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Paradise's MAC 10, the 10mb hard disk subsystem designed for the MAC.

Your Mac's been lonely too long.
You just found the right hard-disk subsystem for your MAC...  
Check out the Paradise MAC IO.  
**Easy To Look At:** Beauty isn't everything but most hard disk MAC drives will scare your computer to death in the morning! The MAC 10 is artfully engineered to complement the aesthetics of the MAC.  
**Nice To Have Around:** Just 3.5" wide and no deeper than the MAC, the MAC IO has a smarter footprint than any other external MAC hard drive subsystem. Nice to carry around too... Only 5 pounds.  
**The Right Breeding:** Paradise Systems is known for innovative engineering. The MAC 10 is the latest in a line of ground breaking micro computer peripheral products from Paradise.

Accommodating: 10 MB of formatted data storage, there when you need it. Equal to 30 MAC floppy drives! Storage you'll want for Jazz and other popular business applications.  
**Your MAC Can Relate To It:** 5 times faster than the add-on MAC floppy.  
**So Can You:** Just plug in the MAC 10 and you're ready to go ... That's it!  
**No Surprises:** The MAC 10 won't void your Apple warranty, or require you to modify your system. The user interface uses pull down menus, just like the one you're used to on the MAC.  
**Long Term Commitment:** The MAC 10 comes with a 1 year limited warranty*.  

Do Your MAC A Favor: Go see your Apple dealer and look at a MAC 10 or call us toll free at (800) 822-2020 (CA.) or (800) 527-7977 (outside CA.). It will be the beginning of a wonderful relationship.  
**Specifications:**

**CAPACITY:**
- E2.75 mb unformatted
- 10mb formatted

**DISK DRIVE SEEK TIMES:**
- Adjacent track: 18 ms
- Average: 85 ms
- Maximum: 180 ms

**ROTATIONAL SPEED:**
3600 RPM

**POWER REQUIREMENTS:**
- 110/220 Volts AC, 50/60hz, 50 watts max.

**DIMENSIONS:**
- Height: 5.5 inches
- Width: 3.5 inches
- Depth: 10.8 inches

**WEIGHT:**
Approx. 5 lbs.

**INTERFACE:**
Connects to your MAC via the modem or printer port. Printer connector and integral print spooler provided on MAC-10.

*See retailer for details.

Suggested Retail Price

$1,495

PARADISE SYSTEMS, INC

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The hostess of a lavish masquerade ball has just been brutally strangled.

Fortunately, there's a suspect. Unfortunately, it's you.

Just slip SUSPECT, Infocom's latest interactive mystery story, into your computer and suddenly you are a newspaper reporter covering the blue-blood society event of the year, Veronica Ashcroft's annual Halloween costume ball. And every decision you make will determine the story's suspenseful outcome. Suppose, for instance, that while snooping about the mansion in your cowboy costume you decide to peek in the office. You simply type, in plain English:

> OPEN THE DOOR
THEN ENTER
THE OFFICE

And the story responds:

YOU OPEN THE DOOR. SLUMPED BEHIND THE DESK IS THE BODY OF VERONICA ASHCROFT. HER MASK HAS BEEN PULLED OFF. AROUND HER NECK IS THE AGENT OF DEATH: A ROPE. IN FACT, IT'S YOUR LARIAT, WHICH YOU GOT TIRED OF CARRYING AROUND AND HUNG IN THE CLOSET WITH YOUR COAT.

You've been framed. And you have mere hours to discover who the real killer was. Because if you don't, you could be in serious trouble:

THE DETECTIVE GRABS YOU FIRMLY BY THE WRIST, AND WITH
A PRACTICED TWIST, SLIPS THE CUFFS ON YOU. "YOU'RE UNDER ARREST FOR THE MURDER OF VERONICA ASHROFT," SERGEANT DUFFY APPEARS AS THOUGH OUT OF NOWHERE AND ESCORTS YOU TO THE WAITING POLICE CAR.

You communicate – and the story responds – in full sentences. Which means that at every turn you have literally thousands of alternatives. So if you decide it might be worthwhile, for example, to dance with Mrs. Ashcroft's corpse, you just say so:

> DANCE WITH VERONICA'S BODY

And the story responds:

YOU'LL HAVE TO LEAD; YOU CAN BE SURE OF THAT.

This masquerade ball is one bash where you'd better go easy at the bar. Because simply staying out of the slammer is a challenge that could send the soberest soul staggering.

Other interactive mystery stories from Infocom include:

- The WITNESS, a 1930s style whodunit thriller in which a case of blackmail turns into a murder before your eyes.
- DEADLINE, which gives you just twelve hours to find the murderer, before he finds you.

You'll have to solve puzzle after puzzle as you build your case. You'll search for clues. Analyze evidence. Overhear conversations. You'll even question suspects:

> COCHRANE, TELL ME ABOUT SAMUEL OSTMANN

And the story responds:

COCHRANE IS UNSTEADY AND SWALLOWS A LITTLE MORE OF HIS DRINK BEFORE ANSWERING. "THAT SLIME! HE'LL GET WHAT'S COMING TO HIM ONE OF THESE DAYS, HE'S GOT AN IN WITH THE REAL ESTATE BOARD AND HE'S TIGHT WITH VERONICA. HE'S RUINING MY BUSINESS!"

And if you're clever enough, then maybe, just maybe, you'll prove your own innocence. But you'll have to hurry.

So polish up your party manners and rush down to your local software store to pick up a SUSPECT today. And remember, the costume ball lasts from 8 to 12. But if you don't solve the mystery, you'll soon be doing 18 to 20. With no parole.

Still not convinced? Try our Sampler Disk which includes portions of four different types of stories for just $7.95. If it doesn't get you hooked on the addictive pleasures of Infocom, return it for a full refund. If it does, you can apply the price toward your first Infocom story. You can't lose!

For more information call 1-800-262-6868. Or write to us at 125 Cambridge Park Dr., Cambridge, MA 02140.

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Please circle 72 on reader service card.
Front Desk is a time and resource manager for Macintosh that understands a simple fact.

Time is money.

It will help you coordinate the time use of lots of people. Or schedule facilities. Or loan out equipment. Or plan projects. Or track a sales staff's sales. Or whatever. For a major company. Or a one-man-show.

At first glance, it looks like a snazzy electronic appointment book. But Front Desk is no mere calendar. Not only does it organize how time is spent, it analyzes how well time is spent.

When you click open the simple appointment entry form and select the service that's going to be performed (from a menu that you create), Front Desk automatically calculates the proper fee or rate. Then at any time you can print out an analysis report for last month showing how many hours you or your staff spent—or how many dollars you brought in—by holding consultations, or selling wickets, or playing golf. And you can project how much you'll bring in on those services in the coming weeks or months.

This lets you see where your profits are coming from. Where your time is going. You can spot trends. Nip unprofitable ventures in the bud. And decide who gets bigger Christmas bonuses. In short, you'll get more done. In less time.

So dash down to your local computer store today for a look at Front Desk. And buy yourself some valuable time.
There’s a Moral Issue Involved Here

What’s happened to the Apple mystique?

In the good old days (1979) Apple was known as a company that cared about its end-users, that cared about the direction of the computer industry and that cared about the state of the world in general. When they released the Apple II there was no doubt that it came from a company dedicated to The People. There was a sort of idealism apparent that tied in with a 60’s mentality of using technology to change the world for the better.

Flowers and Apples

Do you remember the 60’s? I do. Did you walk in civil-rights demonstrations, argue endlessly about the moral rightness—or wrongness—of war and this country’s foreign policies? Did you have a feeling that somehow, someday, it would be American Science and Technology that would change this world for the better? Feelings ran deep that, if only industry would commit to certain goals and principles, the world could really be made a better place.

I felt that way then. I still do.

I was a Journalism major when I first heard about personal computing. And it wasn’t until a year or two after college that I read the first publications that got me involved. These publications still had the flavor of the late 60’s, an aura of people-to-people involvement and commitment.

The very first computer book I read was called What To Do After You Hit Return and it was published by The People’s Computer Company run by, among others, Dave Albrecht. Dave styled himself as The Dragon. The book was an oversized volume containing page after page of rough, typewriter-printed listings, cartoons and trivia. Embedded within this dragon’s horde was gem after shining gem of jewel-like programs that would enable anyone—even me—to control the power of a microcomputer.

Hey, there was an atmosphere in computing then! When People’s Computer Company brought out a magazine they christened it Dr. Dobie’s Journal of Computer Calisthenics and Orthodonture and subtitled it “Running Light Without Overbyte.”

The people who started personal computing—they were after something: They wanted nothing less than to change the whole darn world.

They came pretty close to succeeding.

When Woz and Jobs brought out the Apple II they didn’t just do it to make money. In fact, few people would have thought they were going to make any cash at all.

But the first Apple II was the first computer dedicated to the idea of anyone being able to use it to fight back against more monolithic, private, huge computer systems. The Apple II was meant to be the great equalizer, the six-shooter that made all cowboys equal.

So Grows The Tree

Then, gradually, Apple became more and more corporate. They began growing faster than a silicon crystal in a supersaturated solution.

Back in 1979, if you wanted to talk to someone at Apple you picked up a phone. You could get through to almost anyone. But as they outgrew the garage it began to seem that they were losing touch with their roots.

