international what?"

Upon calling the C franchise, you find that there are at least six different franchise owners, with new ones being built all the time, including one being built by the company which built your house. You call the one nearest your home, expecting another disappointment.

"Well, our prices may be a little higher than the others', but you'll get much more value from us."

You're pleasantly surprised to learn that they can do the job just about as fast as Paper Assemblers.

"What do I have to tell you in order for you to do the job. I mean, how much detail do you need?"

"Well, just show us the kind of paper you want and where you want it, and we can figure out the details. Here's an illustrated sample book full of papers we've used before in other jobs. We can use any of these in your house."

"I'm surprised you guys are so fast. What about the really tight stuff, like mouldings? Are you as fast as Paper Assemblers?"

"Well, not quite that fast, but we think you'll find that for the majority of the job, our speed is more than adequate. Of course, if you really feel the need to speed up those tight spots, we can subcontract Paper Assemblers for just those parts of the job. We've worked with them in the past and we've always worked well together."

Oversimplified? Maybe. True? Definitely. For programming the Mac on the Mac, assembly language and C are the only reasonable choices for commercial applications. Assembly language is fine if you think in hex and are willing to write 10 to 20 lines of code for each little step your program takes. But the beauty of C is its elegance and brevity. With short, easy-to-remember keywords like "while" and "do", you can create fast, powerful programs that look and act just as you'd imagine them. Once you've learned the syntax (something you'll have to do with any language), C becomes an expressive language that you actually can think in.

When not practicing criminal law in California, Bob Perez is busy hacking on his Mac. His favorite language is C.

ROBERT WOODHEAD ON PASCAL

I program for a living, so my choice of programming language is a crucial one. I need a language that provides a great deal of built-in support to the programmer, so that I can spend more time figuring out what I want my program to do, and less time figuring out how to do it. It's also important that the language be portable, so that I can move my programs to other computers easily.

Over the years, I've used just about every popular computer language, and while there are several that fit my criteria, my choice is PASCAL.

Pascal is a *structured* programming language. As opposed to free form languages like FORTH, PASCAL requires the programmer to follow a set of guidelines and rules that results in programs that are clean and readable. In return for this bit of regimentation, PASCAL provides a bevy of features and conveniences that make a programmer's life a little easier.

PASCAL programs are built out of *procedures* and *functions*, which are (usually small) sub-programs that, when put together, form the entire program.

At the lowest level, PASCAL programs consist of a series of statements.

Simple statements are things like a simple expression (X: X 1) or an IF statement (IF X: 3 THEN Y: 2).

Compound statements are simply the word BEGIN followed by any number of statements (simple or complex!) and ending in the word END.

The trick comes when you realize that anywhere you can use a simple statement, you can use a compound statement. So, if in the case of the IF statement above, we also needed to set X to 0 if X was 3, then we could say:

```
IF X: 3 THEN
 BEGIN
   Y: 2;
   X: 0
END
```

The indentation of the example is a common PASCAL practice that helps make programs easier to read.

There are many other languages I could have chosen, and many reasons why I didn't. With tongue set firmly in cheek, let's take a look at the shortcomings of the other major programming languages:

BASIC: The name says it all - Beginners All-purpose Symbolic Instruction Code. BASIC programmers think that writing a checkbook balancing program is a major achievement, and for them, it is. It

took me years to unlearn the bad habits BASIC taught me. About the only good thing about BASIC is that it is better than FORTH, and that isn't saying much.

FORTRAN and COBOL: Both were championed by IBM, which explains why they are so mediocre and so successful. These are the languages you learn when you answer the ad on TV that says, "EZBI will train you in only six months of day classes or nine months of night classes to join the fast-paced computer field."

LISP: Good for doing artificial intelligence work, but it's a sure bet that if a key on a LISP programmer's keyboard is going to break, it will be one of the parentheses. LISP programmers are even more arrogant than PASCAL programmers, but fortunately they are usually kept securely locked up in universities, where they can do little harm.

C: C programmers have fallen from the true faith. While C has many of PASCAL's important features, it's too easy to take shortcuts in C. The only reason C is so popular on the Macintosh is because Apple, in its infinite wisdom, decided to test those who really want to program in PASCAL by requiring them to buy a Lisa.

FORTH: FORTH programmers are the scum of the earth. FORTH was designed for computers with 4K of RAM, where saving every bit was important, so FORTH code is even less readable than APL, which isn't readable at all! I have yet to meet a FORTH programmer that could read and understand his own code a month later. In fact, I have yet to meet a FORTH programmer who could read and understand English! People who use FORTH are masochists. People who implement FORTH are sadists.

Robert Woodhead's best-known program is Sir-Tech Software's Wizardry *series.*

NICK KARP ON FORTH

Forth programmers are often accused of worshipping their language. It's true. The more devout twitch and froth at the mere suggestion of alternative languages. While not among the rabid orthodox, I am a staunch believer in Forth as a development system for the Macintosh.

No one language can have the tools needed for every application. Forth doesn't try. Instead it has a minimal kernel which is extended as desired. Most of the Forth language is itself written in Forth, giving the programmer complete flexibility to customize the system. Forth is fast. It is so quick that it is the language of choice in many real-time applications. While not quite as brisk as compiled Pascal or C, it is many times speedier than *Microsoft BASIC* and *MacPascal,* and the ease with which assembly code can be introduced to time-critical operations makes Forth zippy enough for anything.

Source code, object code, and working environment are all extraordinarily compact. Whereas even mid-sized *Microsoft BASIC* or *MacPascal* programs are cumbersome or impossible on a 128K Mac, Forth works fine, leaving 55K of only slowly consumed programming space.

MacForth excels in the ease and flexibility of toolbox access. A lot of the work involved in digesting and using the ROM traps is done automatically (though the programmer can access traps at as low a level as desired). The language's documentation provides full templates and clear, comprehensive examples of the use of toolbox calls.

The support available to *MacForth* users is extraordinary. The language's early release and large base of users means a wealth of accumulated knowledge available to new programmers. Creative Solutions, the language's publisher, maintains a telephone hot-line and an active SIG on CompuServe. Hundreds of messages are posted weekly, as well as code fragments and full programs.

MacForth is priced comparably to other full development systems. Unlike many other Mac languages, however, it has no licensing fee. There is also an excellent public domain version of Forth. Mountain View Press (run by some of the most talented of the froth-lipped acolytes) sells versions of Forth for most microcomputers, but does not withhold distribution rights on the software or its very ample documentation. If you want a fully-functional development system on the cheap, zero is a hard price to beat. And since Mountain View's Forth is identical on many machines, source code is highly portable.

Forth compares favorably versus other languages on the Mac. Though long-term BASIC addicts continue to feed their habit with *Microsoft BASIC,* that language is slow, cannot produce stand-alone applications, and encourages the unstructured code characteristic of all BASIC's. Though well-organized programs can be and have been written in BASIC, the language is not conducive to it; the rare programmer who can do good work in BASIC will write great programs in anything else.

MacPascal's virgin purity is admirable from a distance, but sterile at serious production. Limited access to the ROM, the inability to produce stand-alone applications, and the sluggish pace of its interpreter render *MacPascal* unrewarding. Other versions of Pascal have their own problems: SoftTech's *UCSD Pascal* is burdened by documentation barely more intelligible than Linear Script 'A', and carries none-too-liberal licensing restrictions. *LisaPascal* requires a Lisa.

Of the languages discussed, C is closest to Forth in philosophy. Both give the programmer low level access to the machine. Both emphasize efficiency. Both are fast. Forth offers the rapid, interactive development process that C lacks, however. Forth also has extensions to handle complex data structures, and a vocabulary system that permits local functions, both problem areas for C.

Forth will appeal most to those who appreciate its versatility and minimal overhead, and who do not need their hands held by rigid typing or massive error-checking. Forth's speed, compactness, easy development cycle, high level of support, and extensibility recommend it for a wide range of programming tasks on the Mac.

Nick Karp heads the Forth SIG on NYMUG. He recently wrote the Public Domain game, Hustle, *in MacForth.*

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MUG LINE! MacUser's

BY DAISY GENOVESE

Need an answer to a programming question, a tip to get you further into your favorite game to help you solve it? If so, maybe a user group is the answer.

IMAGINE A WHOLE ROOM FULL OF Mac fanatics, where enthusiasm and energy are running high. Where are you? Most likely at a user group meeting. These meetings are a place to get questions answered, and to develop bonds with experienced Mac users and exchange tips and ideas.

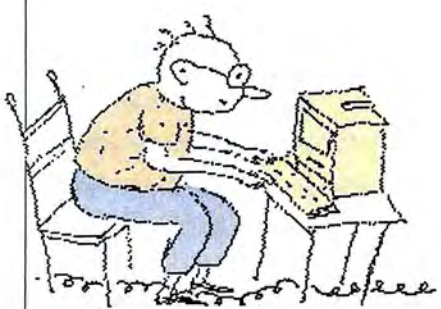
User groups are a source of information, forums for the distribution of up-to-the-minute news that ranges from the technical to the leisurely uses of the Macintosh. Whether you are a beginner or an expert, there are benefits to be had.

User groups are the greatest communication networking system available to Mac users. Every member has different ideas to offer, and the group is the avenue for sharing it with others. Because everyone is using the same computer there is a feeling of community, a camaraderie in getting the best use out of the Mac and its software.

User's group members get access to a public domain software library. Free software that many users never have had the opportunity to see is one of the biggest attractions in these groups. Most groups stock an extensive public domain software library.

There are Special Interest Groups (SIGs) that take care of individual fancies or special needs that members may have. SIGs for programming, business, languages, legal, beginners, novices, communications and graphics are among the many available to anyone interested in these areas. Not all SIGs are offered by all groups, but most groups will start new SIGs if there is sufficient interest.

Most user's groups generate a journal or newsletter, featuring user's



CATHERINE LAZURE

Guide to User Groups

group bulletins and news from the Macintosh community. Newsletters can be as small as 2 photocopied pages, or as large as 120 pages professionally produced. Some are highly acclaimed within the Macintosh community. Many groups swap newsletters among themselves so users can get an even better picture of what is going on.

Speakers are invited to groups to give demos on software and hardware. Electronic bulletin board systems (BBSs) are made available by most of the larger groups. Some groups also offer the benefits of group discounts for purchases at local dealers.

Joining a user's group usually requires filling out an application and paying a small fee. Membership fees range from "none" to $55 per year. When making a decision in joining a group, the user should keep in mind that the personality and ethos of user groups varies.

To find out where user's groups are, what they offer, how you can join, and how to expand your circle of Macintosh friends, check the list on the following pages. New groups pop up everyday. There are so many groups that, unfortunately, we didn't have the space to list them all.

Who knows? You may be about to find the niche in the Macintosh world you were looking for!

Canada

OTTAWA MAC USERS GROUP

32 Alder Cresent, Ottawa, Ontario K1B 4X6, Canada **Contact:** Ted & Susan Roseman **Telephone:** 613-824-4888 **Meeting day(s) and time:** 3rd Monday every month at 7:30PM **Group Services:** newsletter, public domain software library **Membership Fee:** $15 per year

VICTORIA MAC N TALK MACINTOSH USERS GROUP

PO Box 7075-D, Langford Post Office, Victoria, B.C., Canada **Contact:** Steve Lang **Telephone:** 604-478-2612 **Meeting day(s) and time:** 2nd Thursday every month at 7:30PM **Group Services:** programming, spreadsheet and graphics SIGs, demos of programs, 12—16 page newsletter, public domain software library **Membership Fee:** $40 per year

MidWest

CENTRAL MISSOURI APPLE USERS GROUP

209 Johnson, Warrensburg, MO 64093 **Contact:** John Hancock **Telephone:** 816-747-2477 **Meeting day(s) and time:** 3rd Saturday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** none

CLUBMAC MIDWEST

6904 Hopkins Road, Des Moines, IA 50322 **Contact:** William B. Davis Jr. **Telephone:** 515-276-2345 **Meeting day(s) and time:** 1st and 3rd Wednesday every month at 7:00PM **Group Services:** programming SIG, 10 page newsletter, public domain software library, 10% product discount at the Computer Mall, BBS **Membership Fee:** $25 per year

FERMILAB MACINTOSH USERS GROUP

Box 500, Batavia, IL 60510 **Contact:** John Urish **Telephone:** 312-840-3017 **Meeting day(s) and time:** 1st Wednesday every month at lunch time **Group Services:** newsletter (group is only for Fermilab employees) **Membership Fee:** none

KIRKSVILLE MACINTOSH USER GROUP

100 W. LaHarpe, Kirksville, MO 63501 **Contact:** Vic Treutel **Telephone:** 818-665-6093 **Meeting day(s) and time:** 3rd Tuesday every month at 7:30PM **Group Services:** public domain software library, newsletter **Membership Fee:** none

MACINTOSH COMPUTER USERS GROUP OF THE SANGAMON VALLEY

1540 W. Cook Street, Springfield, IL 62704 **Contact:** Mark Pence **Telephone:** 217-546-2782 **Meeting day(s) and time:** alternate between 1st Tuesday and Thursday every month at 7:00PM **Group Services:** 3—4 page newsletter, small public domain

MACUSER'S USER GROUP GUIDE

software library, discounts to members at local vendors **Membership Fee:** $18 per year

M.U.G

310 Woodlawn Dr., Mundeline, IL 60060 **Contact:** Jim Fiester or John Patrick Russell **Telephone:** 312-949-0266 **Meeting day(s) and time:** 3rd Saturday every month at 10:00AM **Group Services:** software development and technical SIGs, newsletter, public domain software library **Membership Fee:** $5 per year

NORTH PLATTE MAC USER GROUP DOCTORS OF MACOLOGY

PO Box 177, N. Platte, NE 69101 **Contact:** Kevin Pickett **Telephone:** 308-534-4645 or 308-534-8776 **Meeting day(s) and time:** once a month at 7:30PM, day changes **Group Services:** public domain software library **Membership Fee:** none

OKLAHOMA MACINTOSH USERS GROUP

1410 North 40th Street, Lawton, OK 73505 **Contact:** James F. Carpenter Jr. **Telephone:** 405-357-0313 **Meeting day(s) and time:** 1st and 3rd Tuesday every month at 7:00PM **Group Services:** programming SIG, public domain software library, 7—10 page newsletter, demos. Group is divided into 2 parts (Oklahoma Macintosh Users Group and Lawton Macintosh Users). Lawton meets 1st and 3rd Saturday every month at 10:00AM **Membership Fee:** $10 per year

SEMCO MAC PAC

PO Box 02426, Detroit, MI 48202 **Contact:** Dennis Krystowiak **Telephone:** 313-247-8286 **Meeting day(s) and time:** 2nd Sunday every month at 2:15PM **Group Services:** 12 page newsletter, BBS, public domain software library **Membership Fee:** $15 per year

TEAM MAC

1000 E. 18th Street, Yankton, SD 57078 **Contact:** Larry Hosmer **Telephone:** 605-665-9221 or Roger Deitrich at 605-665-7240 **Meeting day(s) and time:** 2nd Tuesday every month at 7:30PM **Group Services:** 6 page newsletter, public domain software library, speaker at meetings **Membership Fee:** none

NorthEast

AMATEUR COMPUTER GROUP OF NEW JERSEY MACINTOSH USERS GROUP

698 Magnolia Road, North Brunswick, NJ 08902 **Contact:** Keith Sproul **Telephone:** 201-821-4828 **Meeting day(s) and time:** 4th Friday every month at 7:00PM **Group Services:** developers SIG, public domain software library **Membership Fee:** to be a member just show up