But the philosophy of computers for people remained; in the background, but always there.

The Macintosh was Apple’s recommitment to its original corporate goal of being the supplier of computers to The People. The entire Desktop Metaphor of the Macintosh was developed so that everyone with a need to do so could finally access a powerful, computing machine.

What is the Macintosh other than Power To The People?

Apple itself made that point with its famous “1984” commercial. The woman athlete with the hammer, she was throwing it for all of us. When the hammer hit the screen it shattered a lot of concepts about where computers are now, and where they are headed.

Apple is now indeed a corporate giant. Are they now as unfelt and cold as any Big Blue monolith? Anyone can hire an advertising agency to design a TV ad. How deep, how real, is Apple’s commitment to the ideals of the past?
The Apple Blossom Statement

While no one treated the following as a big news story, the AP news wire carried very interesting, almost astonishing, copy about Apple Computer Inc. and its relations to South Africa.

Apple, in response to South Africa's racist policies of apartheid, has decided to end all deliveries of products to its distributor there by the end of October.

I don't really think that IBM, GM, Bechtel, Nestle's and other worldwide conglomerates of corporate power are going to rush to join Apple on this particular barricade. Too bad. Because, all together, maybe they could change the world.

On a personal note: I'm wearing my old T-shirt with the faded but full-color Apple logo on it with new feeling these days. I own Apple-brand computers, and I'm proud.

Apple may be a company involved with the future, but it hasn't forgotten the past.

Closer To Home

Meanwhile, have we forgotten our own future? The Letters page in this issue features a missive from Marc Cantor, who is president of MacroMind, the company behind such products as VideoWorks and MusicWorks.

Marc's letter makes the point that Macintosh owners are in a very precarious position. We all love having a ton of software for our Macs and hate the long wait for it to appear on the shelves.

There's a lot of "pre-release" software floating about in users groups and available through many other avenues. But the marketplace is being endangered by so many people having programs — for free — before the programs go on sale.

Sure, most of us are honest. We fully intend to buy a production version of a program when it comes out. But how many of us really, for one reason or another, follow through on that promise? Maybe we are buying only the more complex programs with the most bulky manuals? What's happening to the well-written and intuitive software?

Read over Marc's letter. Then look through your own collection of software.

There's a moral issue involved here. Of course, moral issues aren't as fashionable as they used to be. "Do Unto Others..." is not exactly the yuppie battlecry. But this is an important issue that we all have to face. We recommend that you do what you might have done in the 60's.
Yes indeed. A set of Mac the Knife Clip-Art and Font Volumes. One for most every application.

If you're the type that makes up a lot of forms or newsletters on the Macintosh, you've probably noticed that they could use some illustrations or something to make things look better. That's where Mac the Knife, Volume I: A Clip Art Treasury comes in. This best-selling program has literally hundreds of images to 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 where Mac the Knife, Volume III: Mac the Ripper slashes in. This specially-priced two-disk set has the kind of imagery you've always wanted to see. Large and small drawings and useful illustrations, including many for almost any conceivable occasion from Hanukkah to Christmas to birthdays to Chinese New Year are drawn in magnificent detail. Included are a number of specialty headline fonts so you can do BIG LETTERS. Once you see it, you know why we call it...
HYPERDRIVE ANNOUNCES THE LIBERATION OF 400,000 MICE.
This message is for the several hundred thousand
people who bought a Macintosh because of its user-friendli-
ness—and then found it a bit slow in expressing its affections.
For those who find themselves
frequently feeding floppies. And waiting. And
wishing the Macintosh's capacity for work
matched its appetite.
For all those who've learned to live with
these and a variety of other limitations, we're
pleased to announce a richly rewarding
un-learning experience.
INTRODUCING HYPERDRIVE 20.
TWENTY MILLION BYTES. NO WAITING.
HyperDrive 20 is a new internal hard
disk that, when installed in your Macintosh,
makes it the World's Fastest Macintosh. Up to
15 times faster than a conventional Mac that
runs on floppies.
In fact, as Personal Computing maga-
zine put it, "Using a HyperDrive compared to a
regular Macintosh is akin to cooking with a
microwave oven instead of a gas range."
This rather heady level of performance
may be attributed to a simple principle of engi-
neering: Macintoshes, like human beings, travel
faster and better when unencumbered by excess luggage.
Unlike all other hard disks, which are external, Hyper-
Drive connects directly to the Macintosh's microprocessor.
This gives it an insurmountable lead over external disks—
which, since they have to slow down to talk through one of
the Macintosh's ports, will forever lag behind.
A FAREWELL, OF Sorts, TO FLOPPIES.
The HyperDrive 20 hard disk holds as much as fifty
floppies (twenty megabytes). And if it holds them, you won't
have to.
But besides holding more information, HyperDrive
manages it more intelligently.
It recognizes, for example, that files are organic cre-
ations, with a tendency to grow with their own special
urgency to their own self-determined size. HyperDrive is
engineered accordingly.
It lets you divide your disk into 32 file drawers, each
holding up to 512 files. These files automatically re-size,
swelling or shrinking according to what you put in or take
out. Which lets you use storage space according to your
dictates, instead of your computer's.
POWERFUL ENOUGH FOR
POWERFUL SOFTWARE.
HyperDrive 20 will run all Macintosh programs,
including Apple's new Switcher. And it will run them faster.
VAST DIFFERENCES IN PERFORMANCE.
A TINY DIFFERENCE IN APPEARANCE.
example. And Microsoft's Word. Powerful business software
that can multiply a Macintosh's performance and
productivity.
HyperDrive 20 also comes with its own software that
raises both the friendliness and the sophistication of your
Macintosh.
Such as a backup program, unsurprisingly named
Backup, that lets you back up and restore information from
the hard disk to and from your floppies.
There's even a print spooler that lets you use your
Macintosh for other jobs while your printer is busy churning
out the one you just finished.
VAST VS. TWICE AS VAST.
For all its emancipating qualities, there's one item that
HyperDrive won't liberate you from. The Apple warranty.
Even though your Macintosh must be opened (by an
Apple dealer) to install HyperDrive, your warranty remains
intact. But Apple won't be the only one watching over you.
HyperDrive is further backed by our own 90-day
limited warranty and an optional HyperCare extended service
contract. And service is readily available at participating Apple
dealers nationwide. (See your nearest dealer for complete
warranty details.)
In fact, the only imaginable problem left unattended
by HyperDrive is that of deciding which to buy—HyperDrive
10 or HyperDrive 20.
That will depend largely on how much capacity you
need: vast or twice as vast.
You can make that determination by visiting a partici-
patng Apple dealer and seeing HyperDrive in action. Or call
us at (800) 422-0101 or (617) 492-5500. In Canada, call our
distributor at (800) 565-1267.

MANAGE HUGE AMOUNTS
OF INFORMATION, INSTEAD OF HUge
AMOUNTS OF FLOPPIES.

Please circle 81 on reader service card.
Notwithstanding the opinions of our esteemed contributing editor, Mr. John Dvorak (see page 152), there’s an awful lot of rubbish talked about the Macintosh and the serious user.

Is the Mac a wimp computer?

MacUser magazine doesn’t think so. We believe the Macintosh is one of the most powerful personal computers in the world.

In common with every other computer, it has its limitations, its quirks and those tasks to which it is best suited. But that having been said, the vast majority of Macintosh users truly coax only a fraction of the Mac’s potential out of their system.

That’s where MacUser comes in. As The Macintosh Resource, we’ll bring out the best in you and your Mac. Increasing your productivity. Ensuring you value for money in your hardware and software purchasing decisions. Showing you new ways to solve old problems. Keeping you up to date issue after issue, article after article, review after review.

A subscription to MacUser should pay for itself, literally, many, many times over in the course of a Macintosh owner’s year. By subscribing to MacUser you save over $20.00 off the newsstand cost. And if you ever feel we shortchange you editorially, we guarantee to refund any unused portion of your subscription on demand. No questions asked.

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BALANCE OF POWER

Power! Now you can be either the President of the United States or the General Secretary of the Soviet Union. While monitoring and responding to crises in a world arena of superpower politics, your goal is to enhance your country's prestige, without provoking a nuclear conflict. It's the ultimate simulation for the nuclear age. Available Fall 1985.

© 1985 Chris Crawford.

THE PERFECT SCORE: Computer Preparation for the SAT

The Perfect Score for the Macintosh covers all areas of the SAT exam, and includes a timed practice exam, print-out capability and a continuous on-screen clock. All this makes The Perfect Score more computerized than other SAT programs—so you'll learn more. Available Fall 1985.

The Perfect Score is a trademark of Mindscape, Inc. All rights reserved.

STEPHEN KING'S THE MIST

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.

© 1985 Angelsoft, Inc. Based on "THE MIST" copyright © 1980 Stephen King. All rights reserved.

DEJA VU: A Nightmare Comes True

Deja Vu is a graphic/text adventure in which everything seems vaguely familiar, yet you remember nothing. Advanced Macintosh technology lets you explore your environment with a click of the mouse, but you'll still have to solve this Chandleresque murder mystery yourself! Available Fall 1985.

Deja Vu © 1985 ICOM Simulations, Inc.