BOSTON COMPUTER SOCIETY MACINTOSH USERS GROUP

1 Center Plaza, Boston, MA 02108 **Contact:** BCS office **Telephone:** 617-367-8080 **Meeting day(s) and time:** main meeting is 2nd Wednesday every month **Group Services:** technical, business, legal, satellite and beginner SIGs, public domain software library, 20 page newsletter, 100 page technical newsletter **Membership Fee:** $28 per year for entire society of 45 groups

THE DUSERS

The Macintosh Users Group of Drexel University, 21 Saddle Lane, Cherry Hill, NJ 08002 **Contact:** Steve Weintraut **Telephone:** 609-667-3131 **Meeting day(s) and time:** every day at any time **Group Services:** public domain software library, newsletter, tutorials, all teachers and students are Mac users and members **Membership Fee:** none

MICRONETWORKED APPLE USERS GROUP (MAUG)

PO Box 520, Bethpage, NY 11714 **Contact:** Neil L. Shapiro **Telephone:** 516-735-6924 **Meeting day(s) and time:** no meetings **Group Services:** Mac Users Group, Mac Developers Forum on CompuServe **Membership Fee:** none

M U D—MAC USERS OF DELAWARE

PO Box 161, Rockland, DE 19732 **Contact:** Sandy Cuccia, write c/o MUD—Mac Users of Delaware **Meeting day(s) and time:** 4th Monday every month at 7:00PM **Group Services:** public domain software library, discounts on Mac supplies, BBS, 4—6 page newsletter **Membership Fee:** $24 per year

MUGWUMP

Dept. of Computer Services, Cornell University, 401 Uris Hall, Ithaca, NY 14853 **Contact:** Chris Pelkie **Telephone:** 607-256-4981 X 205 **Meeting day(s) and time:** 1st Thursday every month from 3:30—5:00PM **Group Services:** SIGNUM for novice users (but anyone is welcomed), newsletter, public domain software library **Membership Fee:** no fee, unless you want newsletter, $5 plus postage

NEW YORK MAC USER GROUP (NYMUG)

PO Box 1143, Madison Square Station, New York, NY 10159 **Contact:** Steve Doochin **Telephone:** 212-473-YMUG **Meeting day(s) and time:** 1st Tuesday every month at 7:00PM **Group Services:** graphic, business and education SIGs, BBS, 20 page newsletter **Membership Fee:** $32 per year

PITTSBURGH APPLE BUSINESS USER GROUP

2325 Collins Road, Pittsburgh, PA 15235 **Contact:** Tom Neudecker **Telephone:** 412-241-8417 **Meeting day(s) and time:** 3rd Tuesday every month at 5:45PM **Group Services:** reviews of software and hardware, BBS, 6 page newsletter, devoted to business applications. Group consists of corporate Mac users from Fortune 100 & 500 corporations in the Pittsburgh area **Membership Fee:** $10 per year

SOUTH JERSEY MAC USERS GROUP

221 Timothy Court, Cherry Hill, NJ 08034 **Contact:** Larry Margulis **Telephone:** 609-428-4429 **Meeting day(s) and time:** 4th Friday every month at 7:30PM **Group Services:** review of software and hardware **Membership Fee:** none

YALE MACINTOSH USERS GROUP

Box 220, Yale Station, New Haven, CT 06520 **Contact:** write c/o Yale Macintosh Users Group **Meeting day(s) and time:** 1st Wednesday every month at 7:15PM **Group Services:** developer, Forth and business SIGs, 32 page newsletter, group purchases, large public domain software library **Membership Fee:** $20 1st year and $15 thereafter—$5 initiation fee—$15 per year

NorthWest

A.P.P.L.E CO-OP

290 Southwest 43rd Street, Renton, WA 98055 **Contact:** order desk **Telephone:** 206-251-5222 **Meeting day(s) and time:** 2nd Tuesday every month at 7:30PM **Group Services:** Mac (32 Little Apples) and Lisa SIGs, newsletter when requested, technical support hotline, software/hardware discounts, publish hardware/software catalog **Membership Fee:** $49 for 1st year, $26 renewal offer

BERKELEY MACINTOSH USERS GROUP

1442A Walnut Street, Suite #153, Berkeley, CA 04709 **Contact:** Raines Cohen **Telephone:** 415-849-9114 **Meeting day(s) and time:** every Thursday at 5:30PM **Group Services:** a tutorial developer SIG that meets every Wednesday at 5:30PM, 120 page newsletter **Membership Fee:** $15 per semester, $2 postage & handling for newsletter

EAST BAY MACINTOSH USER GROUP

5901 Broadway, Apt. #7, Oakland, CA 94618 **Contact:** Shepard Tamler **Telephone:** 415-653-5849 **Meeting day(s) and time:** 3rd Tuesday every month at 7:30PM **Group Services:** 6 page newsletter, public domain software library, use of a ThunderScan, discounts on blank disks. Group leans away from the technical. **Membership Fee:** $20 per year

EUGENE MACINTOSH USER GROUP

PO Box 10988, Eugene, OR 97440 **Contact:** club members **Telephone:** 503-683-5565 **Meeting day(s) and time:** 2nd Thursday every month at 7:30PM **Group Services:** graphics, developers and lawyers SIGs, 12 page newsletter, public domain software library, member discounts at various vendors **Membership Fee:** $15 per year

MAC USERS OF THE ROGUE VALLEY

502 NE Dean Drive, Grants Pass, OR 97526 **Contact:** Monte Pescador **Telephone:**

503-479-1541 **Meeting day(s) and time:** last Thursday every month at 7:00PM **Group Services:** public domain software library, newsletter, hardware rental **Membership Fee:** $20 per year, $10 out of state for newsletter only

MAC YAK

704 N. Water, Ellensburg, WA 98926 **Contact:** Doug Miles **Telephone:** 509-925-5280 **Meeting day(s) and time:** last Thursday every month at 7:30PM **Group Services:** public domain software library **Membership Fee:** $1 per meeting

MACINTOSH USER GROUP OF CORVALLIS

c/o Computer Store, 2015 NW Circle Blvd., Corvallis, OR 97330 **Contact:** write PO Box 1912, Albany, OR 97321 **Meeting day(s) and time:** last Thursday every month at 7:00PM **Group Services:** programming, business and legal SIGs, newsletter, public domain software library, disk of the month **Membership Fee:** $24 per year

MONTANA MAC

Heritage Inn, 1700 Fox Farm Rd., Great Falls, MT 59404 **Contact:** Al Donohue **Telephone:** 405-761-1900 **Meeting day(s) and time:** 2nd Monday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** $25 per year

NORTH COAST MAC USERS GROUP

503 Marylyn Circle, Petaluma, CA 94952 **Contact:** Marc Mott **Telephone:** 707-763-1124 **Meeting day(s) and time:** 3rd Wednesday every month at 7:30PM **Group Services:** public domain software library, 5 page newsletter, group concentrates on new users **Membership Fee:** $10 for individuals and $15 for families per year

PENINSULA LISA USERS GROUP

c/o Computer Connection, 214 California St., San Francisco, CA 94111 **Contact:** Joan Dickey **Telephone:** 415-761-1040 **Meeting day(s) and time:** 2nd Wednesday every month at 6:00PM **Group Services:** BBS, public domain software library **Membership Fee:** none

32 LITTLE APPLES

PO Box 536, Edmonds, WA 98020 **Contact:** Lisa or Mike Storrie-Lombardi **Telephone:** 206-778-3888 **Meeting day(s) and time:** 2nd Tuesday every month at 7:30PM **Group Services:** newsletter, you have to be a member of A.P.P.L.E National Group **Membership Fee:** none

SouthEast

CAPITOL CITY MUG

Rt. 2, Avenstoke Rd., Waddy, KY 40076 **Contact:** George Kent **Telephone:** 502-223-1508 **Meeting day(s) and time:** 2nd Tuesday every month at 7:00PM **Group Services:** business SIG, public domain software library, newsletter **Membership Fee:** $20 per year

CATAWBA VALLEY LISA/ MAC USER GROUP

Rt. 1, Box 540-191AB, Conover, NC 28613 **Contact:** Steve Baker **Telephone:** 704-256-7035 **Meeting day(s) and time:** 3rd Tuesday every month at 7:00PM **Group Services:** programming SIG, newsletter, public domain software library **Membership Fee:** $20 per year

MAC BUG

c/o Micro Systems, 911 Hethwood Blvd., Blacksburg,VA 24060 **Contact:** Donald Purdie **Telephone:** 703-382-3309 **Meeting day(s) and time:** 1st Monday every month at 7:30PM **Group Services:** public domain software library **Membership Fee:** $25 per year

MIAMI APPLE USERS GROUP MACINTOSH SIG

3250 Mary Street, Suite 305, Miami, FL 33133 **Contact:** Stanley Kuperstein **Telephone:** 305-448-4411 **Meeting day(s) and time:** once a month, usually on Wednesdays at 7:30PM **Group Services:** general meetings, technical help, demonstrations **Membership Fee:** $30 per year

NEW ORLEANS MACINTOSH USERS GROUP

2334 New York Street, New Orleans, LA 70122 **Contact:** James H. Abbott **Telephone:** 504-283-3819 **Meeting day(s) and time:** 1st and 3rd Tuesday every month at 7:00PM **Group Services:** languages, beginner, graphic and many more SIGs, discount with local dealers, 2 page newsletter **Membership Fee:** $24 per year

NORTH FLORIDA MACINTOSH USER GROUP

PO Box 10262, Jacksonville, FL 32247 **Contact:** Christopher Allen **Telephone:** 904-396-6952 **Meeting day(s) and time:** 2nd Monday every month at 7:00PM **Group Services:** public domain software library, group discounts **Membership Fee:** $10 initial fee—$15 per year

PENSACOLA APPLE USER GROUP

PO Box 15390, 8435 Lofton Drive, Pensacola, FL 32514 **Contact:** Gordon Theil **Telephone:** 904-478-1112 **Meeting day(s) and time:** 1st and 3rd Thursday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** $20 per year

PLAYGROUND MACINTOSH USERS GROUP

924 Holbrook, Ft. Walton Beach, FL 32548 **Contact:** E. Schattner **Telephone:** 904-862-4908 **Meeting day(s) and time:** 2nd Monday every month at 8:00PM **Group Services:** programming SIG, public domain software library, group purchases **Membership Fee:** none

SHENANDOAH MACINTOSH USERS GROUP

PO Box 36, Mt. Crawford, Mount Crawford, VA 22841 **Contact:** Michael Brodsky **Telephone:** 703-434-4563 **Meeting day(s) and time:** 2nd Tuesday every month at 7:00PM **Group Services:** 10 page newsletter, public domain software library, discounts on blank disks and other items, demos at meetings **Membership Fee:** $10 per year

WASHINGTON APPLE PI LTD SIG MAC

8227 Woodmont Avenue, Suite 201, Bethesda, MD 20814 **Contact:** write for application—c/o Washington Apple Pi Ltd SIG Mac **Meeting day(s) and time:** 1st Saturday every month at 9:00AM **Group Services:** Mac subject SIGs, hotline for questions, public domain software library, group purchase discounts, newsletter, extensive hard copy library **Membership Fee:** $27 1st year—$20 after first year

SouthWest

ASSOCIATION OF APPLE 32 USERS

PO Box 634, Santa Clara, CA 95052 **Contact:** Ken Silverman **Telephone:** 408-988-5594 **Meeting day(s) and time:** 2nd Saturday every month (call for time) **Group Services:** language SIGs, BBS, newsletter, public domain software library **Membership Fee:** $40—covers $20 initiation fee plus $20 for first year dues

BETA MACS

116 Pine Street, Henderson, TX 75652 **Contact:** John Biggs **Telephone:** 214-581-4993 **Meeting day(s) and time:** 2nd Tuesday every month at 7:00PM **Group Services:** publishing and business SIGs, newsletter, public domain software library **Membership Fee:** $15 per year

BOULDER MACINTOSH MEETING

NCAR, PO Box 3000, Boulder, CO 80307 **Contact:** Ron Johnson **Telephone:** 303-494-1494 **Meeting day(s) and time:** 2nd Thursday every month at 7:00PM **Group Services:** a loosely run group, BBS, speakers **Membership Fee:** none

CLUB MAC

735 Walnut, Boulder, CO 80302 **Contact:** Vickie Jackson **Telephone:** 303-449-5533 **Meeting day(s) and time:** no meetings **Group Services:** unlimited number of SIGs (develop SIGs on request), newsletter, BBS, free technical services, free member startup kit, communications programs, help line, extensive public domain software library **Membership Fee:** $35 per year

COFFEE MUG

Beem Systems Corp., 6420 Hillcroft, Suite 212, Houston,TX 77081 **Contact:** Brian Ebarb **Telephone:** 713-981-8098 **Meeting day(s) and time:** no meetings **Group Services:** developers, programmers and business SIGs, BBS on TymNet (online data service) **Membership Fee:** none

MACUSER'S USER GROUP GUIDE

EMPIRE MACINTOSH USER GROUP REDLAND SAN BERNARDINO

33418 Rosemond, Yucaipa, CA 92399 **Contact:** Jack D. Walker **Telephone:** 714-794-1151 **Meeting day(s) and time:** 2nd and 4th Tuesday for 6 months of the year at 7:00PM **Group Services:** beginners, novice, real estate and financial SIGs, public domain software library, newsletter **Membership Fee:** $15 for the 6 months

FAYETTEVILLE MACINTOSH USER GROUP

2313 Holly, Fayetteville, AR 72703 **Contact:** Clifford Goeke **Telephone:** 501-442-7040 **Meeting day(s) and time:** 2nd Tuesday every month at 7:00PM **Group Services:** MacForth SIG, public domain software library, shareware software, user help, Apple diagnostic machine available for members, Apple trained technicians **Membership Fee:** $12 per year

LOS ANGELES MACINTOSH GROUP

12021 Wilshire Blvd., #405, West Los Angeles, CA 90025 **Contact:** Eric Anderson **Telephone:** 213-392-5697 **Meeting day(s) and time:** changes **Group Services:** architecture, programming, education and film/TV SIGs, public domain software library, BBS, newsletter, discounts on products **Membership Fee:** $25 per year /$15 for students

THE MAC DESERT CONNECTION

PO Box 2714, Palm Springs, CA 92263 **Contact:** Melinda Barlow **Telephone:** 619-320-4003 **Meeting day(s) and time:** 3rd Monday every month at 6:30PM **Group Services:** novice SIG, newsletter, public domain software library **Membership Fee:** $30 per year

MAC EXPLORERS—PHOENIX

c/o APSCO, PO Box 21666 M/S 6079, Phoenix, AZ 85036 **Contact:** Doug Darke **Telephone:** 602-879-6015 **Meeting day(s) and time:** once a month, usually 1st Wednesday at 6:00PM (not a set day) **Group Services:** public domain software library, local dealer discounts, demos of software by dealers, routing of other group newsletters, working on a newsletter of their own, working on club-only BBS **Membership Fee:** none

MAC HOLLYWOOD

PO Box 27429, Los Angeles, CA 90027 **Contact:** write c/o Mac Hollywood **Meeting day(s) and time:** 3 monthly meetings, day and time changes **Group Services:** newsletter, public domain software library, 20—30% dealer discounts **Membership Fee:** $25 per year

MAC MANIA

3930 Market Street, Riverside, CA 92501 **Contact:** Ken Phillips **Telephone:** 714-788-4836 **Meeting day(s) and time:** 2nd and 4th Wednesday every month at 7:00PM **Group Services:** programming and developer SIGs, newsletter, public domain software library **Membership Fee:** $10 per year