RACTER

Racter is a wizard at wonderfully weird computer conversation on almost any subject. Practice the art of small talk or liven up your next party. Racter is artificial insanity at its best. Talk to Racter, soon! Available Fall 1985.

Racter is a trademark of Innac, Inc.

James Bond 007 A VIEW TO A KILL

A madman's cravings for power and vengeance spell destruction for Silicon Valley. Take your place as Agent 007 and experience all the elegance and daring of James Bond's finest adventures. Available Winter 1985.

Based on the screenplay A VIEW TO A KILL © 1985 DANJAQ S.A., software © 1985 Angelsoft, Inc.

MINDSCAPE

3444 Dundee Rd.
Northbrook, IL 60062
1-800-221-9884
(In Illinois 1-800-942-7315)
Read & Heed

As the creators of MusicWorks, VideoWorks, Art Grabber and now CheapPaint, we (MacroMind Inc.) have witnessed a disturbing phenomenon in the Macintosh user community. Programs that we have prereleased to people for the purpose of beta testing have found their way onto many public domain disks. This is especially true of our Art Grabber program (also known as Art Thief or Paint Grabber) which was being distributed by CompuServe and other BBSs as well as available on most public domain disks for a period of time. We did not authorize Art Thief or Paint Grabber to be public domain at any time. Most organizations we contacted quickly removed the unauthorized programs, but the damage was done.

MusicWorks also is widely copied illegally, and many user groups have even given our prerelease versions .34 and .37 as if they were for public consumption. One store in L.A. even had the gall to sell a prerelease version.

If we remember back to September 1984, there was very little good Macintosh software available. As soon as MusicWorks made the scene, everybody had to have a copy of it, and so the prerelease versions spread like wildfire. Now these same people, who were so grateful for having a decent piece of Mac software, refuse to go out and buy a legal copy of MusicWorks.

The industry needs a grass roots campaign to put an end to stealing software from hardworking programmers! The only way that we can continue to produce high quality products like VideoWorks and MusicWorks is by people buying the software, not copying it!

We think that $79.95 for MusicWorks and $99.95 for VideoWorks are fair prices to pay (besides the fact that you can buy our products at up to 40% discount anywhere). It costs a lot of money to develop these products. We feel that we have contributed a lot to the Mac community and have tried to keep our software prices low. It is time for the user community to show support for developers like ourselves.

The Bottom Line: If you are regularly (once a day or once a year) using a copy of one of our products that you didn’t pay for, you owe it to us and to the future of the Macintosh to buy a copy.

Marc Canter
President,MacroMind, Inc.

More MacAbuse

We of the MacAbuser community wish to issue a call for users to return to the principles that personal computing used to mean. By that, I refer to seeming overdependence on Apple to provide all the answers for anyone using their brand of computer. We all sit around bitchin’ and a-mournin’ about the latest shuffles and gossip about what Apple will do or won’t do.

Yes, the tools that we need to do custom work (like ex-Apple-er Bert Sloane’s Font/DA Mover) should be done by Apple because they got a jump on how to figure out the intricacies of the machine. But that didn’t stop Don Brown from writing DAM way before Apple released its own. But Apple sells machines, not uses for them. Users should not be so dependent on the Cupertinoians for Gospel Programs like MacWrite and MacPaint.

(See, yeah they are good ones, but are only examples of what can be done. And to think that they are the only way something can be done stifles both the creativity that the computer can enhance and the reasons for having one machine for one person.)

The IBM mentality of depending on the machine’s builder for all goodies for that machine is starting to grow. It must be nipped in the bud before it gets any further. How many good ideas lay stillborn by someone’s inability to get them realized is a matter of conjecture. But I think that Apple’s priority should be to get users to realize that they are not and cannot be supplier of all the promise and potential that this machine has.

I would rather than someone try to make a new and exciting use for it and fail, than not try at all. Better creative tension than smug complacency any day.

So, dear user, do something radical with your machine. Find a way to get what you do with it out to the rest of us through MAUG, or your local user group, or selling it in a magazine. But get it done because YOU want it done. Without some creative anarchy with this tool, we all lose.

Larry Loeb

Click Where?

I was very impressed with your premier issue. The articles were informative, and the level of technical sophistication of articles like “The Gourmet’s Icon Cookbook” is what the Macintosh community has been longing for. And the graphic design and overall “look” of the magazine are impressive. Kudos to your technical editing and art direction staffs. A first-class effort.

Congratulations, also, on naming John Dvorak as a columnist. While I don’t always agree with him, he’s certainly fun to read. Looking forward to his next column.

One thing, though, about the window on the cover: Aren’t you worried that the competition will sneak into newsstands and click on the go-away box? As far as I can see, that would be the only way to keep this magazine out of the hands of the information-starved Mac community. It’s like manna from heaven.

Keep up the fine work.

Robert R. Wiggins

Who’s a Big Wimp?

MacUser seems to be the perfect mix of meaningful Macintosh information and interesting, insightful articles. I especially enjoyed the many minireviews in your MiniFinder section.

As for Dvorak’s column, as always I hated him... and loved him. I wonder what he thinks of those of us that enjoy both the “6s” and the “6s” Big wimps?

Sincerely,
Tom DeFazio
Color Mac?  
No.  
Color From the Mac.

A recent wave of press releases (well, three anyway) promise color MacPaint output. All require special software and either a color TV or RGB monitor.

Users will first create images with any Mac software and then move them to the special versions of MacPaint using standard cut and paste techniques. Once the image is moved, the new software color is added and the results are either viewed on the color screen or transferred to film.

Prices and shipping dates have not been announced, although we expect to see at least some of these units demonstrated at the Boston MacWorld Expo. Look for a full report next month.

Numeric Turbo is Assimilation’s high-speed trackball combined with a full-function numeric keypad that provides function keys, cursor control and a keypad. The unit attaches to the side of the Mac keyboard with velcro strips and can be operated from either the left or right sides. Numeric Turbo is compatible with Jazz, Excel, Ensemble, Quartet and Dollars & Sense and is fully operable on AppleTalk. An extra port on the unit permits the mouse to join the party. $149, Assimilation, 485 Alberto Way, Los Gatos, CA 95030.
Would the anonymous sender of the above kindly inform us which programs are shareware as a number of editors are anxious to review them.

**UPDATEs**

Macintosh programs all seem to have a feature not often found in programs written for other computers: They evolve, and updates are released, and eventually you, the user, has to wonder if you have the latest version, the most recent update. Every month in this space we'll tell you the latest version numbers (as of press time).

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**68000 WATCH**

About 5000 Atari 520 STs were shipped to dealers in mid-August. Carrying a $799 price tag for a basic black-and-white unit and $999 for a color setup, the units were snatched off dealer's shelves. However, reports indicate that the return rate almost matched the shipping rate. A lot of 'em don't seem to work.

Those that do work don't have much software. There will soon be the inevitable Haba product, allegedly a program that will let you write and edit your own will! And possibly a spreadsheet, but Atari says that GEM Write and GEM Paint will not be released until mid-October. Check your local stores. And you thought that early Mac owners had a rough time.

All has been quiet on the Amiga front. Small third party developers are still having a very hard time getting machines to work with. And quantity shipments have been delayed a bit. Units should be reaching dealers though, as you read this.

MacUser's evaluation unit is still on hold, according to Commodore's PR people. As soon as we get it, we will check it out and objectively report to you. We're particularly interested in its KickStart system, where the operating system is loaded in a 256K block of protected RAM when the machine is powered up. This is a feature that was not covered in any of the first glowing reviews.

**THE RUMOR MANAGER**

John Dvorak was recently seen coding a program. When we asked him if it was a Mac program, he merely growled. When we tried to sneak up for a look, his faithful dog Sparky growled. But it did look like a Mac program. More soon . . . . Steve Jobs has been talking to several groups in Europe about forming a new company, most likely in the computer field . . . . . a 40-meg hard disk for the Mac will hit the stores before Christmas, and will be priced below $2500 . . . . . a portable Mac with a TFT (thin-film transistor) color screen exists in prototype form . . . . . a new LaserWriter based on the Kyocera 10 page per minute laser engine will be out within six months and will list for under $5000 . . . . two of the new Sony double-sided drives will fit in a Mac case. 'Nuff said? . . . . . look for a surge in Mac accelerators.

Michael "Shatter" Saenz exhibited his talents at the MacUser booth in Boston. Look for this latest edition of "Shatter"
NEW ON THE MENU

HOT OFF THE WIRE

Two spanking new telecommunications programs are now undergoing final tests.

Mouse Exchange Terminal will be Dreams of the Phoenix's entry into the crowded Mac telecommunications field. This $39.95 program can emulate any terminal and has user-defined macros. The program was written by Bill Bond and is based on the powerful and easy to use FreeTerm.

The other program is Software Venture's Microphone. This under-$100 program features a unique "Watch Me!" mode that remembers user and system actions. Telecommunications automation is just around the corner. Microphone also has powerful scripting (macro) functions and an excellent user interface.

IS SWITCHER REALLY FREE?

Switcher, Andy Hertzfeld's wonderful productivity aid, has always been referred to by Apple as a free item. Apple has honored that promise, although in a roundabout way. Users who are willing to print their own manual and have some adventurous spirit will be able to obtain Switcher from MAUG on CompuServe (Go PCS-23) and through other electronic bulletin boards.