MAC ORANGE

PO Box 2178, Huntington Beach, CA 92647 **Contact:** write c/o MacOrange **Meeting day(s) and time:** 3rd Wednesday every month at 7:30PM **Group Services:** unlimited number of SIGs, newsletter, public domain software library, volume discounts on software and hardware **Membership Fee:** $20 per year

MAC VALLEY USERS GROUP

PO Box 4297, Burbank, CA 91503-4297 **Contact:** Ruth Steuer **Telephone:** 818-848-1277 **Meeting day(s) and time:** day and time changes **Group Services:** public domain software library, group purchases, newsletter **Membership Fee:** $20 per year

MACINTOSH INTERNATIONAL APPLE CORPS

908 Georgia St., Santa Clara, CA 95050 **Contact:** group **Telephone:** 408-727-7652 **Meeting day(s) and time:** no meetings **Group Services:** newsletter, software discounts **Membership Fee:** $55 per year

MACLUB

Texas Tech University, Health Sciences Center, Dept. of Dermatology, Lubbock, TX 79430 **Contact:** Brian Stadig **Telephone:** 806-743-2488 **Meeting day(s) and time:** 3rd Thursday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** $25—one time fee

MACPACK

PO Box 834097, Richardson,TX 75083-4097 **Contact:** write Terry Girardot, c/o MacPack **Meeting day(s) and time:** 3rd Sunday every month at 6:30PM and 2nd Tuesday every month at 7:00PM **Group Services:** technical, programmers,communication and business SIGs, newsletter, public domain software library **Membership Fee:** $24 per year or $3 each meeting

MAUI MUG

PO Box 4103, Kahului, HI 96732 **Contact:** Beth Sherman **Telephone:** 808-572-0630 **Meeting day(s) and time:** 3rd Wednesday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** $5 per year

MID CITIES MAC GROUP

1209 Glenn, Ellis, TX 76039 **Contact:** Phil Brown **Telephone:** 817-540-4894 **Meeting day(s) and time:** 3rd Tuesday every month at 6:30PM **Group Services:** beginner and programmer SIGs, newsletter, public domain disk of the month for $7 **Membership Fee:** $15 per year

ORANGE APPLE COMPUTER CLUB

17661 Falkirk Lane, Huntington Beach, CA 92649 **Contact:** Robert Ameeti **Telephone:** 714-840-0048 **Meeting day(s) and time:** 1st Saturday every month at 7:30PM **Group Services:** modem, business and graphics SIGs, newsletter, public domain software library **Membership Fee:** $20 per year

ORIGINAL APPLE CORPS

15 Paloma Ave, Suite 24, Los Angeles, CA 90291 **Contact:** Fred Duffy **Telephone:** 213-296-5515 **Meeting day(s) and time:** 2nd Sunday every month **Group Services:** CPM, MAC and BASIC SIGs, disk of the month, 10 page newsletter, help group in expertise areas, group purchases, group encourages teaching **Membership Fee:** $30 per year, covers all family members

SAN DIEGO MAC USERS GROUP

PO Box 12561, La Jolla, CA 92037 **Contact:** Mari Hughes **Telephone:** 619-284-3760 **Meeting day(s) and time:** 1st Wednesday every month at 7:00PM **Group Services:** programming, novice, intermediate and business SIGs, newsletter, extensive public domain software library **Membership Fee:** $15 per year for newsletter

SANTA BARBARA USER GROUP

c/o Computer Terminal, 90 W. Highway 246, Buellton, CA 93427 **Contact:** Andrew Bang **Telephone:** 805-688-1713 **Meeting day(s) and time:** 1st Wednesday every month at 7:30PM **Group Services:** public domain software library, group discussion of new products **Membership Fee:** $12 one-time fee

SILICON MOUNTAIN MUG

6826 Mescalero Dr., Colorado Springs, CO 80915 **Contact:** Thomas Arneberg **Telephone:** 303-596-9256 **Meeting day(s) and time:** 2nd Monday every month at 7:00PM **Group Services:** newsletter, public domain software library **Membership Fee:** $10 per year

ST. MUG (SOUTH TEXAS MACINTOSH USERS GROUP)

317 Breezeway, Corpus Christi, TX 78404 **Contact:** Chuck Sphar **Telephone:** 512-888-4653 **Meeting day(s) and time:** 1st Tuesday every month at 7:30PM and 1st Saturday every month at 9:00AM **Group Services:** business and programming SIGs (not permanent at this time), public domain software library, 2 page newsletter, help sessions for new users **Membership Fee:** $10 per year

THE UNIVERSITY MACUSER GROUP (UMUG)

Box 320, The Texas Union, The University of Texas at Austin, Austin, TX 78713-7338 **Contact:** Richard Bouton **Telephone:** 512-471-5569 **Meeting day(s) and time:** changes each semester **Group Services:** word processing and educational application SIGs, 20 page newsletter, public domain software library, office with subscriptions to computer magazines, group is limited to University of Texas **Membership Fee:** $20 per year

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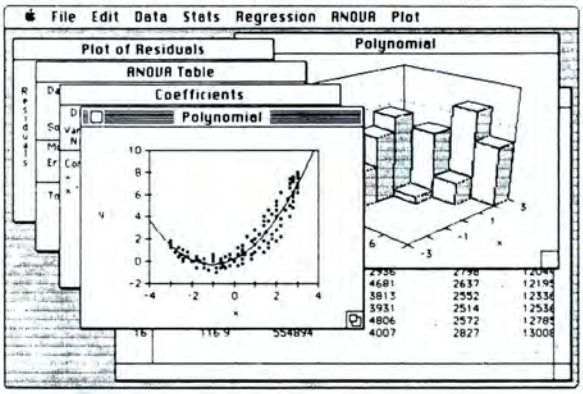

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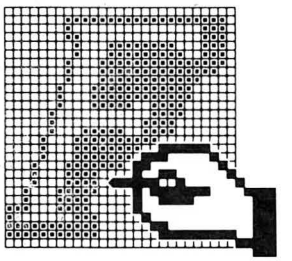

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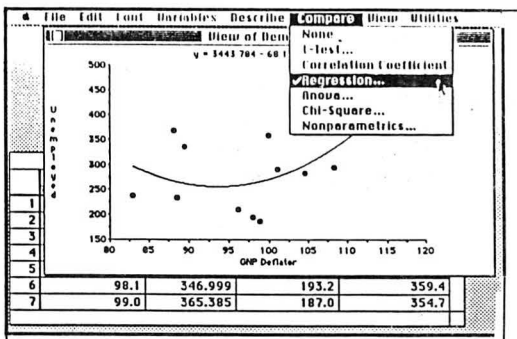

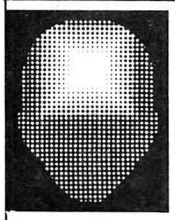

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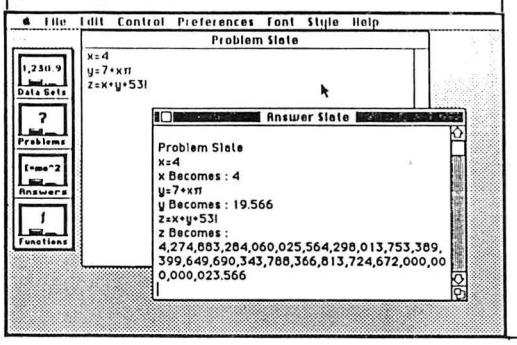

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ANSWERS FROM THE MAC TEAM

by Dan Cochran

Got a Mac problem? Something that you'd like explained? Something you can't find the answer for anywhere else? Apple's Dan Cochran will answer your questions every month in this space. When the questions are too tough for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!

Send your questions to Dan care of **MacUser,** *25 West 39th Street, New York, NY 10018. Dan will read all of your questions, but, unfortunately, he may not be able to answer individual queries. Watch this space for the pick of each month's Q & A crop.*

Sometime ago I purchased a Davong hard disk drive to use with my 512K Mac. This has been a happy marriage until I decided to buy a LaserWriter. Everything works OK as long as I use floppy disks but as soon as I try to print anything with the hard drive operating, the system gets as far as displaying "Looking for LaserWriter." It hangs at this point and the only way out is to shut the Mac off and reboot.

Since Davong is now out of business there is no technical support from them. My dealer has asked Apple for help but they have no suggestions.

I understand this was a problem with early Tecmar drives as well. It seems that the drivers for both the disk drive and printer use some of the same memory area.

Is it possible to relocate the drivers for either machine with the resource editor? If so could you describe the procedure? If not, do you know of anyone who might offer technical support for the Davong drive?

I really like both machines. I just need to get them to talk to each other.
Paul M. Williams
Blaine, Minnesota

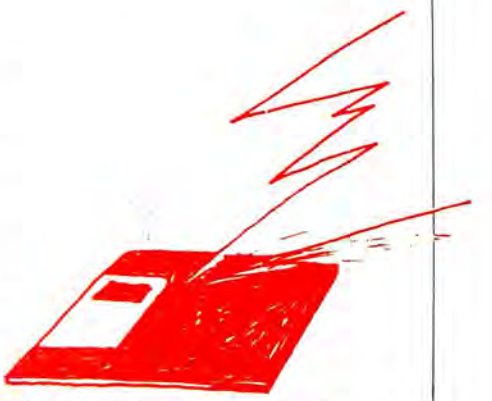
Your problem surprised me because our group regularly uses orphaned Davong hard drives on our own internal AppleTalk network without any problems. Ergo, a bit of investigative reporting seemed to be in order. Here's what I found.

We are using version 1.1 of the Davong software. I spoke with Tim Lundeen, former Software Development VP for Davong and he explained that very few Davong units would have shipped with this version of the software (completed in December 1984). Apparently this version of the Davong software will correct the problems you describe.

Tim also referred me to a company called Santa Clara Systems, who have purchased the exclusive manufacturing and technology rights to the Davong product line. I subsequently spoke with a very cooperative Darrell Evora, VP of Marketing for Santa Clara Systems, who will be sending you a copy of the version 1.1 software. Other Davong owners should contact Santa Clara Systems, 1610 Berryessa Road, San Jose, CA 95133, (408) 729-6700.

Can you help us settle an argument? Will using the plastic sleeves from 3½-inch disks damage data?

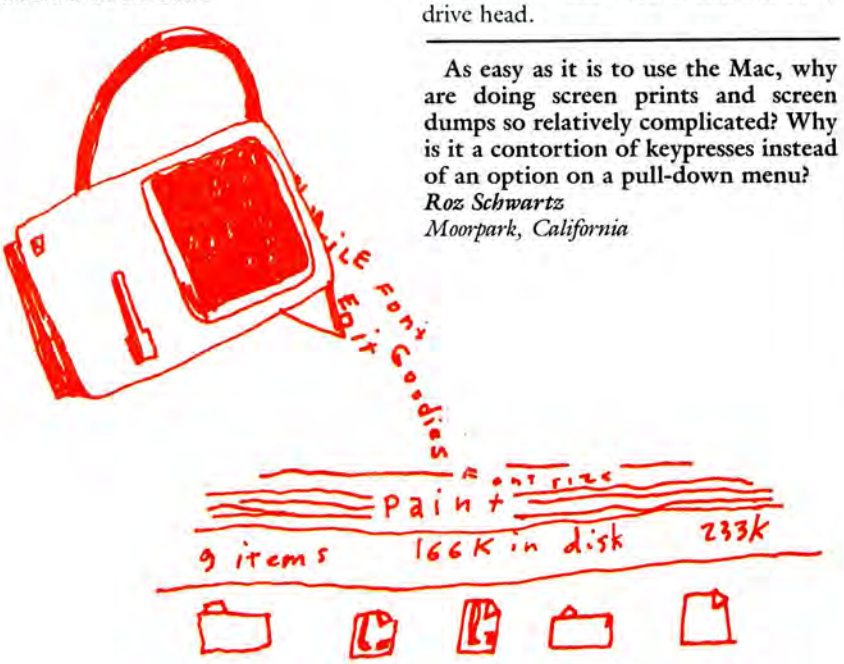
A friend says static build up from the sleeve can destroy magnetic info on the disk. I say it's highly unlikely, particularly when there is a paper "jacket" between the disk and the plastic.
Fred Showker
Shenandoah MUG News



I think I'll have to give you the nod in your argument and John Moon, Apple media guru, concurs. Your friend is, of course, right that static charge can destroy data on magnetic media. Open up the casing and discharge two electrodes on either side of the media and you'll see what I mean (this will obviously void your warranty on that particular piece of media!). This scenario is improbable in most people's day-to-day usage. In order for a static discharge to occur you'd have to have a fairly severe potential buildup between the plastic sleeve and the media. The paper sleeve between the media and plastic casing is there to help keep the media clean.

Of greater concern would be a potential buildup between the disk-drive head and the media itself. However, as soon as a disk is inserted in the drive, the chassis is grounded and it's highly unlikely that a static discharge would damage your data. The Sony media itself has properties that discourage potential difference buildup between the media oxide and the disk-drive head.

As easy as it is to use the Mac, why are doing screen prints and screen dumps so relatively complicated? Why is it a contortion of keypresses instead of an option on a pull-down menu?
Roz Schwartz
Moorpark, California



BLAIR THORNLEY

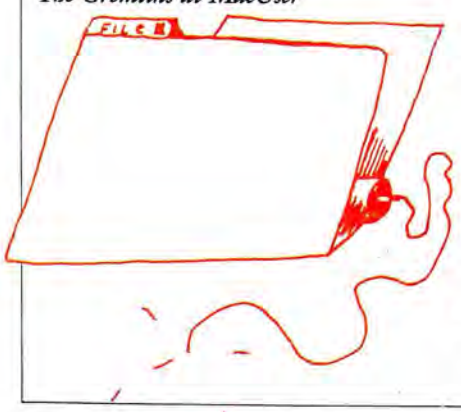
The ability to produce screen dumps and screen prints is context insensitive. That is, they can be accomplished regardless of the application you are using. *MacPaint* documents of what is on the screen are created by pressing the Command, Shift and 3 keys simultaneously; screen dumps are accomplished by pressing the Command, Shift and 4 keys. The Macintosh Operating System intercepts these keyboard events before the application gets them and does the appropriate thing.

We could have chosen to specify that all applications should include this function in their menus; however, some applications don't use menus (e.g., games), and screen-dumps/prints are performed relatively infrequently compared to other commands.

Another reason is that we often use screen dumps to document tutorials and manuals. Some of these screen dumps need to show a menu pulled down with the cursor highlighting a menu selection. That would be pretty difficult to do if you had to go to another menu to invoke a screen-dump command.

I do sympathize with you (I always forget the appropriate key sequences myself). So I'll offer a limited edition Macintosh T-shirt to the first reader who uploads a functional, bug-free Screen Dump/Print Desk Accessory to CompuServe's MAUG. Remember that you'll have to make sure that the desk accessory menu and the desk accessory itself don't get included in the screen dump or print.

Saving *MacWrite* 4.5 files as text only works fine. But when we try to launch them from the desktop we are told that "No application can be found to open this document." Yet other text files launch with two dialog boxes—one for formatting carriage returns and one that says the document is being converted and will reopen as Untitled. Why is this and can we do anything to fix it?
The Gremlins at MacUser



A text file created and saved in *MacWrite* will be assigned a creator ID of MACA. When you subsequently double-click on that text file icon, it will launch whatever version of *MacWrite* happens to be around.

The problem you describe could occur for two reasons:

(1) The creator ID of the text file is something other than MACA, either because the text file was produced in an application other than *MacWrite* or because *MacWrite* did not write out the ID correctly (highly unlikely), or

(2) *MacWrite* isn't on your disk or is buried in some volume the Finder doesn't know about.