Most users will get their copy as part of a commercial software package. These packages will include Switcher and a tested, documented Switcher document. Apple is licensing Switcher to software publishers for $250 per year. They require their licensees to provide the tested set up document and clear instructions.

Finally, those users who want to explore the frontiers of Switcher will be able to obtain a nicely packaged disk and manual from Apple dealers. The disk will include some other utility software and the package will carry the reasonable list price of $19.95.

Switcher TidBits

Every application has a magic number, the number of kilobytes (K) that make it run best in Switcher. Users can only discover these numbers through trial and error or listings published by the various user groups. Examples of magic numbers are 304K for Jazz and 179K for MacPaint.

Magic numbers will soon become unnecessary as developers add SIZE resources to their products. The SIZE resource tells Switcher exactly how much space the program requires. All of this is detailed in Inside Switcher. Switcher 4.3 was announced as the release version in August. Sharp-eyed readers will note that the actual release version is 4.4. What are the differences? Version 4.4 corrects a bug by adding two instructions which take a grand total of six bytes!
The Analog Fence

Some users who upgraded their 128K Macs to 512K have reported overheating analog boards. (The analog board is the circuit board containing the sound and power supply circuits that is mounted on the left side of the Mac.) Here's what MacUser's investigation uncovered.

The first 72,000 or so Macs (all 128s, obviously) used Rev. B of the analog board. All later Macs (both 128s and 512s) have Rev. C. Component for component they are identical although the layouts differ slightly. Rev. B has one extra part, the analog fence. The analog fence is a metal strip that sticks up from the board. It is tied in to the circuitry and was designed to dissipate the heat generated by the power supply.

Thing is, it didn't. In fact, by blocking a bit of the airflow, the analog fence made things slightly worse. The heat problem does not affect 128K Macs, but since 512s work a bit harder, there is more heat to get rid of. Most 512K Macs with the analog fence have no heat problems. However, if you have heat problems, a technician can easily remove the fence. But if it ain't broke, don't fix it.

Armchair adventurers can look forward to huge strides in state-of-the-art computer gaming, thanks to the efforts of several super talented designers and their companies.

Silicon Beach Software, well-established as a leader in Mac entertainment programs since its smash hit Airborne!, is about to turn adventure gaming on its ear with Enchanted Scepters, an illustrated text game with stunning graphics, digitized sound effects and even a little pseudo-animation. Rumor has it that the construction kit used to create this eye-popper will be available a few months down the road.

Players of Mindscape's Deja Vu, an icon-driven adventure game, have only to click on wanted objects to pick them up off the screen and transfer them to a "possessions" window. If you'd rather click than type, this one's for you.

Entertainment software leader Electronic Arts is bringing a number of its best-loved hits to Mac enthusiasts. Dr. J and Larry Bird can now go One On One thanks to a new, two-controller adapter available from Assimilation. More strategy-oriented types can try their hands at Archon, a sort of live-action chess game in which pieces battle for possession of each square. EA will also be distributing Origin Systems' Ultima III, Moebius, and Auto Duel. And, for the most double-domed among us, they'll be offering a Calculator Construction Set which allows users to create custom calculators, then add them to disks as desk accessories.

Remember to send in those bug reports. Let us know about any bugs you find in commercial software. We'll be starting our listing next issue, and we'll pay $25 to (and print the name of) the person who, in our humble editor in chief's opinion, supplies the best bug.

If the winner also supplies a fix for the bug, we'll give a very special award. Bug reports should include all the details: what you were doing when you found it, what Finder was on the disk, what fonts and desk accessories were in the System and anything else you can think of.

Send your bug finds to BUGS c/o MacUser, 25 West 39th Street, New York, NY 10018.

Three Mac databases will take on IBM PC and UNIX DBs in a toe to toe slugfest at the Entity-Relationship Conference in Chicago on October 29th.

Vendors will demonstrate their products by showing how they handle a case study involving personnel data. Solutions will compete on data modeling (relational features), time to build the solution and query language.

If you're interested in powerful databases, contact Rodney P. Zimmerman at 415-838-6571 for more information.

We lost a few mice in last month's MiniFinder section. We apologize for any confusion these errors might have caused. Here are the correct ratings:

VideoWorks is a 5-mouse program, not a 2. See the review in this issue to see why.

And ConcertWare comes with more than 20 songs, not 200! (And you thought they'd discovered a new way of storing data.)
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..."

MacAttack! was the first, an amazing bestselling programming feat. It's a 3-dimensional tank battle zone simulation where you defend a city in your radar-equipped Sherman Tank. You must survive by out-maneuvering conventional and heat-seeking missiles coming from your opponents who can only be eliminated by accurate shooting on your part. Deadly tanks and planes roam about in this unique game with three levels.

Harrier Strike Mission is follow-up to MacAttack! in a tour-de-force of Assembly language utilizing sensational 3-D graphics. This flight combat simulator features the famous Harrier Jump Jet, a fighter aircraft which can maneuver like a helicopter but has all the punch of the latest in modern jet armament. You are pitted against an enemy-occupied island firing heat-seekers, not to mention fighter aircraft in mid-air combat. You must take off from an aircraft carrier, take out the command post and fuel depot on the island and return to your ship. With two skill levels and your choice of day or night mission, mouse or joystick controls, it's the ultimate 3-D flight combat simulator.

Then there's Fusillade. You're the last person stuck on Planet Fusill, and must defend a city from power-hungry kamakaze looters in a fast-action shoot-out which escalates at dizzying speed as wave after wave attacks your position in over 30 knuckle-whitening levels. Mouse, keyboard or joystick controlled.

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.

Miles Computing Entertainment Software. The Promise Fulfilled.

Miles Computing, Inc., 21018 Osborne Street, Building 5, Canoga Park, California 91304. (818) 341-1411.

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SMALL DEVELOPERS FILL BIG NEEDS

BMUG

THE BERKELEY MAC USERS GROUP, 3,000 strong, is one of the country’s largest. They even have an office in New York City! The group has grown so large, in part, as a result of an extraordinary bimonthly newsletter. Hundreds of pages long, it contains product reviews, programming help, news and features, and practical projects.

The Fall edition of the BMUG newsletter, hovering around 300 pages, includes two very interesting hardware projects. BMUGNET is an AppleTalk-compatible Local Area Network using ordinary phone cables. The project offers considerable savings in time and money.

The second BMUG hardware project is a speech digitizer. The newsletter gives complete instructions for building a D-to-A converter. A kit with printed circuit board and hard to find parts is available from BMUG for under $50. The BMUG newsletter is available to anyone for $15 a semester plus $2 postage.

Ode by a Mac

Although not exactly a new item, I just recently heard about an unusual Mac application. Called Magical Poet, it is a Mac program that generates an original poem and creates a personalized greeting card from among 80 standard designs. The Poet generates a three-verse poem in limerick style built around the name and descriptions of the cards’ recipient. The developer, Dwight Minkler of Phoenix, claims that the Poet will never generate the same poem twice, even given exactly the same information. Approximately 250 Magical Poets have been installed in greeting card shops around the country. For further information, call 1-800-422-POET.

MacChatter

Apple has been working internally on speech digitizing software for the Mac, and recently made the modules available to developers for inclusion in new programs. The software, called MacinTalk, combines small bits of sound called phonemes to generate words. Words that sound different from their spelling can be adjusted by hand. Sounds a little like Smooth Talker, and I’m told that the people at First Byte are none too happy about this.

From the Ground Up

Several small developers I have spoken with recently are taking a consumer-oriented approach to their products. Working basically from their homes, they believe their best chance for success is to provide well-made, specific-use products at very reasonable prices and support them better than anyone else. Many of these developers came out of Apple, or from an Apple II background, and they remember that Apple used to have this approach. (Anyone listening, Cupertino?)

Lauryn Jones and Diane Hunter, former product managers in the Mac team at Apple, started Assimilation (formerly Assimilation Process) with an idea for software that would connect Mac to daisy wheel printers. Too small for internal development, the Mac•DaisyWheel Connection became their first product. (Diane constructed the cable that was packaged with the software.) The two have kept good relations with Apple, and often use Apple resources for product development.

Lauryn and Diane have set their niche as utilities and peripherals that will help open up the Mac. Mac•Touch adds macros to Mac operations, and Work••Print, their newest product, is a print spooler. They also package a parallel port, and plan a MIDI connector.

Marilyn Afana was a CPA. She became annoyed that nobody had accounting software that worked the way she did, so she decided to do it herself. She designed the software and assembled a team to program it. She decided to use the Mac as a base because of its interface and the fact that the market was not yet flooded with Mac accounting products. Her product, called Strictly Business, is a modular accounting system for small and large businesses. It has been used to help sell Macs in Japan because it is one of the few products that can handle the large values required when working in yen. Marilyn incorporated Smooth Talker into her program, so error messages and other minor features are spoken.

Charlie Jackson of Silicon Beach Software will continue to focus on games (Airborne) and utilities (Accessory Pak I). A new product called PowerPrint is used to create items like custom labels and 3 X 5 cards, using both text and graphics. A Conan-like game with digitized sound is planned for around Christmas. Charlie says that the digitized sound used in Silicon Beach games will also be incorporated into several educational programs in development. I for one would love to see a computer that talks back to kids!

Easy, They Say

I can’t wait to see the new program from Arrays/Continental/Haba (recently merg-
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**IN THE LABORATORY (shhh!)**

—Beta versions of multitasking software for the Mac have been seen alive and running in a secret location in Berkeley.

—Mac-controlled video production systems that take a project from conception to storyboard to color animation, taping and post production have been observed in California.
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THE GÜTENBERG MAC

HERE WE ARE IN THE OFFICES OF Congressman Bill Stump. Bill has just returned from a whirlwind factfinding tour of southern France where he conducted feasibility studies on importing prefabricated sections of highway to repair the Triborough Bridge. Bill’s press secretary thinks all of his constituency should know about this remarkable plan which is due to come before the House Appropriations Committee in about twelve years. An informative release has been written complete with pictures of Bill and a prominent French actress, both wearing hard hats at the actress’ pool in Marseilles.

The copy goes to a writer to add a little spice to the article and then goes to Bill’s production department. It is laid out on boards. Type and headlines are set and the whole thing is pasted up in the studio. The press secretary looks everything over and remembers that Bill is due to appear before a Senate subcommittee to report on moped emissions. This is a very important issue and must be included too. Back to the writer, then to the studio and the typesetter, and back again for approval. The secretary gives it a once-over and it goes to the printer. The job is done and out go thousands of valuable newsletters telling voters how lucky they are to have Bill Stump fighting for them.

The whole process has taken two weeks and the mailing is on schedule and everybody is happy. What a guy, Bill Stump! But what’s this got to do with the Macintosh?

The whole job could have been done in one day with a LaserWriter and any one of the electronic page makeup programs now available for the Mac. Composition involves the laying out of a printed page and sizing of type and pictures so that everything fits and, at the same time, is esthetically pleasing to the eye. In most cases it is laboriously done by hand because, in the type composition industry, one of the most expensive services is electronic page makeup. Most studios simply don’t use it. Yet a Macintosh on an AppleTalk network connected to a LaserWriter and running PageMaker by Aldus or Ready Set Go by Manhattan Graphics or Just Text by Knowledge Engineering can do it. Ready Set Go, for instance, can prepare 32 pages at a time.

The pagination software alone for the well-known Linotron 404 costs a whopping $20,000 and the system itself costs about $300,000. Fortunately the company provides a two-week seminar to teach operators how to use it. Compare those prices with the Macintosh, LaserWriter and, say PageMaker, the most expensive of the lot at $495. Whew!

Here is another enormous vertical market the Mac has carved for itself in less than two years.

This is not to say that LaserWriter output is any match for the Linotron’s; it isn’t. But it wasn’t intended to create display type or galleys for books. The equipment that now does most of the typesetting for printed matter has been around for ten years and more. It is sophisticated and powerful but has not been benefited from the microcomputer revolution. Type shops are generally configured with single and multiuser minicomputers or larger numbers of terminals linked to mainframes.

In the realm of composition where ultra-high quality is not a premium, the Macintosh and LaserWriter combination are a truly formidable duo. Most of the printed matter that you see does not require resolution of 2,400 dots per inch. This includes flyers, brochures, internal corporate communications, newsletters, community newspapers, manuals and most government printing.

Here’s a whole new industry in Mac users’ laps for well under $10,000.

Ultra Mac

As applications like page makeup appear for the Macintosh, the system’s limitations dictate themselves more clearly and are being addressed. Memory was once the battle cry of the IBM sales and marketing crew. Apple answered with a 512K Mac and made an upgrade available to 128K owners, originally for $999 and now for $599.

This brought the Mac into a competitive position and gave software developers a much richer environment in which to work. The price to the consumer—$1.60 per kilobyte. This is the price of a 512K upgrade from an authorized Apple dealer. But this is expensive. The price has come down since third party developers have gone to work. A 128K owner can now upgrade to 512K for a mere 60 cents per kilobyte, $229 versus $599. And it doesn’t end there. Reliable 1-, 2- and 4-megabyte upgrades are also available at indexes averaging $1.20 per K. And you can upgrade your 128K Mac to a full megabyte for about $1.00 per kilobyte. The Mac’s present and intended ROM will address up to 4 megabytes! Try that on for size. Reports are that it does wonders for sluggish programs like Jazz.

A Last Note For Adventurers

Piracy is no longer associated with Errol Flynn. This is 1985 and it is stealing. While the postures taken by companies like Lotus and Microsoft seem more like a challenge to hackers than an appeal to ethics, consider the little guys. If everybody knocks off their products such companies will cease to exist and all the work they put in goes for naught. As one manufacturer puts it “Would you go into a store and steal software off the shelf?” Piracy is the same thing. 

GUTENBERG MAC

by Richard Herbst

Page.Maker

by Richard Herbst

The Pinstripe Mac

by Richard Herbst

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Please circle 73 on reader service card.
SO I CALL UP STEVE JASIK.

This guy’s gotten a lot of press lately, and he’s about to get more here. He wrote MacNosy, a “decompiler” for Macintosh programs.

Here’s what it does: It turns any old Macintosh program into source code: an assembly language listing. May produces the actual program assembly code — or something that’s very close to it. It takes binary, compiled program code and produces “human readable format.” The stuff you’re not supposed to see.

If you don’t understand assembly language, of course, it might as well produce Sanskrit. If you do understand assembly language, the feeling is akin to slowly disrobing your favorite fantasy figure.

You not only see how programs are written, you see how well programs are written: Who writes good stuff. And who doesn’t.

To digress for a second … Microsoft writes good code. Let Nov crank away on Microsoft Word a few minutes and you’ll see code that’s clean, polished, and was thoroughly thought through, “spec’ed out,” before a line of code was produced. Microsoft writes good stuff.

So, okay. It’s possible to turn compiled programs into assembly language listings. Or even to go a step further (as Nov does) and “decompile” the programs to break out procedures and other nerdy stuff.

Yawn.

But there’s more. Jasik talks about a project to turn binary program listings into Ada. Into Ada! “Very do-able,” he says. We’re not talking about “disassembling” anymore. Disassembling “brings up” the code one level of comprehension. We’re talking now about bringing the code all. The Way. Up.

If you can convert code to Ada, you can certainly convert it to C, or Pascal, or even Basic listings!

And let’s say it’s already done. I’ve got the program that does it. I can now take OverVUE or ThinkTank or Filevision or Microsoft Word or Saramon III or even Mind Probe (heh heh) and turn each program into crisp, clear, program listings. Maybe Pascal listings; they’re reasonably straightforward.

When I get done, I think I’ll copy the disk with the program listings and pass them out at the next user group meeting. Then, of course, the members, with disks clutched in their hands, can scurry home, fire up their Pascal compilers, compile the listings and Voila!

Maybe that’s no big deal. That’s only piracy, possibly. But other software manufacturers can do the same thing. And use the results to steal precious code, tricky routines, and subtle features.

How would you like to spend several million dollars producing jazz, then find your source code in the hands of your competitors, and everyone else?

What’s the program do? What do people need that they don’t have? What’s useful? What would people pay real money for? What hasn’t been done?

That’s the hard part.

And you’re still only part way there. After “What’s it do?” comes “How’s it do it?” What’s the program flow? What things need be done first? After that, what comes next? How much control does the user have, and where do they have it?

Along with those decisions come “looks.” What are the commands? And how are commands given? From menus? From dialog boxes? Which should go where? Maybe an incredibly sloppy “Everything on the menus,” à la Tardis FastFinder is the way to go. Maybe not. Maybe the program should nag you constantly with dialog boxes, à la MacTerm., which lets you know when it’s dialing, when it’s hanging up, and when it’s quitting with (horrors!) changes made to the settings.

Of all the bum Macintosh raps, the bummiest is this: that the Macintosh is difficult to program. Uh uh. The Macintosh is easy to program. The ROM routines save — not cost — programmer’s time. Macintosh makes coding easy. Look what the mainframe boys at Telos did when presented with a few Macs. After mainframes and minis, Mac was easy. Zip, zip, zip; Filevision. Thanks for the ROMs.

What Macintosh requires of programmers and designers is thought. Raw thinking. Never easy. The easy way is to present the unwary with a “>” prompt and hope they read the manual. The hard way is deciding what’s in the dialogs, what’s on the menus, and what gets “dimmed” where.

As always, making things look simple is the hard part.

Go get’em, Steve Jasik. The world has nothing to fear from you.

If there’s a twisted, doubled-back, contradictory irony in this spiel, it’s this: of every Macintosh program in existence, the very worst user interface — mind you, the very worst — is the MacNoy user interface. The worst. And I would have paid double Nov’s $60-some-dollar price.

Think what it’d be worth with a menu bar.
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Nancy Taub, Manager Technical Documentation, Chemical Bank, New York, NY

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The Ultimate Page Processor™

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**OMNIS 3**

List Price: $495.00. Requires 512K. Printer and external drive recommended. Published by Organizational Software Corporation, Suite 150, 2655 Campus Drive, San Mateo, CA 94403. (415) 571-0222.

The **OMNIS 3 RELATIONAL/HIERARCHICAL DATABASE** system is designed for development of vertical applications systems, such as job costing, accounting, inventory tracking or any other application that requires user access to multiple files. Up to twelve files may be open at a time, while the program is capable of handling 24 file formats per data file.