One way to get a clue as to what's actually happening is to use *SetFile* or *Fedit* to examine the file's creator ID.

What are the significant differences between the current Macintosh file system and the new file system that accompanies the Macintosh HD20 Hard-Disk Drive?
Steve Bobker
MacUser

[This answer is provided by Bob Anders, a co-author of Inside Macintosh, *and currently working on future technical documentation.]*

The Macintosh File Manager, an integral part of the Macintosh ROM, was originally designed to handle relatively small volumes (400K-byte disks) containing a modest number of files (a few dozen per volume). All files on a volume were considered to be in a single file directory whose only structure consisted of a linear, unsorted list of file names with accompanying file information.

While effective for handling small volumes, this single directory structure proves inadequate for handling larger memory devices (several megabytes per volume) containing a large number of files (thousands per volume). When a call is made to open a file, for instance, an exhaustive, linear search must be made to find that file's directory entry. As the number of files on a volume increases, such a search becomes very time consuming. A major feature of the the HD-20 file system is the implementation of a hierarchical file directory, known as the file catalog, that can be used to speed up access to files.

In addition to allowing efficient access to large numbers of files, this hierarchical directory structure provides the Finder with the information needed to maintain the user's perceived hierarchy of folders containing files.

Since the standard version of the File Manager provides no additional directory structure, the desktop hierarchy is essen-

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tially an illusion maintained completely by the Finder (at considerable expense). The introduction of the file catalog greatly enhances the performance of the Finder by maintaining this hierarchical relationship of directories (folders) and files.

When trying to copy files with Finder Version 4.1, I sometimes get an alert that says "Some files couldn't be read and were skipped." What gives?
Ron Hazelwood
Wilmington, Delaware

Steve Capps, co-author of the Macintosh Finder, informs me that the most likely cause is that the files you are trying to copy either have some form of copy protection implemented or the actual media you are trying to copy from is defective. This alert box shouldn't appear unless one of these conditions exist. If this doesn't sound like your situation let me know and we'll do some additional investigation.

I need to use real long dashes and quotation marks that slant to the left and right in my work. My boss is rather picky about how her letters look. Is there any Mac word processor that will do that for me?
Bob Stern
Kansas City, Missouri

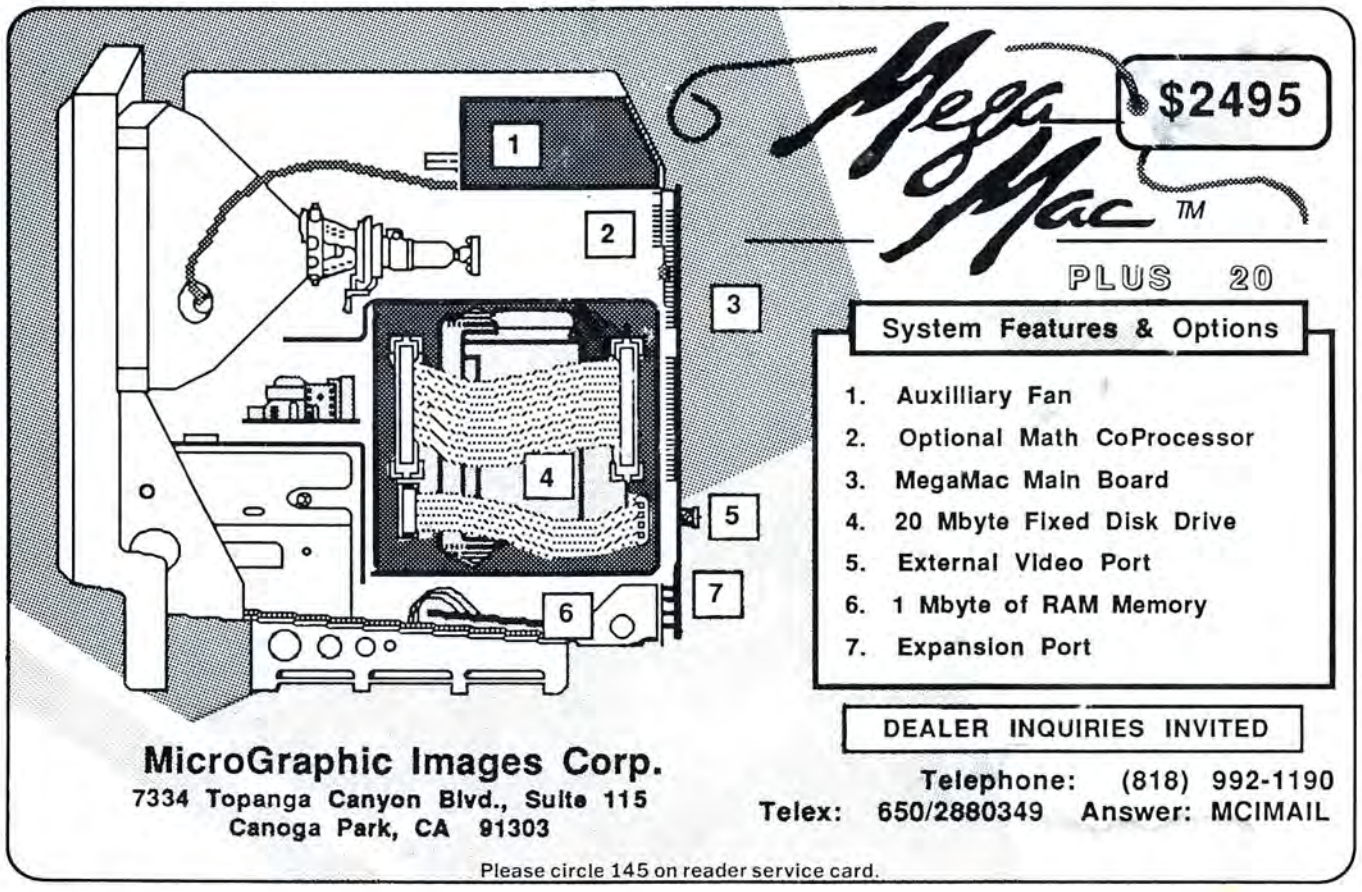
You're in luck. Any Mac word processor that doesn't remap the keyboard will do exactly what you require. That means that both *MacWrite* and *Microsoft Word* will be OK.

To get dashes other than the hyphen use the Option key. Pressing the Option key and the hyphen key simultaneously will give you an en dash that is almost twice as long as the hyphen. Pressing the Option, Shift and hyphen keys together gives you an even longer em dash. Here's what the dashes look like in the typeface **MacUser** is set in (- – —). Experiment to see how they look in the font you normally write in.

Directional (slanting to the left or right) quotation marks are also easy. Double quotes (normally used in the United States) can be accessed using the left bracket key (next to the P key) and the Option key. Pressing the left bracket and Option keys together sets opening quotes (") while pressing Option, Shift and left bracket sets closing quotes ("). Single quotes (used in the United Kingdom for quotes; inside of quotes in the U.S.) are set using the Option and right bracket keys. As with double quotes, Option and right bracket sets a single opening quote (') and Option, Shift and right bracket is the closing quotation mark (').

The keyboard has other "hidden" goodies. Try the Option and equals sign together and also the Option, Shift and equals sign.

BLAIR THORNLEY



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MUNCH! GOBBLE! CRUNCH!

(continued from page 63)
to view is a match. Unfortunately, it is not very clear how the hidden areas are uncovered again. This is done by selecting Match All from the Data menu. The use of the "?" as the query symbol may be a bit confusing, because other programs use the same symbol to indicate a Help function.

Crunch has an odd way of searching for items on more than one key. To find all the regions with sales above $50,000 but below $90,000, two query cells have to be used, with >$50,000 the value in one and <$90,000 in the other. Then both cells are selected and the query performed. The program then hides all values outside this range.

Over *Crunch*ing

As is true with other large spreadsheets, the usable area in *Crunch* is much smaller than its theoretical limits. In several tests on a 512K machine, *Crunch* consistently ran out of memory with about 7000 cells filled (with values of four to eleven digits in length). Although a memory indicator in the About *Crunch*. . . screen showed that some space was still available, operations could not be performed on more than one cell at a time.

As is also true with other spreadsheet programs, cells are not allotted space in memory until a value is entered. Once a cell has contained a value, however, it occupies memory even if the value is later removed. When a work area of 7000 cells has been completely emptied of values, the program indicates that the entire area is in use, and less than half the normal amount of memory remains for work. The best recommendation here is to avoid opening cells unless they are going to be used, and to organize the shape of the work area before entering values.

How fast does it *Crunch*?

From the beginning, working with *Crunch* elicits a strange feeling that the program is very slow. There is a noticeable hesitation as the program expands and closes windows, or opens menus, for example. The speed doesn't appear to be a problem, though, until *Crunch* tries to perform a lot of calculations. The strange feeling is confirmed as you wait for the results. The benchtests we ran may not be true to the way people normally work with a spreadsheet, but they give a quick, or slow, indication of a program's speed. And *Crunch* is slow, although it is actually a little faster at sorting a database than performing calculations. (See Figure 2)

As slow as it is in calculating, *Crunch* prints very quickly, even on the ImageWriter. The quality of graphs and worksheets is excellent.

Crunch will print out very nicely on the LaserWriter, but because the program is so large (246K) some changes have to be made to the disk. The system folder must be moved to another disk and the LaserWriter driver installed on the new system disk. There are then two *Crunch* disks, the program disk and the system disk. This problem does not arise when using a hard disk.

How Good is *Crunch*?

Crunch is basically a very good program, with a lot of versatility and excellent potential. There is a detailed Help section, accessible via the About *Crunch*. . . screen. The manual is clear, thorough and generally well written. One test of the quality of a manual is how quickly you can find something you need to know because you've been using the program without having opened the manual. *Crunch* excels in this respect, and is clear enough to take a novice *Crunch*er through the dangerous terrain of spreadsheets.

The icon bar is a very nice, and ultimately Mac-like feature. It is actually used quite often. But for people who don't want to use the icons, there is a complete range of menu selections available, and most menu choices have command key options for access from the keyboard as well.

Crunch's quirks are more annoying than truly troublesome, although the lack of an Undo command is a significant problem—especially if you've just sorted an area and gotten bizarre results because formulas were embedded in sorted cells. Sorting in the reverse order doesn't always clear up the problem, and you should be able to simply Undo the sort.

The current version of *Crunch* has no macro facility, although this ability is planned for the future. Macros are small programs that let you automate program actions that are used all the time. Selecting an area, setting it as a database, sorting it, then displaying it as a graph type could all be done with a single keystroke by creating a macro. While macros are the latest fad for power spreadsheet users, they may not be used all that much. *Crunch*'s lack of a macro facility is only an important drawback if macros are used and needed on a regular basis.

On the other hand, the program's speed is a drawback. For a program that bills itself as a power spreadsheet, it seems at times as though *Crunch* is having to fight its way through a mound of peanut butter.

CRUNCH REPORT CARD

Overall Rating: ***

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

Comments: Integrated spreadsheet, database, charting and simple word processing.

Best Feature: Icon bar for common actions simplifies basic operations.

Worst Feature: Slow when performing large numbers of calculations.

List price: $295.00. Requires 512K. Second drive or hard drive recommended.

Published by Paladin Software Corporation, 2895 Zanker Road, San Jose, CA 95134.

MINIFINDERS

Ever go into a computer store and wish you had someone you could trust tell you what the various programs and accessories do and how well they do it? These MiniFinders detail items chosen by the editors. Each one has been rated from one to five mice and there are even a few bomb icons scattered here and there. Red names indicate this month's additions. Next time you have to find products you can count on, count on MacUser*!*

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INTEGRATED SOFTWARE

Crunch is an icon-driven relational spreadsheet that features versatile charting and database capabilities. Strong financial logic, date and mathematical functions. Spreadsheets can be linked. The manual is clear and concisely written. Macros are not supported. $195. Paladin Software Corporation, 2895 Zanker Rd., San Jose, CA 95134.

Ensemble lets users create a database of words, pictures, and/or numbers; graph data; generate custom forms and link files for applications such as mail merge. Can perform calculations and math functions on data. Capacity limited by RAM and disk size. Easy to use, general database with graphics. $299.95. Hayden Software Corporation, 600 Suffolk St., Lowell, MA 01854.

Excel is THE power spreadsheet. Of the Mac, of the world. Has 256-column by 16,384-row capability. Features include a powerful easy to use macro function (with a recorder to make creation simple) and elaborate charting facilities. Can link multiple spreadsheets. 512K Mac and external drive required. $395. Microsoft, 10700 Northup Way, Bellevue, WA 98009.

Jazz provides well integrated modules for word processing, graphs, worksheets, databases and communications. Each of the modules is substantial. HotView, where data placed in any module automatically updates all other documents that use that data, is best feature. *Jazz* provides adequate coverage of most data and communications needs of small businesses. Requires 512K and external drive. $595. Lotus Development Corp., 55 Cambridge Parkway, Cambridge, MA 02142.

OverVUE is a power-packed relational database that has extensive sorting, summarizing and report generation capacity. Has macros and a charting function. Good manual. The program tries to anticipate every need conceivable in manipulating data. It can exchange files with a very wide variety of other programs (including IBM software). Be sure to get version 2.0. $295. ProVUE Development Corp., 222 22nd St., Huntington Beach, CA 92648.

Quartet, an integrated program that works on a 128K Mac, is 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, Inc., 15154 Stagg St., Van Nuys, CA 91405.

BUSINESS ACCOUNTING

Accountant's Choice is a powerful system built around a relational database, with functions accessed through menus. Standard reports are provided but most can be customized. Multiple journals allowed. Number of accounts determined by disk space. General Ledger can stand alone or integrate with other modules, not yet available. Requires 512K, printer and external drive. $695. Sierra Information Systems, Inc., 10201 Torre Ave., Cupertino, CA 95014.

AMS General Ledger is a ledger with five preset journals: Cash Disbursements, Receipts, General, Sales, and Purchases. Other modules are planned. Account ranges are preset. Menus and data entry are very straightforward. Flexible summary reports are built in but customer and vendor information is very minimal. $295. Applied Micro Solutions, PO Box 860, Fort Collins, CO 80522.

Gallery Finance is one-write system with General Ledger, Cash Disbursements, Payables and Receivables in single package. Additional modules to be added. Data entered in a journal automatically posted to appropriate record card. Excellent manual includes tutorial on basic accounting principles. Requires 512K, printer and external drive. $795. Micromax Systems, 6868 Nancy Ridge Dr., San Diego, CA 92121.

Hardisk is a complex integrated hard disk system (General Ledger, Receivables, Payables, Inventory, Payroll and Job Cost modules) that does not use Mac interface. Fully menu-driven. Manual detailed but complicated, with a few extra pages that make it Mac-specific. Flexible reporting, statements and account numbering; huge numbers of accounts, transactions, profit centers and detailed financial analysis. Requires hard disk and printer. $695 per module. Great Plains Software, Box 9739, Fargo, ND 58109.

Maccountant is a one-write system that provides only very basic ledger entries. Aging of accounts but no detailed records. System setup and operation are very rigid. Errors in simple operations and disk crashes make *Maccountant* somewhat unreliable. $275. Digital, Etc., 1749 14th St., Santa Monica, CA 90404.

MacOneWrite Cash Disbursements is simple, one-write check writing system. Limited functionality, but does allow some detailed information. Menus clear and easy to follow, but check printing can be confusing. Other modules planned. 512K and printer required. $245. Sierra, PO Box 485, Coarsegold, CA 93614.