Among the features included are user defined pull-down menus, command buttons and messages, preconfigured command sequences for automated procedures, password security, array processing of data, mail-merge function with access to Macintosh fonts and date calculation capabilities.

Reports are user defined, allowing up to 9600 fields and 60 calculated fields per report layout.

Data files created in Omnis 2, a single file program, are upwardly compatible with Omnis 3. The structure of an Omnis 3 database may be modified after data is entered and stored, providing maximum flexibility.

Omnis 3 can generate and read standard DIF (Data Interchange Format) files, SYLK files (Symbolic Linking), delimited format and text files. A multiuser version of Omnis 3 is also available for the AppleTalk network and Corvus' OmniNet Network.

The program comes complete with four working examples, including Personnel Management, Accounts Receivable, Inventory Control and Job Costing. These files demonstrate everything from user-defined menus to custom help menus and screens, and they can be treated as primitive examples to be built upon.

Omnis 3 can be installed on a hard disk: the user will be required to insert the master disk three or four times a month as a key.

The documentation is very clear and complete, although one thing is obvious: users with experience in database design will have no problem learning the program, while first time databaseers will be overwhelmed by the capabilities available. This program is not for the meek. —DB

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**THE GREAT INTERNATIONAL PAPER AIRPLANE CONSTRUCTION KIT**


**THE GREAT INTERNATIONAL PAPER AIRPLANE CONSTRUCTION KIT** lets MacPaint users create customized versions of some of the world's best paper airplanes. The kit consists of a disk of MacPaint files with design basics and decorations for custom aircraft, including wings, tails, assorted hardware and armament. The designs are reprinted from *The Great International Paper Airplane Construction Book*. The manual explains the procedure, from decoration to actual assembly used to create a personalized masterpiece.

Before creating a plane, one of the sixteen designs must be selected as a template. Printouts of the illustrations files in the back of the manual serve as guidelines. Users may put the designs provided on the plane or create designs of their own. Once suitable pictures have been located, the pictures are selected using the marquee tool and copied into the Scrapbook using the standard cut and paste techniques. (Remember to not save changes to the design files since the files will be of more use later if left intact.) This process is repeated until all the art needed to complete the plane has been collected in the Scrapbook.

The pictures in the Scrapbook are now pasted onto the plane template. The design already has folding lines used as a guideline for assembly. It is unwise to cover these lines with illustrations since the lines must be visible when folding the plane. When the decoration process is finished, the plane is printed.

Fold the plane by following the instructions in the book and the dashed lines. All that remains is to find friendly airspace and let your imagination soar.

Since the drawings are MacPaint files, *The Great International Paper Airplane Construction Kit* is easy to use. The documentation is elaborate. It includes explanations and hints for every stop and in the back of the book there are...
pictures of some finished plane designs and short descriptions of the flight characteristics of each.

In our rush, rush, rush society people don't relax and let stress and tensions build. This program provides a fun way to relax during slow moments in the day. At home children of all ages can occupy themselves for hours building planes and with a Mac creating a plane is half the fun.—Gilbert Rankin

**XL/SERVE**


XLServe makes a Mac XL the key player in an AppleTalk network. This program, which runs under MacWorks, turns the XL into an effective volume and print server.

The volume server feature allows AppleTalk users to access any one of up to sixteen volumes. Each volume can be password protected so that critical data can be protected. Volume partitions are adjustable by the manager function. File storage is efficient with allocation block sizes ranging from 2 to 8K, depending on the volume size.

The print serving feature allows all the users on the network to speed up their printing. When a print command is issued, the document is rapidly sent to the print buffer established by XLServe and the sending unit is immediately released. Users no longer have to wait for printing to end before they can start working again. XLServe then prints the document without further user involvement.

The Mac XL that is the base for all of this activity remains fully usable. XLServe's operations are transparent to the XL operator. XLServe seems to make fewer demands on the system than other file (volume) servers.

The program is well documented and has on-screen help. It is easy to install and use. Each user installs the XLServe driver as a desk accessory so calling and changing volumes is simple.

There are a few bugs. Word spacing when the print spooler is producing output is not always correct or attractive. This flaw is as much a fault of MacWrite as it is of this program. The print spooler does not support the LaserWriter directly.

Among the most useful features are print spooling and incremental saving of files. The incremental saving feature keeps track of when files were last backed up and only copies changed files when a backup is made. This feature is a real time saver.

Users must be sure to have MacWorks 3.0. XLServe will refuse to even load with earlier versions. The publisher is aware of this problem and a fix should be available by the time you read this.

XLServe should be high on the buy list of every AppleTalk network that has a Mac XL. It is an excellent product.—Dennis Brothers & SB
QUICKCLICKS

GATO


Radar reports: three objects on scope, nearest 990 units, speed 15 knots, course 180°
Up periscope! Enemy destroyer!! Dive! Dive!
You're in command of USS Growler (SS215), a World War II fleet submarine of the Gato class. In this exciting simulation game, your decisions determine your vessel's success and survival. The Pacific Ocean in 1943 was a dangerous place to hunt!

Gato uses every bit of the Mac's graphic and computing power. The screen displays are numerous and complete and the action, as viewed from the bridge or through the periscope, is remarkably realistic. Players can set which the sub's radio operator can translate even if it is so head off into the broad Pacific. You may have been ordered to rescue a downed pilot, or sink a freighter carrying vital

Time-limited missions. Up to five games can be saved to disk.

There's plenty of on-screen help, some history, and a Morse code tutorial (actually, just a chart of the code). Sub commanders can get a report on how many missions they have successfully completed and a report listing the name, size and date sunk of all victims.

Gato is engaging; players must pay attention to all the information their eyes and instruments supply. That's not enough. A successful captain must know, or more likely learn the hard way, what good sub tactics are and what their opponents are likely to do. And although luck doesn't play a big part in this game, it sure helps to be lucky!
The basic training in the manual will serve you well. This is one Mac game where you should read the manual before you start to play.

This first real simulation game for the Mac sets a high standard for those to come. We can look forward! Excuse me, a fat tanker just came into my view on my periscope.

Full speed ahead! Open forward torpedo tube doors!...

- SB

CONCERTWARE +

List Price: $69.95. Requires 128K. External drive recommended. Published by Great Wave Software.
PO Box 5847, Stanford, CA 94305. (415) 325-2202.

WHEN WE REVIEWED CONCERTWARE IN OUR premier issue, we found room for improvement. ConcertWare + maintains the format of the original program but adds many new features. Great Wave Software is definitely listening to the feedback provided by users of the original version.
The most exciting new feature of the Writer module is that it can accept timed entry without using the Player module, and also

FINANCIAL COOKBOOK

List Price: $49.95. Published by Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. (415) 571-7171.

THIS FINANCIAL FACTFINDER AIDS USERS IN CONSTRUCTING various "what-if" formulas that can be used as a basis for financial decisions. Thirty-two different "recipes" are included on disk, including Single Savings Deposits, Monthly Savings Deposits, Deposit Needed for Future Purchase, Living on Your Savings, An IRA's Future Value, How Much Life Insurance You Need, Mortgage Schedule Yearly, Mortgage Schedule Monthly, Mortgages With Balloons, Buying Vs. Renting a Home, Energy Saving Devices and Owning Your Car.

If you don't already own a program that allows you to easily input variable data to figure out, say, the monthly payments on a mortgage if the interest rate goes up or down, this program will prove a handy tool for quick calculations.

Users choose from a menu listing of different recipes to use. If you picked Monthly Savings Deposits, the program would ask you to type in the monthly deposit amount, the number of years you'll be automatically generating the cash, the interest rate earned, compounding periods, your marginal tax rate and the inflation rate. From this, it will produce an itemized display of the yearly balances, including tax paid, current balance and buying power adjusted for inflation.

After testing the program for an hour or so, this
reviewer found it to be both informative and entertaining. First, we found that in our financial circumstances it was better to buy a home than rent. Then, to our amazement, we calculated the monthly costs of a mortgage, using several different interest rates, and found that we could actually afford The American Dream — if interest rates dropped a mere half point.

The instruction manual is well-written, including a glossary of financial terms. The manual also explains in detail the mathematical calculations the computer uses to figure out each recipe, an interesting bit of trivia for mathmongers. The program doesn't integrate data from one recipe to another: to apply the findings from one session to a different recipe, you'll have to either remember the numbers in question, or read them from a saved file or a hard copy.

If you already own a program that lets you figure financial variables, or have access to one through a bank-by-computer account, Financial Cookbook would probably be a useless duplication. But if you've been looking for a simple to use way to make financial calculations, look no further. Just add your own numbers and stir.—TFH

ACCESSORY PAK 1
PAINT CUTTER

List Price: $39.95. Published by Silicon Beach Software, Inc., PO Box 261430, San Diego, CA 92126. (619) 695-6956.

Silicon Beach Software's Accessory Pak 1 is a full set of "wish list" utilities that will appeal to anyone who regularly uses MacPaint. The disk includes the Paint Cutter utility program and a selection of desk accessories, including "Rulers," "Coordinates," and "QuickEject."

Paint Cutter allows full page editing of paint files; users are no longer constrained to MacPaint's small active window. Up to four MacPaint documents can reside concurrently in memory on a 512K Macintosh (only one document on a 128K Mac). Switching between documents on the 512K Mac seems almost instantaneous.

A selector that scrolls beyond the active MacPaint window will cut or copy up to the entire MacPaint page to either the clipboard, or directly into the Scrapbook (without explicitly invoking the Scrapbook). The selection may then be pasted into any application that works with the Clipboard.

If the selected area is too large to cut or copy, the program will specify the percentage over and prompt the user to repeat the procedure. Any selected area can be inverted, rotated, or flipped horizontally or vertically. Vertical selections of up to 8 inches can be rotated without truncation.

The Coordinates menu selection displays the location of the cursor on the screen, and also the size of the area selected in inches, centimeters or pixels. The origin can either be set at the upper left hand side of the screen, or at any point on the screen.

The menu bar can be hidden with a double-click, so that the screen is dedicated entirely to the document being edited. The cursor can be transformed into the Grabber (Hand) by hitting and holding the space bar to scroll the page around.

Some of Paint Cutter's features include the ability to create a Startup screen from any MacPaint document, full printing capabilities (Draft, High Quality, 50% reduction), compatibility with Switcher (optimum memory allocation: 244K for one document, 344K for two documents), compatibility with Macintosh XL, including increased document loading capabilities (up to eight documents with a 1-megabyte Mac XL) and full screen utilization.

Accessory Pak 1 also includes a "Rulers" desk accessory that places horizontal and vertical rulers on the borders of the MacPaint active window. These rulers have real time trackers, much like MacDraw, and can be adjusted to display in inches, centimeters or pixels.

The "Coordinates" desk accessory works within most Mac applications, and will display the position of the cursor at the upper right side of the menu bar. It also can be adjusted to display inches, centimeters or pixels.

The "Screen Saver" program will protect the Mac screen against phosphor burn-in (due to long periods of inactivity) by blanking the screen and displaying a bouncing Mac until the mouse button is depressed; the program can be set for variable delay, activating after a user-specified amount of time. "QuickEject" will eject all disks in drives and will reboot the computer from within any application.

The quality of the software is exceptional. Paint Cutter is a must buy for all graphics enthusiasts. The rest of the disk? A deal any way you look at it.—DB
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BETWEEN A ROCK

MacWrite  MacPaint  MacDraw

MS File  ThinkTank 512  Filevision™

System Folder  Icons Folder  App.Help Letter
Faster than a speeding bullet; more powerful than a locomotive; able to leap stacks of floppies with a single click...

by Richard Herbst
**BETWEEN A ROCK AND A HARD DISK**

**Speed kills. It also adds.**

Place a user in front of a Mac equipped with a hard disk and listen for the squalls associated with birthday presents being opened, Christmas morning ecstasies and other sounds of delight. For many it creates an instantaneous bond of love between man and machine that cannot be broken. If you deal with large amounts of data and if rapid deployment sounds appealing, you are a likely candidate for such a union.

**Genesis**

In tracking the development of hard disks for the Macintosh we are talking about a time frame of only two years. “First-generation” hard disks like Corvus’ OmniDrive, Tecmar’s first MacDrive and the Davong MacDisk are so called because of the nature of their interface with the Macintosh. “Second-generation” systems have more sophisticated interfaces that are better designed to complement the Macintosh environment.

**Problem: System Restraints**

First generation systems initially had to deal with the limitations of Apple’s early Finder, which would handle only 128 files per drive. This is not an unreasonable number if the drive is a 400K floppy. But the drives were generally 5 or 10 megabytes (1 megabyte = 1,024K), and 128 files accumulated in no time at all. Tecmar, in writing its controlling software, luxuriously allocated files in increments of 20K, i.e., a 3K file on a floppy disk opened as a 20K file on the MacDrive.

Transferring 15 or 20 files from floppy to hard disk gobbled up vast amounts of space.

**Solution: Software**

The first change to occur was the development of volumizing software. The hard disk could now be partitioned into smaller multiple volumes or drawers, each recognized by the Finder as a discrete drive and able to handle the Finder’s limit of 128 files. This also helped organize the desktop to the user’s needs. Every hard disk manufacturer now offers volumizing software of one kind or another.

The size of incremental blocks came down as well. The minimum size for most systems is now 2K, and some, such as Corvus’ OmniDrive, are 1K.

More changes. Applications for volume management were written which could create from 20 to 32 volumes on disk. Several companies, notably Micro-Design and General Computer, designed volume managers as desk accessories so that volumes could be mounted or quit from any desktop without returning to the startup volume and opening the manager application. More closely following the Macintosh user interface, disk management became more intuitive.

**Problem: Where To Put It**

One of the guiding philosophies in the design of the Macintosh was the bundled component approach. As much of the system as possible was kept inside the box. The total aspect of the computer was kept as low as possible, the only exception being the external disk drive. A quick look at the majority of hard disks shows them to be larger and heavier than the Macintosh itself.

Four companies have addressed the problem of space. The Paradise Hard

---

**About the Finder...**

QuickWord SetFile Choose Printer Art Grabber QuickPaint Time:Date Cockpit Extras Drawers Scrapbook

Second generation hard disks have the volume manager installed as a Desk Accessory making the manager transparent to the user during applications and available from any desktop. HyperDrive’s manager allows a full menu of icons on the desktop at a time.
Disk offers a small box about half the width of the Mac and slightly less than the Mac's depth. If you disregard the external power supply required for the Paradise which adds a second component, it's a nice design. PCPC's MacBottom is two inches thick and resides underneath the computer. Apple is introducing a low profile design in November. The boldest approach, however, is the HyperDrive. General Computer decided that the place for a hard disk was inside the Mac. Judging by the wide acceptance of this unit, GCC has made its point.

Problem: Waiting For The ImageWriter

When it's time for a document to be printed, the ImageWriter receives two lines at a time from the Mac in high quality mode, about half a page at a time in standard mode. It prints continuously because a 2K buffer holds the file or portion thereof. This ties up the computer for as long as it takes to print out the entire document. If only the document could be stored somewhere besides the Mac and sent to the printer, freeing the machine for other tasks. . . .

Print Spooling

Some hard disks have a portion of the media surface set aside for creating temporary files intended for the printer. This buffer area varies in different systems: Teccmar's is 150K; the Bernoulli Box can spool up to 250K; the MacBottom's is 200K. The HyperDrive 20 also has a buffer.

Once a file is sent to the printer, it is spooled onto the hard disk and sent from there. Since the spooling area on the disks is relatively large, quite a number of documents can be queued up for printing. The Macintosh is now free to quit the application and begin another.

Somebody Has To Be Different

Let's call it the "What? principle." Omega makes a different breed of hard disk. Media for hard disks is sensitive stuff. Data is packed into very tight tracks and the disk platters themselves are extremely fragile. For this reason Winchesters are hermetically sealed to keep out dust or anything else that could come between the drive head and the media surface. If you so much as move a hard disk while it is in operation, you are either a high roller or you're trying to see if somebody up there likes you. The tolerances are so fine in a drive that a slight jar can bring the head into physical contact with the disk (where it should never be) and cause a permanent data error at the very least. Omega's approach is to treat the hard disk as a piece of office equipment bound to be abused. Instead of a hard platter, they use a very large, fast-turning flexible disk which, at speed, creates an airfoil effect on the data side. The sensor rides on an air cushion and if a physical shock is transmitted to the whole unit, the disk simply bends away from the head. Clever, huh? It's called the Bernoulli principle and the unit is called the Bernoulli Box.

The Fork In The Road

Drives come in two basic application types: single user and multi-user. Multi-user systems include Corvus' OmniDrive, Omega's Bernoulli Box (10 + 10), Sunol's Sun*Mac and MicroDesign's Keeper. All four are classed as system servers, providing data for all the computers on an AppleTalk network, but only the Keeper and the Sun*Mac are true file servers. (See Mac User, issue 1: File Servers.)

What ultimately separates one hard disk system from another is the controlling software used. Megabyte for megabyte, and all things considered, the best single user system is the HyperDrive 20. It has the most sophisticated software of any hard disk built today. It is also the fastest. External hard disks receive data from the Macintosh serial ports at a maximum of 920 kilobits per second. Systems using ATP (AppleTalk Transfer Protocols) receive data at 230 kilobits/second. The HyperDrive accesses the Macintosh directly from the internal bus at 5 megabits per second and transfers data to the bus at 1.3 megabits per second. The internal placement of the drive leaves all external ports free.
BETWEEN A ROCK AND A HARD DISK

and the latest version, HyperDrive 20 features 20 megabytes of storage plus print spooling.

But what really sets this system apart from others is the software. As mentioned earlier, the only hard disks which feature volume managers as Desk Accessories are the HyperDrive and the Keeper. HyperDrive also features three levels of password protection plus the option of heavily encrypted files, and the desktop can display as many as 32 volumes. Entire files can be transferred from volume to volume in less than 3 seconds.

Better, Not Bigger . . .

The cardinal rule of hard disks is: back up your data. A hard disk is just another system that can fail. For the single user this means that a smaller but faster hard disk may be easier to work with than a larger, slower machine.

When You’re Having More Than One . . .