Palantir is simple, inexpensive accounting system for a 128K, one drive Macintosh. Manual is clear and concise; program uses icons for common operations; menus are clear and detailed, with most operations easy to find and use. Flexible report formatting and a customized chart of accounts. But program is written in *Microsoft BASIC* so it is very slow. Nice design but the speed is intolerable. Requires *Microsoft BASIC*, printer. $145 per module. Palantir Software, 12777 Jones Road, Suite 100, Houston, TX 77070.

Rags to Riches integrated accounting modules (General Ledger and Accounts Receivable) use Mac interface to the hilt. Information entered in one window automatically transfers. Menu commands all have command keystrokes, as can accounts. No detailed or flexible reporting. Very easy to use, although it can be confusing to operate with several windows on screen. Requires 512K and printer. $295 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129.

Strictly Business General Ledger features clear, well-outlined set-up procedures and operations. Very flexible, with a custom chart of accounts; user-defined journals; up to 99 profit centers per company with up to 100 departments each; and customized reports. Program spools to printer and allows for printing of multiple documents. Built in *SmoothTalker* gives verbal error messages or entries, if desired. Other modules planned. Requires 512K, printer and external drive. $395. Future Design Software, 13681 Willamette Dr., Westminster, CA 92683.

PERSONAL FINANCE

Dollars & Sense is a bookkeeping program suitable for personal, home and small business use. 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. Reports can be generated and either viewed on-screen or printed. Has simple graphing and charting facilities. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301.

Electric Checkbook does exactly what the name says: keeps a running account of checkbook transactions, balances checkbook to bank statements, tracks bills, and even prints out checks. Provides detailed financial statements, calculates net worth, lists expenses by category, and tracks your personal cash flow. A good, full-featured program. $79.95. State of the Art, 3191-C Airport Loop, Costa Mesa, CA 92626.

Financial Cookbook provides nearly 3 dozen "recipes" to help users figure out financial formulas (i.e., mortgage costs at different percentage rates) by inputting pertinent data. Very user friendly. $44.95. Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403.

Financial Utilities Pack is a set of applications that allow users to figure annuities, compound and simple interest, depreciation and amortization. Simple and well documented. $69. Cognitive Software, PO Box 26948, Austin, TX 78755.

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.

The Home Accountant is a complete and easy to use financial system. Data entry is intuitive. All kinds of reports, including charts and checks, are easily generated. Entered data will update all relevant material. $150. Arrays, 11223 South Hindry Ave., Los Angeles, CA 90045.

MacInTax 1984 is an excellent tool for preparing tax forms. Simple to use, with good built-in help. Will prevent or avoid most common tax preparation errors. Can output IRS approved forms. $75 (for 1985 edition). SoftWeave, Suite C, Bldg. D, 400 Mobil Ave., Camarillo, CA 93010.

Tax-Prep 85 allows users to prepare their taxes on a series of incredibly detailed, linked *Multiplan* templates. A cross checker assures form to form consistency. Can output IRS approved forms. $99.95. Requires *Multiplan* and external drive. EZWare Corp., 17 Bryn Mawr Ave., Bala Cynwyd, PA 19004.

TaxWizard '84/85 does adequate tax preparation. Forms and schedules are linked. Easy to use, marred only by inability to produce final, IRS approved forms. $64.95. Gamma Productions, Inc., Suite 102, 817 10th St., Santa Monica, CA 90403.

DATABASES

Factfinder is a free-form information organizer (medium-duty database). Users enter data on to factsheets in any manner desired and select keywords. Searches are by name or keyword. Only one factsheet can be open at a time. Be sure to get version 1.1, 1.0 is too slow. Publisher offers 800 number telephone support. $149.95. Forethought, Inc., 1973 Landings Dr., Mountain View, CA 94943.

FileMaker is a nonrelational database that combines lots of power with ease of use. Data entry is extremely flexible and all items in all fields are indexed so that multiple criteria searches are both simple and fast. Calculation fields make the creation of invoices and similar documents a snap. $195. Forethought, Inc., 1973 Landings Dr., Mountain View, CA 94943.

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 Products, 3420 Ocean Park Boulevard, Santa Monica, CA 90405.

1stBase is a small, easy to use database that allows users to join or append files. It is the simplest, most accessible relational database available for the Mac. Supports calculated fields including statistical summaries such as averages. Integrates with *1stMerge* and *1stPort*. $195. DeskTop Software, 244 Wall St., Princeton, NJ 08540.

Helix is a relational database that makes extensive use of icons. Excels in database setup and forms generation. Setup is

MINIFINDERS

made easy by the adherance to the Mac interface. The manual is clear, thorough and well-indexed. Too complicated for most simple database applications, excellent where a relational database application is required. Supports multiple windows. Requires a 512K Mac and an external drive, but is slow on that configuration. $395. Odesta, 3186 Doolittle Dr., Northbrook, IL 60062.

The Housekeeper is a home inventory database. Users can keep track of assets for both tax and casualty purposes. Specialized reports are easily generated. $59.95. Aegis Development, Inc., Suite 277, 2210 Wilshire Blvd., Santa Monica, CA 90403.

I Know It's Here Somewhere stores information in a simple filing system. Ideal for hobbyists, general household or small business use. File formats are flexible and 31 samples are included. Can cross reference up to five files at a time; perform simple, wild card, or multiple key searches, and print selected items or whole files. $59.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

MacLion is a true relational database program. Can handle all databasing requirements although set up may require outside (consultant) help. Has a built-in programming language (LEO) and can be customized for any application. Reasonably flexible and easy to use once a database is set up. Can handle very large files as well as multiple files. $379. Computer Software Design, Inc., 1904 Wright Circle, Anaheim, CA 92806.

Microsoft File is a flexible data manager. Creates files for variety of data, including simple graphics. Files created in simple row/column format; reports, forms easily customized by moving field names around on a blank form. Sorting limited to approximately 5000 records on 128K Mac. Easy to use, well designed and full featured. $195. Microsoft, 10700 Northup Way, Bellevue, WA 98004.

Omnis 3 is a power database, featuring concurrent multiple file management. Can handle 24 files, 12 at a time, and is fully relational. Allows user to create custom environments including user-defined menus, commands and dialogs. Good report generation capability. Comes in single and multiple user versions. $495 (single user version). Organizational Software Corporation, 2655 Campus Drive, Suite 150, San Mateo, CA 94403.

pfs: File/Report provides two programs on one disk. *File* is a reliable, easy to use text database. Use it to design simple forms, maintain records, and, in concert with *Report*, generate reports in list format or as designed forms. This package was an early entry into the Mac marketplace and more powerful and versatile products are now available. $175. Software Publishing Corporation, 1901 Landings Drive, Mountain View, CA 94043.

NUMBER CRUNCHING

BEAMAC II is for civil engineers. It performs full graphic and numeric analyses of any statically determinate or indeterminate beam. Simple to use, good use of the Mac interface. Money-back guarantee. $295. Erez Anzel, 5T, 5800 Arlington Ave., Riverdale, NY 10471.

ClickOn Worksheet is a 50-row by 20-column spreadsheet that loads onto any System disk as a desk accessory. Small in size, it has remarkable capabilities for a desk accessory. It produces line, bar and pie charts within the worksheet automatically reflecting in charts. Especially useful when working in a word processor. $79.95. T/Maker Company, 2115 Landings Dr., Mountain View, CA 94043.

Multiplan, the first Mac product from someone other than Apple, is beginning to show age. Still a very capable basic spreadsheet with simple sorting, 63 columns by 255 rows, many built-in functions, other standard spreadsheet features. *Multiplan*'s best feature is the ability to link areas of one worksheet to portions of another. $199.95. Microsoft, 10700 Northup Way, Bellevue, WA 98004.

StatView is a high-powered statistical calculation package. Easily and efficiently handles all the common statistical techniques and tests and many uncommon ones. Has a user definable area as well. Easy to use and well documented. $199.95. BrainPower, Inc., Suite 250, 24009 Ventura Blvd., Calabasas, CA 91302.

StatWorks is another high-powered statistical calculation package. Simple to use, with a more than adequate range of tests available. Still has some bugs in its reporting functions. Not LaserWriter compatible. $125. Cricket Software, Suite 206, 3508 Market St., Philadelphia, PA 19104.

GRAPHICS & DESIGN

Art Grabber with Body Shop is a desk accessory that lets users browse *MacPaint* documents, selecting and copying as they choose. Selections can be larger than screen size. Also included are *MacPaint* documents and templates to allow the creation of people in your art. $49.95. Hayden Software Company, 600 Suffolk St., Lowell, MA 01853.

ClickArt Special Effects is a *MacPaint* enhancement desk accessory. Allows the user to distort, stretch, rotate and use perspective on *MacPaint* documents. A neccessary addition for all serious users of *MacPaint*. $49.95. T/Maker Company, 2115 Landings Drive, Mountain View, CA 94043.

DaVinci Building Blocks features predrawn blocks of brownstone, garden, and skyscraper portions that can be cut and pasted together to form landscape and architectural drawings. Fun for even non-pro's. $79.95. Hayden Software Company, 600 Suffolk St., Lowell, MA 01853.

DaVinci Commercial Interiors is a professional-level package of layout aids for interior designers and architects. Features predrawn office sections with furnishings included as a font. $199.95. Hayden Software Company, 600 Suffolk St., Lowell, MA 01853.

Fontastic is the best font editor now available for the Mac. Features a large editing window with a grid to make positioning easy. Select letters to edit by clicking on a matrix of the font. Allows scaling of existing fonts and previewing the various styles (italic, bold, shadow, underline and outline). $49.95. Altsys Corp., PO Box 865410, Plano, TX 75086.

Icon Switcher changes icons for applications and the documents they generate, permitting you to customize icons for personal work. New icons can be built pixel by pixel in the program or created in *MacPaint* and pasted in. Generally easy to use. $19.95. PBI Software, 1155B-H Chess Drive, Foster City, CA 94404.

Mac the Knife/Vol. 1: Treasury contains over 500 pieces of clip art in the form of *MacPaint* documents and two new fonts. The art is well organized and mostly high quality. The rulers, for on-screen measurement, and the disk label templates are particularly useful. If you only plan on getting one clip art disk this would be a good choice. $39. Miles Computing, Inc., Suite 212, 7136 Haskell Ave., Van Nuys, CA 91406.

Mac the Knife/Vol. 2: Fonts contains over two dozen new fonts. ★★★★★ Some of these (Paris and Stuttgart, for example are real stunners). If you do a lot of word processing try Paris 9 point (it's a big 9 point) as your text face and use High quality printing. Some fonts have single key fractions (½, ¼). $49. Miles Computing, Inc., Suite 212, 7136 Haskell Ave., Van Nuys, CA 91406.

MacDraft is the step beyond *MacDraw*. This object oriented drafting ★★★★★ program is packed with advanced features such as rotation, zooming, auto dimensioning and scales. A professional level product. $239. Innovative Data Design, Suite 8, 1975 Willow Pass Rd., Concord, CA 94520.

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. *MacPaint* documents can be pasted into *MacDraw* documents, but not manipulated. $195. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

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. Comes with Macs. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

MacPublisher is a tool for creating newsletters. Allows multiple ★★★ page issues. Layout is fairly easy but hard to do precisely. Runs on a 128K Mac but is slow; a 512K should be considered a requirement. Printer support, including LaserWriter, is good. Ideal for informal newsletters, not yet a professional tool. $99.95. Boston Software Publishers, Inc., 19 Ledge Hill Rd., Boston, MA 02132.

Microsoft Chart is the standard to be matched in presentation ★★★★★ graphics programs. Users 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, 10700 Northup Way, Bellevue, WA 98009.

PageMaker is an advanced layout and makeup program that can ★★★★ easily create multiple page documents. Output is optimized for LaserWriter. Good documentation. $495. Aldus Corporation, Suite 400, 616 First Ave., Seattle, WA 98104.

QuickPaint is a desk accessory that allows browsing through *MacPaint* documents. Selected portions of documents can be ★★★ expanded to fill the screen. Disk also includes a wealth of very high-quality clip art. $49.95. EnterSet, Inc., Suite 408, 410 Townsend St., San Francisco, CA 94107.

ReadySetGo is a page makeup program for 512K Macs. Users build ★★★★ up pages from blocks of text, graphics and rules. Resizing and scaling of blocks are supported. Each block can be precisely positioned. Text and art may be pasted in from another source or created within the program. Good LaserWriter support. $125. Manhattan Graphics, 163 Varick St., New York, NY 10013.

Slide Show Magician lets users easily design and show their own ★★★★ text and art presentations in the form of a slide show. The program accepts documents created in *MacWrite* and *MacPaint*, plus any clip-art style graphics helpers. Movielike special effects options include wipes, barn doors, venetian blinds, and fades. An option lets users install working buttons on the screen. $59.95. Magnum Software, Suite 337, 21115 Devonshire St., Chatsworth, CA 91311.

VideoWorks is a full-featured animation package. Professional ★★★★★ quality animations are easily accomplished using the tools provided. Features frame-by-frame and real-time modes. Comes with an art disk of predrawn images and *Art Grabber* (which allows the user to use any part of a *MacPaint* document in *VideoWorks*). Includes many special video and sound effects, excellent manual and many on-disk examples. $99.95. Hayden Software Company, 600 Suffolk St., Lowell, MA 01854.

COMMUNICATIONS

inTouch comes with its own communications command language ★★★★ able to do unattended sessions. Supports Xmodem, MacBinary and Kermit. Has a macro key function. Many sample set up documents and command language files provided. $145. Palantir Software, Suite 100, 12777 Jones Rd., Houston, TX 77070.

MacTerminal provides basic telecommunications and terminal ★★ emulation for the Mac user. Doesn't have macros nor any sort of auto redial/auto logon capability. Best for those needing faithful VT100 or IBM 3278 emulation—it is superb at those. $99. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

SmartCom II balances power and ease of use. Capable of unattend- ★★★★★ ed operation and has a very powerful command language. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived both to the printer and to disk. Lacks keyboard macros. $149. Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092.

Telescape is the power telecommunicator's terminal program. Can ★★★ be configured to emulate any terminal and has all the advanced features (except unattended operation). Unfortunately the documentation does not adequately explain the many features and much of the power will be unavailable to all but the pros (who can figure it out on their own). $125. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.

VersaTerm features include DEC VT100 and VT52, Tektronix 4014 ★★★★★ graphics terminal and Data General DG200 emulation. Supports Xmodem and MacTerminal Xmodem protocols and MacBinary. *VersaTerm* is easy to use, well documented. $99. Peripherals, Supplies & Computers, Inc., 2232 Perkiomen Ave., Perkiomen, PA 19606.

1stPort is a data transfer program that is more than adequate as a ★★★ simple terminal emulator. It can handle many document formats, including SYLK, DIF, *1stBase* and plain ASCII, and has a built-in text editor, making this program easy to use with remote message and electronic mail services. $95. DeskTop Software Corp., 244 Wall St., Princeton, NJ 08540.

WORD PROCESSING

1stMerge is a mail-merge program that integrates data files with ★★★★ documents after a blueprint for documents has been designed. Features on-screen help, and the ability to add and search records. Requires *MacWrite*. $95. DeskTop Software Corp., 244 Wall St., Princeton, NJ 08540.

Hayden: Speller checks spelling errors in *MacWrite*, and *Word* ★★★★ documents against a dictionary of 20,000 common words

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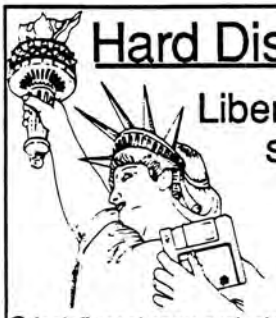

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and user-created dictionary. Reasonably fast and quite simple to use. Dictionary is small and words cannot be viewed in context while correcting. $79.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

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 2139, New York, NY 10116.
★★★★★

MacSpellRight is a spelling checker that works with *MacWrite* 4.5 (not 2.2!). Allows the user to create custom dictionaries. Has some bugs. Works from within *MacWrite*. $89. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.
★★

MacWrite is the basic word processor that comes with the Mac. While it doesn't have every bell and whistle, it is more than adequate for most users. Features of the current version (4.5) include document size limited by disk space, global search and replace, page numbers indicated in the scroll bar and excellent LaserWriter compatability. Easy to use and well documented. Free, except for consortium students. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.
★★★★

Microsoft Word is a power word processor for the Mac. It has just about every feature your heart could desire. Supports keyboard commands as well as the mouse. Does mail merge and multicolumn text. And it's easy to use. Integrates with the rest of the Microsoft line. $195. Microsoft, 10700 Northup Way, Bellevue, WA 98009.
★★★★

QuickWord is a word processing accessory that adds sophisticated glossaries to *MacWrite*. Simple to install and use, yet powerful and efficient. $49.95. EnterSet, Inc., Suite 408, 410 Townsend St., San Francisco, CA 94107.
★★★★

ORGANIZATIONAL TOOLS

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. Has a very clear manual. $125. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.
★★★

ods/Consultant is a program that lets users organize ideas and helps in thinking through and solving problems. Easy to use thanks to extensive use of icons and on-screen help. This program introduces some low-level AI (artificial intelligence) concepts. $200. Organization Development Software, Inc., Suite 535, 1011 E. Touhy Ave., Des Plaines, IL 60018.
★★★

ThinkTank 128 is a basic outline processor. The interface is not the standard Mac interface, but is simple to use and efficient. The program is speedy. Printer support is limited, but files can be printed in a draft-style mode. Only for 128K owners; 512K owners should get *ThinkTank* 512 . $145. Living VideoText, Inc., 2432 Charleston Rd., Mountain View, CA 94043.
★★★

ThinkTank 512 is a very fast and intuitive organizational tool that can handle word processing chores in the midst of structuring a plan or outline. Full keyboard control (without mouse) is possible. Can store and paste graphics into outlines. Slide show features allows high quality presentations to be created. Good report formatting and printing capability. $245. Living VideoText, Inc., 2432 Charleston Rd., Mountain View, CA 94043.
★★★★

DESK MANAGERS

Battery Pak is a set of eight 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. Comes with an installer and the best manual we've seen in a long time. Be sure to get version 1.1. $49.95. Batteries Included, 30 Mural St., Richmond Hill, Ontario, L4B 1B5, Canada.
★★★★★

Day Keeper Calendar is the ultimate computerized appointment and notebook, the *Day Runner* of computers. Holds a year's worth of information in each calendar document (you can have several). Starting from the basic display of a whole month you can easily see details of days and individual entries of many sorts. If you need a computerized appointment book, this is it. $39.95. Dreams of the Phoenix, Inc., PO Box 10273, Jacksonville, FL 32247.
★★★★

The Desk Organizer is a free-form desk management system based on card index style files. Has many features including alarms, report generation and calculation. The Meta feature lets the program run along with another application. $99. Conceptual Instruments, 269 W. Walnut St., Philadelphia, PA 19144.
★★★★

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, Inc., 85 Merrimac St., Boston MA 02114.
★★★

MacOffix combines many of the simple and necessary office functions in one easy-to-use package. Features include simple word processing, forms design, report generation and filing. Good design nearly makes the manual unnecessary. $149. Emerging Technology Consultants, Inc., 1877 Broadway, Boulder, CO 80302.
★★★★

My Office lets you handle your files and papers in much the same way you did before you got a computer. Now your folders and piles are all in the computer and you can easily find anything, print anything or even print everything. Excellent use of graphic symbols makes this program the easiest to use of its type. $129.95. DataPak Software, 14011 Ventura Blvd., Sherman Oaks, CA 91423.
★★★★

Quickset is a set of five desk management and organizational tools that can be used as desk accessories or applications. Modular design allows users to add only selected items to System disks. Functions include note filer, card filer, calendar, financial and statistical calculators and a file encryptor. $49.95. EnterSet, Inc., 410 Townsend St., San Francisco, CA 94107.
★★★

Sidekick is a set of desk organization applications and accessories. Functions include phone dialer and logger, desk accessory terminal, calculator, clock, editor and more. When required resource files are included, modules take up a lot of disk space, and are best used with a hard disk. All work well. $84.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066.
★★★★

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 Software, Suite 201, 11212 Dalby Pl., San Diego, CA 92126.
★★★★★

MINIFINDERS

Copy II Mac was one of the first back-up programs available for the ★★★★★ Mac. Does efficient sector and bit copies and in its latest version can back-up virtually all Mac software. Features graphic displays of copy progress. Comes with *MacTools*, a multiuse utility that can recover many damaged files. $39.95. Central Point Software, Inc., Suite 100, 9700 S.W. Capitol Highway, Portland, OR 97219.

Disk Ranger is a speedy cataloguing program that doubles as an ef- ★★★★ ficient labelmaker. Comes with pinfeed labels. Works with regular and hard disks. $49.95. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.

Epstart lets Mac users use most Epson printers. Required, but not ★★★ included, is a serial printer interface. Data can be sent to the printer via either the printer or the modem port. The documentation is clear. $45. SoftStyle, Inc., Suite 205, 7192 Kalanianole Hwy., Honolulu, HI 96825.

Laserstart allows use of a Hewlett-Packard LaserJet printer with a ★★★★★ Mac. This printer is significantly cheaper than the LaserWriter and has adequate text printing features. It cannot efficiently handle Mac graphics. The software is simple and easy to install. It works perfectly. Data can be sent to the printer via either the printer or the modem port. Comes with a cable to connect the Mac and the LaserJet. $95. SoftStyle, Inc., Suite 205, 7192 Kalanianole Hwy., Honolulu, HI 96825.

Lock-It allows users password control of all their documents. It ★ works quickly and efficiently to protect confidential material. Unfortunately, it is not perfectly bug free and a failure will cause future lack of access to data. If you absolutely need to protect data and are very careful, you can use *Lock-It*, but the average user should stand clear. $29. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.

MacBooster is a disk-cache program that adds a great deal of ★★★ operating speed to a 512K Mac. It installs easily from its master disk. This program can increase the speed of your 512K Mac by 2 to 3 times. $50. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.

Mac Disk Catalog is a utility that will quickly organize a moderate ★★★★ size disk library. It's easy to use and has powerful reporting and label making features. $39.95. New Canaan MicroCode, 136 Beech Rd., New Canaan, CT 06840.

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, Inc., P.O. Box 1540, Fairfield, IA 52556.

MacLink lets users transfer data between Macs and PCs. Simple to ★★★ install and run, high-performance software. Can do special format transfers such as *1-2-3* to *Multiplan* and *WordStar* or *MultiMate* to *MacWrite*. Contains both Mac and PC disks, interface cable is optional. Has Mac and MS-DOS disks. $125, $155 with 8-ft interface cable. DataViz, Inc., 16 Winfield St., Norwalk, CT 06855.

MacMate! combines RAMdisk and print spooling functions in a com- ★★★★ pact package. Both parts are efficient, work well and have on-screen help. This is the best product in its category. $49.95. SMB Development Associates, PO Box 3082, Chatsworth, CA 91311.

MacMemory Disk creates a RAMdisk on 512K Macs. The RAMdisk's ★★★ size is user selected up to 316K. Has auto startup and auto file transfer features. Simple to use, on-screen dialogs prompt for all actions. $29. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.

MacNosy is a global disassembler. A very advanced user can use this ★★★★★ program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going IF you have the skill to guide it. The documentation is sparse. For pro's only. $75. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025.

The Macintosh Reference System consists of the Mac's trap calls ★★★★ arranged into a simple database on a disk and a deck of 750 color coded cards that contain the same information. Very useful for programmers and developers. $99.95. TOM Programs, Suite 34B, 1500 Massachusetts Ave. NW, Washington, DC 20005.

Mac•Tracks allows users to store a series of keystroke and mouse ★★★ movement operations to any command key. The various controls reside in the Apple menu as a desk accessory. Documentation is inadequate and behavior is sometimes not what you expect. Invaluable in some places *(Smartcom II* and *Jazz)*, it needs some improvement before it gets much use. $29. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.

MacZap is a three-part disk and memory utility. It can be used to ★★★★ recover some damaged files and disks, compare disks, analyze disk structure and make back-up copies of most disks. Fairly intimidating due to its enormous power. Has a good manual. $60. Micro Analyst, Inc., 5802B Gloucester, Austin, TX 78723.

'Ncryptor is a simple, safe program that lets users password their ★★★★ files. The same program is used for encoding and decoding. This is the best product in its category. $39.95. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.

PC to MAC and BACK has both Mac and MS-DOS disks. This pro- ★★★ gram easily and efficiently transfers text and other data between PCs and Macs. Easy to use, although not too intuitive. Fortunately, the documentation is excellent. Does special format transfers such as *WordStar* to *MacWrite*. Includes a cable for direct Mac to PC connections. $149.95. Dilithium Press, Suite 151, 8285 SW Nimbus, Beaverton, OR 97005.

Quick & Dirty Utilities, Volume One is a disk chock full of the han- ★★★★★ diest programs you have ever bought. Included are a super disk cataloguer, a desk accessory mover and more. Several desk accessories including a menu bar clock and a terminal are on the disk. "Fileinfo" and "Q&D Filer" are two file management desk accessories that you'll wonder how you got along without. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247.

Quick Disk is a RAMdisk utility. Users can create RAMdisks up to ★★★ 350K on 512K Macs. Works well and has good documentation. $34. Symmetry Corporation, Suite 103S, 3900 East Camelback Rd., Phoenix, AZ 85018.

Switcher is Andy Hertzfeld's contribution to Mac productivity. This ★★★★★ program lets users run several programs at once (up to eight on a 1-megabyte or larger machine). Switching between the programs is near instantaneous. Slick and easy to use; every 512K Mac user should get it . Runs on 512K Macs and larger. $19.95 from Apple, free from MAUG on CompuServe, from Delphi and included with some third-party applications (e.g., *Excel*). Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

TurboCharger is a disk-cache program. It works by storing fre- ★★★★★ quently used portions of a disk in a memory buffer and it can dramatically speed up operation (250 to 500% improvements are common). Features include auto-startup and write buffering. Only works on a 512K Mac but is a

must for one. $95. Nevins Microsystems, 210 Fifth Ave., New York, NY 10010.

TurboDownload is a desk accessory designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50% to over 300% at 2400 baud. $39.95. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.
★★★★★

Twelve-C Financial Desk Accessory brings all the power and functionality of a Hewlett-Packard 12C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247.
★★★★

TypeNow is a desk accessory that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back or "boilerplate" stored and used as needed. $39.95. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.
★★★★

XL/Serve converts a Mac XL into a disk and print server. Uses the AppleTalk network and is easily hooked up. Users can partition the Mac XL's hard disk into multiple volumes (read-only for common access and read-write for private access). Runs in the background on the Mac XL, so users can work on all machines in the network. Comes with a backup and restore utility. $195. Infosphere, Inc., 4730 SW Macadam, Portland, OR 97201.
★★★★

LANGUAGES

Aztec C is a C language program system that will appeal to users with a UNIX background. It uses many UNIX conventions and in the more expensive versions comes with standard UNIX utilities, including the VI editor. Good, solid system. $199 basic system, can't produce standalone applications; $299 development system, can produce standalone applications; $499 commercial system, development system plus utilities and strong technical support by publisher. Manx Software Systems, Inc., PO Box 55, Shrewsbury, NJ 07701.
★★★★

ExperLISP is a very buggy, but still incredibly useful, programming language for high-level programmers. The more you use it, the more you'll figure out about it. System crashes are too common for a language this useful and expensive. $495. Requires 512K and either an external or a hard drive. ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108.
★★★

ExperLogo is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than the usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108.
★★★

Hippo-C Level 1 offers a good basic learning environment for newcomers to the C programming language. The programs limits and restrictions are severe and standalone applications cannot be created. A good place to begin the study of C. Has a useful print spooler desk accessory. $149.95. Hippopotamus Software, Suite 12, 985 University Ave., Los Gatos, CA 95030.
★★★

MacAsm is a software development system that allows programs to be written in assembly language. Programmers can assemble, edit and test software, and an integrated resource compiler lets independent applications run from their own icons. $125. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.
★★★

Mac C is a good, highly Mac-oriented implementation of this popular development language. Latest version (4.0) has assembler and linker built-in. $375. $475 with Toolkit and floating point package. Consulair, 140 Campo Dr., Portola Valley, CA 94025.
★★★★★

MacForth is an implementation of the popular Forth programming language. Level 1 is a simple, introductory version with limited support of the Mac ToolBox. Excellent tutorial and references sections in the manual. Level 2 supports the Mac Toolbox fully. Level 3 extends the language so that professionals can produce standalone applications. All levels are supported by the publisher via telephone and electronic BBSs (the publisher even has a private SIG on CompuServe). $149 (Level 1), $249 (Level 2), $499 (Level 3). Creative Solutions, Suite 12, 4701 Randolph Rd., Rockville, MD 20852.
★★★

Macintosh 68000 Development System is a fairly traditional assembly language package. The two-disk set provides an excellent editor (*Edit*), an efficient assembler, a linker, an executive, a resource compiler called *RMaker*. The files included in this two-disk set have all the basic equates, process definitions, and trap calls. Good documentation includes a copy of the Motorola 68000 handbook. Also included is a copy of the "phonebook" edition of Inside Macintosh. $195. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.
★★★★

Macintosh Pascal is Apple Computer's version of this very popular programming language. Superb usage of the Mac interface makes this the way to learn Pascal. The documents are mostly references, so be sure to get a tutorial textbook in your bookstore. $125. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.
★★★★

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 (in user group libraries and magazines) to run. There have been several versions; be sure to get the latest. $150. Microsoft, 10700 Northup Way, Bellevue, WA 98009.
★★★

Microsoft Logo, from Microsoft's MacLibrary, written by LCSI. An excellent implementation of Logo, taking full advantage of the Mac's user interface. Uses three windows. Turtle looks like a turtle, and its screen actions are very precise. Windows can be resized and moved about. $124.95. Microsoft, 10700 Northup Way, Bellevue, WA 98004.
★★★★

EDUCATION

ChipWits is a combination game and teaching tool. Players create programs to maneuver robots through a set of eight mazes. The programs are written in *ChipWit's* built-in icon-based programming language (IBOL). IBOL is nearly perfect introduction to programming for nonprogrammers. $49.95. BrainPower, Inc., 24009 Ventura Blvd., Calabasas, CA 91302.
★★★★★

MacEdge and **MacEdge II** each contain eight reading or math drill programs for basic skills. Programs follow one of three formats, a bit contrived. Contrivances are design flaws—they require learning format as well as skill. Exception is Alphabet Train, a clever game with great graphics and sound, poor font definition. Average educational
★★★

MINIFINDERS

value, can be fun to play. $49.95 each. Think Educational Software, 16 Market St., Potsdam, NY 13676.

MacType offers structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multistudent environment. $49.95. Palantir Software, Suite 100, 12777 Jones Rd., Houston, TX 77070.
★★★★

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. Scarborough Systems, Inc., 55 South Broadway, Tarrytown, NY 10591.
★★★

Mind Prober is a demonstration of a very simple expert-style system. How well do you know your friends? Answer statements either true or false, and the computer prints a psychological profile of subject in business, stress, sex and other situations. $50. Human Edge Software Corp., 2445 Faber Place, Palo Alto, CA 94303.
★★

Nutri-Calc uses a large database of nutritional information. Users can plan good, healthy diets and print out shopping and menu lists. $79.95. CAMDE Corp., 46 Prince St., Rochester, NY 14607.
★★★

Smoothtalker trains your Mac to say anything you want. Users can program the pitch and tone of each syllable to simulate true speech patterns. Not too useful—but a lot of fun to play with! Latest version includes a female voice. Male and female can be mixed in same document to provide entertainment. $149.95. First Byte Software, 2845 Temple Ave., Long Beach, CA 90806.
★★★★★

Think Fast allows users to improve their recall and recognition abilities. Tests include compare, copy and recall exercises. Users choose the level of difficulty, speed and risk-taking. Has session and summary reports to provide feedback and permanent records. Good for users of all ages. Children will find it fun. $39. BrainPower, Inc., 24009 Ventura Blvd., Calabasas, CA 91302.
★★★

Turbo Turtle is a turtle graphics program primarily designed as a learning tool for children. Uses Logo commands for graphics, but is not a full Logo implementation. Simple to use, good introduction for young children. $59.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.
★★★★

ENTERTAINMENT

Airborne is a classic arcade-style game with "real" sound effects. The player sits at a gun position on a low rise and defends against an assault from flying enemies. Game noises digitized from actual recorded sounds add to the game. $34.95. Silicon Beach Software, Suite 201, 11212 Dalby Pl., San Diego, CA 92126.
★★★

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 game a true classic. $54.95. Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60022.
★★★★★

Baron is the world of real estate, in a financial simulation. Buy and option properties in five key areas; invest in industrial, residential, or land property; or put cash aside in high-interest accounts. $59.95. Blue Chip Software, 6740 Eton Ave., Canoga Park, CA 91303.
★★★★★

Championship Boxing allows statistical replay involving famous boxers. Players can modify existing boxers and can create their own fighters. Good sound and graphics. Sierra, PO Box 485, Coarsegold, CA 93614.
★★★★

Comet Halley is a single-purpose, single-minded program. It will indicate where in the sky users should look to see this pass of Halley's comet. That's it. When the the comet is gone you can erase the disk. $29.95. Great Wave Software, PO Box 5847, Stanford, CA 94305.
★★★

Cutthroats casts players in this full-text adventure as a deep-sea diver, hired by a band of toughs to locate shipwreck treasure. The game is very closed-ended, requiring almost Pavlovian obedience. Multiple endings. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.
★★

Cyborg is a text adventure game with an interesting twist. Robot brain is implanted in concert with yours. It scans, evaluates, and reports, then carries out actions. Word and sentence understanding is very good. Absorbing game for adventurers. $39.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903.
★★★★

Deadline is a text adventure in which the player is a detective called in to investigate what seems like a simple drug overdose. The family lawyer thinks it was really a murder. You have 12 game hours to find the killer! $49.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.
★★★

Deja Vu: A Nightmare Comes True is a graphic adventure that breaks new ground. Innovative use of the Mac interface in a truly playable and exciting game. A great introduction to graphic adventure games. $54.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062.
★★★★★

DejaVu is a set of straightforward memory training devices and games. Makes good use of graphics to help maintain user interest. Can be played alone, against another human, or against the Mac. $39.95. Rubicon, Suite 100, 6300 La Calma Dr., Austin, TX 78752.
★★★★

Dinner at Eight is a useful recipe filing system that includes a collection of recipes from a nationwide sampling of restaurants. Users enter number of dinner guests and program scales recipes accordingly. $59.95. Rubicon, Suite 100, 6300 La Calma Dr., Austin, TX 78752.
★★★★

Entrepreneur allows up to nine players to compete in the software industry. Make the right decisions early on and the game plays itself. Tiresome at best. $49.95. Microsoft, 10700 Northup Way, Bellevue, WA 98004.
★★

Feathers and Space is an arcade game. Heavy flapping birds assault you and your troops. Protect your camp via a single spaceship with full lateral movement but a barrier halfway up the screen. Very average game. $34.95. PBI Software, 1155B-H Chess Drive, Foster City, CA 94404.
★★★

Felony provides twelve mystery games in a package. One or more players visit various clue sites, deciphering numbered clues with the enclosed booklet. The first one to solve the case wins. $44.95. CBS Software, One Fawcett Place, Greenwich, CT 06836.
★★★

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. $39.95. PBI Software, 1155B-H Chess Dr., Foster City, CA 94404.
★★★★★

Forbidden Quest is a text adventure with pictures. Begins in a spaceship, with you in extreme danger. The game provides several levels of on-line help, from simple hints to ac-
★★★

MacUser

COMING NEXT ISSUE

MAC MAKES A POWER PLAY

—The Power User's Manual: High-Performance Hints and Tips from the Pros

—It's time to get a hard disk and we check out the new 20-meg units—featuring Apple's HD-20.

—Fireworks are the result when *Business Filevision* unleashes the Mac's graphic power in a sophisticated database.

Plus:

—Short reviews of *Factfinder version 1.1*. Michael Crichton's *Amazon, ClickArt Effects, Magic Slate, Mind Over Mac*, and more.

—Plus a high flying roundup of flight simulators to get you off the ground—we look at *Fokker Triplane, Harrier Strike Mission* and *MacChallenger*.

And More for the Rest of Us:

—How to really recover "lost" files and disks—get the details from *Fedit*'s author John Mitchell

—Signing on to a national database—we take you from opening the package to getting useful information downloaded into your Mac.

—Neil Shapiro on the wonderful world of public domain software.

Plus:
—Our BASIC series concludes with all you ever wanted to know about ImageWriter control.
—Getting the most action from *Rogue*.
—Creating your own function keys (assembly language programmers only!)
—Handling office forms the Mac way.
—Over 160 capsule product reviews.

And, as always,
—The Macintosh Boundary from Doug Clapp
—Dan Cochran with Answers from the Mac Team
—Mike Wesley discussing West Coast lunacy
—And to end it all, John C. Dvorak actually liking something!

MINIFINDERS

tual solutions. The disk is accompanied by five graphic prints, called Artext, of specific scenes with hidden clues. Very playable if a bit mundane. $44.95. Pryority Software, Suite 22, 635 Sanborn Rd., Salinas, CA 93901.

Gateway, another Artext game, comes with three full-color prints. ½½½ You inherit a boring old building from a supposedly rich uncle, eventually learning that the building is a "gateway" to a lost civilization. Both *Forbidden Quest* and *Gateway* have pull-down menus for conditions, inventory and game operations. $49.95. Pryority Software, Suite 22, 635 Sanborn Rd., Salinas, CA 93901.

Gato puts players in command of an American submarine in ½½½½½ World War II. This superb simulation game uses all of Mac's graphic capabilities to really make you feel that "you are there." $39.95. Spectrum Holobyte, Inc., Suite 325, 1050 Walnut St., Boulder, CO 80302.

Gypsy is a computerized, customizable Ouija board. More than ½½½½ just a software package, users get a pasteboard playing surface and a Mouse Mover with 99 ball bearings. $39.95. Suite 337, Magnum Software, 21115 Devonshire St., Chatsworth, CA 91311.

Harrier Strike Mission pits you against a well defended island. You ½½½½ fly an advanced Harrier jumpjet from a carrier offshore. Fair graphics and reasonable flight simulation prove that color isn't necessary in a flight simulator. $49.95. Miles Computing, 21018 Osborne St., Bldg. 5, Canoga Park, CA 91304.

Hippo Computer Almanac is a collection of interesting facts that ½½½ users access using a question and answer format. This is a game or toy, not a real almanac. $34.95. Hippopotamus Software, Suite 12, 985 University Ave., Los Gatos, CA 95030.

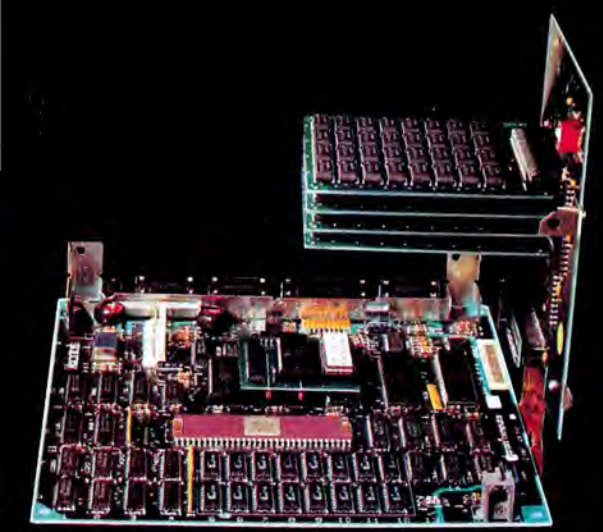
Legacy is a two part text/graphic adventure. A magical orb in Drab ½½½½ Castle must be found through the use of spells and careful adventuring. Well-constructed, fun to play. $39.95. Challenger Software, PO Box 1478, Homewood, IL 60430.

Lode Runner is a 150-screen action-strategy challenge that re- ½½½½ quires a joystick for truly effective play. Move around a grid of ladders and platforms collecting treasure; dig a hole to trap pursuers. Build your own challenges. $39.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903.

MacAttack puts the player in command of a super tank defending ½½½ the wastes of Alaska against invaders. This 3D simulation pits you against attackers that fire heat-seeking missiles. Defeat the horde and get treated to a graphic fireworks display over the town. $49. Miles Computing, Suite 212, 7136 Haskell Ave., Van Nuys, CA 91406.

MacBackgammon with Cribbage provides graphic versions of ½½ these classic games. Variable skill levels allow the user to set game difficulty. At the expert level both games will challenge experts. The graphics are attractive but slow the games down quite a bit. $49. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

MacChallenger lets players land a space shuttle. The graphics of ½½½½ this flight simulator are crude and it's a hard machine to fly, but it's also a lot of fun. Version 2.0 lets you record your landing attempt (that's what most of them are!) and then review it from any of ten camera angles, a truly unique touch! $49.95. Aegis Development, Inc., Suite 277, 2210 Wilshire Blvd., Santa Monica, CA 90403.



Micro Conversions' 1/2/4™ Megabyte Upgrade

Inside every Macintosh beats the heart of a superb machine. However, the sad fact is, most Macs will never have enough memory to run the major integrated software packages wholly from memory. Or perform other tricks. But yours can.

Available in 1 Meg, 2 Meg, or 4 Meg configuration, the Micro Conversions **1/2/4** Megabyte Upgrade is a modular and expandable memory system that will give you both the room to run and the room to grow. Since the Macintosh operating system can address only up to 4 Megabytes of RAM, the **1/2/4** is the ultimate memory system. And the **1/2/4** is HyperDrive® compatible.

MacCheckers with Reversi will provide a stiff challenge to experts. ★★★ You can adjust the degree of difficulty to your taste. The graphics and animations are excellent, although slow. The checkers portion can be very hard to beat when the skill level is set to expert. The reversi (very similar to Othello) is easier, even at the expert level. $49. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

MacPoker looks and plays just like *MacJack II*, one player against ★★ the house. This format is not as successful or interesting with poker as it is with blackjack. Dealing and play are slow and few playing options are provided. Game is limited to five-card draw. $39.95. DataPak, Suite 401. 14011 Ventura Blvd., Sherman Oaks, CA 91423.

MacVegas contains seven complete casino-style games: baccarat, ★★★ blackjack, craps, keno, poker, roulette and slots. All are fairly standard but generally well designed. House rules can be altered by selecting establishment from a menu. The games are fun to play, not absorbing. $59. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

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. Different strategic options and human-seeming associates make simulation more complete. Appeals to the closet capitalist in all of us. $49.95. Scarborough Systems, Inc., 55 South Broadway, Tarrytown, NY 10591.

Millionaire is a financial simulation based on the stock market. ★★★★ "News" affects stock prices, so read it religiously. Turn a pittance into a fortune to win the game. $49.95. Blue Chip Software, 6740 Eton Ave., Canoga Park, CA 91303.

Mouse Stampede is an infectious *Centipede*-like game with mice, ★★★★ bats, cheese (normal and moldy), turtles, flies, paint brushes, knives, shopping carts and sneakers on the attack. Activated cats will gobble mice until full. Game is fast-paced, high scoring and generally fun to play. $39.95. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142.

NewGammon is animated backgammon that will challenge even ★★★★ good players. Features include variable skill levels and strategies and options to play the Mac or watch the Mac play itself. Many positions are included so that you can learn how to play them without having to set up a whole game. An arcade-like high speed play mode is also included. This is the best backgammon player currently available. $39.95. Newsoft, PO Box 4035, Newport Beach, CA 92661.

Pensate is a mind challenging strategy game with multiple levels of ★★★★ difficulty and a play-ahead feature where users plan moves in groups of up to four turns. The graphics are well handled and the game is addicting. $39.95. Penguin Software, PO Box 311, Geneva, IL 60134.

Perplexx is a board word game based on *Scrabble*. Players can vary ★★★★ the rules and board to suit their tastes and skills. Up to four can play and the game can either be an active player or a scorer and arbiter. Has a 90,000-word dictionary, good graphics, and is very playable. $39.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

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). No

Makes your Mac the ULTIMATE MACINTOSH

Pioneers in 512K upgrades, we were also the first to break the "512K Barrier" with 1 Meg. Our 512K upgrade is the leader in the industry. Our **1/2/4** offers you the ultimate. Pick the size you need and go to the dealer of your choice. Or call us at 1-800-237-8622 (1-800-BEST MAC).

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Please circle 73 on reader service card.

MINIFINDERS

documentation to speak of. $40. Electronic Arts, 2755 Campus Dr., San Mateo, CA 94403.

Planetfall leaves users shipwrecked on a seemingly deserted
½½ planet, with only Floyd the Droid to help figure out how to get home. Two possible endings. This full-text game is written in a tongue-in-cheek style. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.

Psion Chess is as good a micro chess player as you'll find. This 1984
½½½½½ World Micro Champion makes superb use of graphics and the Mac interface. Switch between 6 languages for a touch of spice. $59.95. Psion Inc., 40 Lindeman Dr., Trumbull, CT 06611.

Pyramids of Peril is an action-strategy adventure in which a single
½½½ explorer must unravel the mysteries of the pyramid. Computer maps automatically; combat is engaged in with the mouse. $39.95. Aegis Development, Suite 277, 2210 Wilshire Blvd., Santa Monica, CA 90403.

Real Poker is five-card draw against five other players with Old West
½½½½½ names, distinct personalities and playing styles, in a saloon setting. Dealing and play are very fast. Game evaluates your hand, suggests cards to keep/discard. Dynamic, addictive game. $39.95. Henderson Associates, #1, 980 Henderson Ave., Sunnyvale, CA 94086.

Sargon III is a chess program with 9 levels of play. Easy Play option
½½½½ stops *Sargon* from stealing search time during player's move, effectively doubling number of levels. Disk stores 107 classic games for review and replay. $49.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

Squire is a financial simulation that features a unique, real-life
½½½½ mode that lets you set your own financial goals, then play out your strategy using IRAs, stocks, commodities, collectibles, and property. $69.95. Blue Chip Software, 6740 Eton Ave., Canoga Park, CA 91303.

Starting a New Business is a short tutorial structured as a text
½½½ game. Players choose one of the three choices displayed on each new screen to pick one of three businesses to start, then try to run it profitably. Can be mastered quickly, but worth a look just the same. $59.95. Queue Intellectual Software, 5 Chapel Hill Dr., Fairfield, CT 06432.

Suspended is Infocom's most unique text game. Using a small
½½½½ 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.

Strategic Conquest is large scale, strategic conflict on the Mac.
½½½½ This very involved war game will be enjoyed by those who like this genre. $49.95. PBI Software, 1155B-H Chess Dr., Foster City, CA 94404.

Through the Looking Glass consists of 3 programs by *Finder*
½½½ author Steve Capps. Included are a fast paced arcade game based equally on chess and "Alice in Wonderland," the maze application from the guided tour disk and a large digital clock. $29.95. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014.

Trivia has questions in Sports, History, Geography, Literature,
½½½ and Entertainment, on-line instructions and playing options. Up to six players compete. Players set time of response, target score for win. Categories limited, questions replay if game not saved. Own questions can be added from *Word* or *MacWrite* files. $24.95. Mirage Concepts, #108, 4055 W. Shaw, Fresno, CA 93711.

Tycoon is a financial simulation based on the ups and downs of
½½½½ commodities market. Build a fortune in pork bellies and Swiss francs, checking the "Financial Journal" for news affecting the market. $59.95. Blue Chip Software, 6740 Eton Ave., Canoga Park, CA 91303.

Ultima II players take the part of a character who travels through
½½½½ land, sea, air, space, and even time itself in a quest to find and defeat the evil sorceress Minax. Excellent game in spite of confusing graphics. $59.95. Sierra, 36575 Mudge Ranch Rd., Coarsegold, CA 93614.

Ultima III lets up to four characters cooperate to explore the vast
½½½½½ wilderness of Sosaria; dungeons, oceans, and the Moon Gates help solve the adventure. Outstanding translation of the Apple II smash hit. $59.95. Origin Systems, 340 Harvey Rd., Manchester, NH 03103.

Universe 2 is the most complete space adventure yet created. It has
½½½ so much data that it requires 3 disks! Good, playable game, marred by poor parser in the text adventure sections. Requires 512K. $69.95. Omnitrend Software, PO Box 3, W. Simsbury, CT 06092.

Webster's Revenge is a *Boggle*-like word game. Super graphics
½½½½ make it a pleasure to play. The dictionary is adequate and the user can always overrule it if necessary. Multiple skills levels make this a game for all. $34.95. Shapechanger Software, Inc., 113 E. Tyler, Athens, TX 75751.

Will Writer uses a rule-based system to create wills valid in all states
½½½ except LA. Simple to use, comes with a complete book on wills. $39.95. Legisoft/Nolo Press, 950 Parker St., Berkeley, CA 94710.

The Witness is a full-text adventure casting the player as a detective
½½½½ assigned to get to the bottom of a death threat. When the victim is killed, you have only one night to find the real guilty party. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02142.

Wizardry is an outstanding dungeon exploration adventure pitting a
½½½½½ 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 Software, 6 Main St., Ogdensburg, NY 13669.

Word Challenge is a *Boggle* lookalike. Features multiple (26) skill
½½ levels and an extensive dictionary. Even "pro" *Boggle* players should find a level that will challenge them. New version has improved graphics. $39.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

Xyphus is a role-playing game pitting four characters (fighters or
½½½½ wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon control. $39.95. Penguin Software, 830 Fourth Ave., Geneva, IL 60134.

Zork I is a full-text adventure game that lets players explore a
½½½½ strange underground empire. Parser understands full sentences; players can take many different routes to final success. Beware of the thief, who steals random objects. The ultimate text game. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.

Zork II is where the adventure continues in the underground em-
½½½½ pire. A wandering wizard keeps things interesting, though there's a way to beat him if you persevere. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.

Zork III is the final chapter in the trilogy. Players come up against
½½½½ the ultimate enemy—the Dungeonmaster himself. More

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MINIFINDERS

closed-ended than previous *Zorks*. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140.

MUSIC

ConcertWare+ is an enhanced version of *ConcertWare*. Has different instruments and can use any four of a set of eight anywhere in a musical piece. Can read and use *ConcertWare* and *MusicWorks* files. The best program for those who want to listen to music on their Mac. $69.95. Great Wave Software, PO Box 5847, Stanford, CA 94305.

MusicWorks allows the user to create and play simple musical compositions. Music entry is by either a grid or a staff and is very easy. Users can select various instruments and modify each to produce new effects. Compositions are limited to 64 measures and overall limitations make this a beginner's program. There are many public domain music files available to play. $79.95. Hayden Software Company, Inc., 600 Suffolk St., Lowell, MA 01854.

Professional Composer is aimed at music professional. Produces performance-quality sheet music; has only limited playback facilities. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142.

HARDWARE & ACCESSORIES

A+ Mouse is a replacement mouse. It works by optical tracking on a special mousepad. Good choice if the original mouse fails. $99. Mouse Systems Corp., 2336H Walsh Ave., Santa Clara, CA 95051.

The Easel is a compact and portable carrier for up to 20 disks. Can be converted into a standup rack for desktop use. Solidly made, attractive and useful. $19.95. Innovative Technologies, 5731 La Jolla Blvd., La Jolla, CA 92037.

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. Simply raising the Mac 4 inches off the desk results in a more efficient viewing angle for users. $99.95. Ergotron, Inc., PO Box 17013, Minneapolis, MN 55417.

MacIntizer is a graphics tablet and absolute positioning device that replaces the mouse. Various scales are possible directly. $599. GTCO Corp., 1055 First St., Rockville, MD 20850.

MacNifty Joystick Convertor plugs into the mouse port and allows use of any standard nine-pin joystick or controller, such as those manufactured for Atari or Commodore 64 computers. Package includes a tiny Amiga-style joystick. Cursor movement speed is adjustable. $44.95. Kette Group, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MacNifty Stereo Music System converts Mac sounds to simulated stereo by splitting highs and lows between two powerful speakers. User controls bass, treble, balance, low and high impedance output, and most importantly, volume. Hear your music compositions the way they were meant to be played. $79.95. Kette Group, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MacNifty Switch allows any port on your Mac to connect to two peripherals. Turn the knob to switch between the two devices. Plugs are friction-fit, not screw-fastened like most Mac peripherals, so in some cases may loosen by themselves. $34.95. Kette Group, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MacStation is a compact workstation for a Mac, ImageWriter and external drive. Made of strong plastic, it is reasonably attractive. Well vented; will not cause a Mac to overheat. Only flaw is that printer paper feed doesn't really work; users will need space behind the unit to store paper. $95. The MicroRain Corp., PO Box 96008, Bellevue, WA 98009.

MacTablet is a stylus-driven graphics tablet. Users can easily sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Works well with all Mac software, including *MacDraw* and *MacPaint*. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430.

MacVision is a digitizer that uses an ordinary video camera for input. Capable of extremely fine results and special effects. Easy to use and well documented. $399.95. Koala Technologies Corporation, 3100 Patrick Henry Drive, Santa Clara, CA 95052.

Magic is both the most intimidating and easiest to use digitizer available. Use a regular video camera for input. Once the crowded screen is mastered, any effect is possible. $399, $549 with camera. New Image Technology, Suite 104, 10300 Greenbelt Rd., Seabrook, MD 20706.

MacCharlie is one of the most unusual Mac products imaginable. Its components slip around the Mac and the keyboard and convert the Mac into an IBM PC clone. Amazingly it works well. The enlarged keyboard has a few bugs, but is a joy to use. $1,195 with 256K RAM and one floppy drive. $1,895 with 640K RAM and two floppy drives. Dayna Communications, Suite 530, 50 S. Main St., Salt Lake City, UT 84144.

Moustrak is a fabric covered foam mousing pad. It will increase the efficiency of your mouse while helping to keep it clean. Pad comes in a variety of colors. Particularly useful in the typical office desk top environment. $10. Moustrak, Inc., Suite 503, 1 Weatherly, Mill Valley, CA 94941.

Omni-Reader scans optical character (OCR) text and inputs the text in Mac software. Requires carefully prepared text and is very slow as the actual scanning is done by hand moving the scan guide over the text. $799. Oberon International, Suite 630, 5525 McArthur Blvd., Irving, TX 75038.

Mac Turbo Touch is a mouse replacement device. Features include 2.5-inch diameter track ball with control buttons to either side. Users either love it (and refuse to use anything else) or hate it; very few so-so's on this product. Takes a few days to get used to. $129. Assimilation, 485 Alberto Way, Los Gatos, CA 95030.

Numeric Turbo combines a track ball with an enhanced numeric keypad. The keypad includes working cursor keys and other direct function keys that bypass the Mac's Command and Shift keys. The track ball takes some getting used to and some never learn to like it. Those who do rarely ever use a mouse again. $149. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.

ThunderScan replaces the ribbon cartridge in an ImageWriter, which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. Compatible with 15-inch ImageWriter and ImageWriter II. Output has been optimized for LaserWriter. $229. Thunderware, 21 Orinda Way, Orinda, CA 94563.

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BLACK GOLD OR FOOLS GOLD?

by John C. Dvorak

I suppose when you've stumbled on to something that's new you don't [illegible]essarily know its value now or its [illegible]ture. The discovery [illegible] [illegible]uring out of the ground in [illegible] last century was at first [illegible] something bad. "Who needs [illegible]king things up?"

[illegible] computer revolution is [illegible]cidental discoveries. The en[illegible] these things was a big sur[illegible] pioneers who put simple [illegible]st magazines and were [illegible] an onslaught of eager

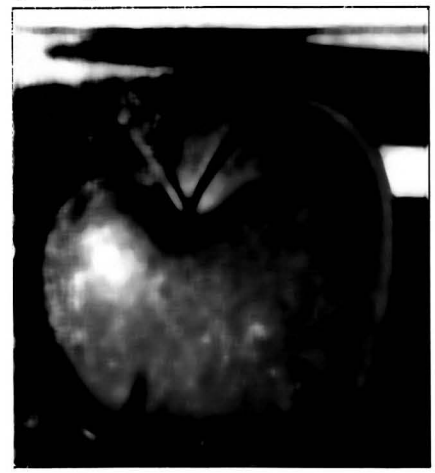
[illegible] think if a lesson was ever to [illegible] would have been learned by [illegible]puter, Inc. Apple has in its [illegible] the seething pond of easy to [illegible] oil (black gold), but it seems [illegible]atching its corporate noggin

[illegible]alking about the capabilities and [illegible]al of the Apple LaserWriter com[illegible]d with both the Mac, the Apple II [illegible] anything else that can hook to it. I [illegible] that H-P has one too and soon the [illegible]rket will be flooded with the things. [illegible]t where is the leadership in this flood? [illegible]-P is scratching its head about the thing and continues to produce cartridges that are nothing more than laserized Diablo daisywheels. Producing typewriter look-alike output with a laser printer is like dropping a Pinto engine in a AA fuel dragster.

Now Apple had the right idea when it first developed the LaserWriter product. Kudos to the person with the notion. Apple surprised everyone with elegant execution, and then by joining with Adobe Corp. to help set a quasi-standard for typeset quality and typeset look from the printer. Kudos for the team that made those decisions. From there we have to do nothing but toss darts. Who do we toss them at? Who else? The marketing people who are like the dumb farmer in the Pennsylvania field complaining about how tough it is to plant corn there.

The LaserWriter was initially part of some grand scheme to move the Macintosh into the executive offices of the Fortune 500 corporations. The marketing guys couldn't quite figure out how it would fit in. "This memo looks printed. I want to make sure my associates *know* I use a secretary . . . make it look typed!"

The concept that pervades too much of Corporate America is: "If I don't have a secretary I can't be a big shot." To heck with performance, let's go for window dressing. That's why dork books like "Dress for Success" are so popular. Obviously the marketeers are of this ilk or they wouldn't be so lackadaisical about pushing the LaserWriter.



The first thing that should be done is that Apple should swallow its pride and sell the LaserWriter as a prestige output device for the top executive. A middle manager mentality has a hard time comprehending this idea and I think that Apple's marketeers must be a lot of ex-gophers and yes-men to ignore this potential gold mine. Simply put, the use of laser-technology printers in the office and small business will eventually be phenomenal. But like any new idea it has to be accepted (blessed, as it were) by the opinion leaders. That means the top execs. Trying to sell it to the gray corporate "knowledge workers" (Apple's alleged targets) is a lost cause. This is blunder number one.

Blunder number two is that Apple overpriced the device. Why? Was it designed for use by rich knowledge workers? First of all, much of the initial price was based on the cost of memory. Memory is cheap nowadays. It was only expensive as far as the printer is concerned for the first few months of its manufacture. So why not price it further down the price-learning curve? Why wasn't Apple aggressive and why didn't they take a leadership role? Perhaps the Apple marketeers didn't know that memory would come down in price. Let's analyze this . . . hmmmmm, a $2 billion corporation selling microcomputers and having no concept of continuously lower prices for memory. Some strategic planning department Apple must have.

I could go on and on about how Apple is acting like the farmer on that Pennsylvania farm. "Sell the mineral rights? Heck yes, there ain't no gold on this land. Just this goop."

Apple is overlooking its own post-Macintosh world and cannot fathom the changes. First of all we've created a new genre of information processing. It's what Alan Hald of MicroAge calls "Image Management." The laser printer is a key element in this technology. When we see the video image capture devices and explore our ability to manipulate images, we quickly see a world of stored images. Do we need optical character recognition when we can put a snapshot of a page directly in memory and then edit it like a manuscript and print out the image with a laser printer? This is image processing. It's a whole new concept and one with a huge market. There isn't one office in the country that will be able to function without an image management system and the Mac plus LaserWriter is the first pure system.

Imagine an office without a typewriter or a copying machine. No way. The image management systems of the future will become just as important. They'll make the company seem more professional and more modern. Just the typesetting capability alone will enhance the look and feel of all correspondence. Bonuses like increased comprehension of typeset material won't need to be counted.

And let's not forget the simple fact that these printers are blazing fast. Who wants to wait for a secretary to grind out a three-page document on a Selectric? Even a daisywheel at 45 cps burst speed seems like a snail compared to a laser printer that can pump out eight pages a minute. And it's quiet.

Am I the only guy promoting this technology? So where's Apple's promotion of the LaserWriter? Huh? Do the Apple marketeers think that it's just goop like that farmland oil? Do they think it will go away? Or are they waiting for IBM to walk in and walk out with the mineral rights to this market?

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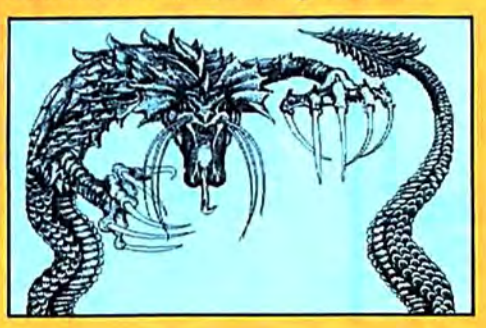
choose from – great for presentations, business graphics, ads, coupons, flyers or just plain fun.

If you do a lot of word processing on your Mac, you've probably noticed that although the Mac has a lot of typefaces, you really don't have the flexibility someone with expensive real typesetting equipment has. That's where **Mac the Knife, Volume II: World-Class Fonts** comes in. Two dozen fonts in all kinds of

styles and sizes – from decorative display typefaces to practical text fonts – come with concise documentation to get the fonts to where they can do you some good.

And finally, if you use your Mac in any one of a number of creative ways, you've probably noticed that if you can't draw, trying to bring life to your ideas in MacPaint can be frustrating. Yes, that's



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