The Keeper is a file server. It can provide storage for all the Macs on an AppleTalk network and permit as many stations to enter the same volume and view a file as needed. It also features print spooling and password protection. The Keeper’s software is designed to be as intuitive as possible. The volume manager is a Desk Accessory transparent to the system. Since the Keeper is intelligent, it can manage far more files per volume than the Finder. It can keep track of up to 3,000 files per volume, while single user systems are “restricted” to 512 files per volume with version 4.1 of Apple’s Finder. Sunol’s newest Sun*Mac is also a file server. The Sun*Mac is designed to take on the heavy work loads associated with tying several different operating systems into one network.

Contrast file servers with the restrictions placed on the OmniDrive and the Bernoulli Box, both of which allow one user at a time in a volume. It is only fair to add that these caveats have to be weighed against the costs.

The Rock Has its Merits

The immediate returns offered by a hard disk are the speed increase, centralized data storage and, in the case of multi-user systems, relative degrees of support for a network. At this point, needs must be taken into account. If the network is going to be large and will include computers using operating systems besides the Macintosh, such as MS-DOS, TRS-DOS or CP/M, the Sun*Mac is worthwhile looking at. It can be configured to 275 megabytes. If rapid interchange of files between network users is a premium, the Keeper should be considered. It is recognized by AppleTalk as another device, just as each computer is a device, thus permitting as many Keepers as necessary to be added to the network.

Caveat Emptor

All hard disks require software to manage their systems. Be sure, when considering a hard disk, that the system uses the latest version of the Macintosh Finder (presently version 4.1) and that when subsequent versions are made available there is some kind of upgrade policy. If you are not sure which Finder is being used, boot up the hard disk and pull down the Apple menu. About Finder will tell the story.

If the hard disk uses the Mac’s printer port, be sure that the disk itself provides a port for the ImageWriter. The single user Bernoulli Box uses the Mac’s external drive port, leaving both printer and modem ports free but precluding the use of the Macintosh external drive.

A hard disk’s startup software should self-eject. If the disk must stay in place you have lost use of that drive. HyperDrive’s startup software can be loaded onto the hard disk so the system boots itself. Tecmar’s System version 2.0 is self-ejecting.

Don’t Say I Didn’t Warn You . . .

Buying a hard disk is not major surgery but it does pay to have more than one professional opinion. Assess your needs, both present and projected. Check out the software and the technical aspects as outlined above and make sure the manufacturer is established and offers more than just a box of gear. There must be a warranty, there must be a service policy and there must be tech support by telephone. If all goes well, soon you too can be whizzing through files, jumping from volume to volume and print spooling with your very own Hard Disk.

KNOW YOUR HARD DISK LINGO

Transfer rate: The rate at which stored data travels from the hard disk to the Macintosh bus. Mac serial ports clock at 920 kilobits/sec, unless the hard disk is configured to run AppleTalk Transfer Protocols.

A TP: AppleTalk Transfer Protocols; transmission standards and recognition codes; one protocol is the rate at which data travels over an AppleTalk network; 230 kilobits per second.

Winchester: The sealed hard disk unit including hard disk platter, drive motor and stepper motor (for moving the sensor).

Megabyte: 1 megabyte = 1,024K or Kilobytes. Single-sided 3½” disks can store up to 400K.

Volume: A section of hard disk memory recognized as a separate drive by a computer.

Volumizing: Partitioning of a hard disk into smaller sized volumes or drawers to optimize the Finder's file tracking capabilities.

Desk Accessory: A subprogram installed in the Macintosh system that is transparent as an application and always available from a desktop.

Spooling: Creating a temporary file for data on a hard disk that effectively relieves the Mac of managing print operations.

Serial ports: The modem, printer and external disk drive ports at the back of the Macintosh.
Business essentials.

If you write letters, issue purchase orders and receive material, correspond with customers, vendors or other businesses, need to keep track of facts, figures and faces... Business Essentials™ will ease the burden and put productivity at your fingertips.

Business Essentials is a double layered program which combines word processing and data management. Business Essentials comes with a set of standard business letters and forms.

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The finest family computer game you can buy. And now the classic first scenario, Proving Grounds of the Mad Overlord has been completely redesigned for the Macintosh.

The new Mac Wizardry is ready to work its very special magic on your imagination. Find out why hundreds of thousands of fans have made Wizardry the most popular computer fantasy role-playing game of all time.

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Now, with Mac·Tracks, you can save the time and hassle of typing the same things over and over again. Mac·Tracks records keystrokes, menu selections and mouse movements and plays them back with the touch of a single key! (In combination with the command key.)

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Mac·Tracks List Price $29

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And that's not all. With Work·n·Print, you can print as many documents as you want, consecutively, without stopping in between. Just tell your Macintosh which files you want to print and you'll be able to print them when you want, and in the order that you want.

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An essential desk accessory.

The "Work·n·Print" name is used with permission of and has no connection with the "Printworks" software products of Softstyle, Inc.
PageMaker makes you your own art director.

All companies produce huge numbers of documents for internal use. Interdepartmental memos and minor reports often need little more than typing and duplication, but many other documents require sophisticated text and graphics, and a highly professional look.

To meet these needs companies send editorial material out for typesetting. Type is pasted down with graphics on layout boards, the boards are sent out to a reproduction house, and then to a printer. This process is often slow and very costly.

It was only a matter of time before software developers exploited the Macintosh’s graphics and the high-quality printing capabilities of the LaserWriter by creating desktop publishing applications. MacPublisher and ReadySetGo have been available for some time now, although neither has over, while line lengths follow the margins users set in the target areas.

PageMaker, recently released by Aldus Corporation, has the power to handle nearly all aspects of desktop publishing. It has its own toolbox of drawing tools; the ability to place, crop, and resize graphics; to bend text around pictures; to place whole files onto a board, and print documents in near-typeset quality on a LaserWriter or other PostScript printer.

PageMaker can dramatically simplify and improve written communications within companies of all sizes. Small businesspeople will find it valuable for self-generated ads, brochures and public announcements. Here we’ll see how to use PageMaker to assemble a company report that has text, charts, other graphics and a newsletter.

Preparing Text

Before creating a PageMaker publication, text should be written and edited in advance. Although text can be created and edited directly within PageMaker, it helps to have a clear idea of the length, structure and desired appearance of a body of text before jumping into PageMaker’s layout area. Besides, PageMaker’s word processing is an auxiliary feature, so it functions very slowly.

PageMaker reads MacWrite, MS Word and text-only files directly. Text styles, tab stops and other formatting elements of the documents will carry over, while line lengths follow the margins users set in the target areas.

Text-only files transmitted from other computers via modem can be placed directly into PageMaker. The resulting text will be unformatted, so style and structure elements must be added in PageMaker. Tables created with worksheet programs can also be included by copying to the clipboard, and pasting into a MacWrite document.

Preparing Illustrations

PageMaker also reads MacPaint and MacDraw files directly (MacDraw files must be saved in the PICT format). If
only a small portion of a file is needed (such as the company logo for the MW Company report) it should be copied into a Scrapbook which is then moved onto the PageMaker disk. This will save time when it comes to manipulating the material in PageMaker.

Charts, graphs and other business graphics can be prepared with Microsoft Chart or similar programs, using data copied from Multiplan worksheets. Charts and graphs should be enhanced to presentation quality in MacDraw.

**Publication and Page Layout**

Once text and graphics are ready to go, the next step is to plan the layout of the report on paper, including margin positions, page numbers and standing (repeated) text or design items.

The same process used to design the publication layout must be duplicated for each of the page formats that will be used in the report. The cover letter and report documents contain text and graphics only from the margin to the vertical rule. The newsletter portion could be designed in two or three columns, depending on the nature and size of text blocks and graphics.

**Preparing the PageMaker Disks**

Once the text and graphics are ready, PageMaker disks should be prepared. PageMaker comes as a set of two disks, a system disk and a program master disk. These disks should be backed up, but the manual’s instructions on this subject are not up to the high quality of the otherwise very well-written
The manual simply tells users to "make one backup copy of both disks. Do this now, and store your backup disks in a safe place."

That's a bit unusual. Backup disks are normally maintained as working copies, with the masters stored safely away.

In fact, the original program disk is a key disk. It must be inserted once each time PageMaker is loaded. After loading both masters should be put safely away. The use of the master as a key to unlock (or allow use of) a backup is not mentioned in the manual. (Aldus assures me that the manual's advice, uses the master as a backup disks as working copies, with the masters stored safely away.

The correct procedure is to use the backup disks as working copies, although the original program disk will be required each time PageMaker is loaded. After loading both masters should be put safely away. The use of the master as a key to unlock (or allow use of) a backup is not mentioned in the manual. (Aldus assures me that the manual will be corrected by the time you read this.)

Starting the Report

The first step is to transfer the publication layout, already designed on paper, into PageMaker. Selecting Double-Sided causes the document to print on both sides of each page.

PageMaker initially displays only the first page of the new publication, a right-handed page. Two page icons, with the right corners turned down (cute, huh?) appear in the lower left of the screen. Clicking on the page with a 1 in it brings page one into the window. Clicking on the R page activates a master for right-hand pages. Items that will appear on every page of the report must be placed on master pages.

Designing Master Pages

Since our example report is double-sided, masters must be created for both left and right pages. Selecting Double Sided from the Page Setup menu brings two pairs of left and right master page icons into view. Clicking the R icon brings the right master page into the window.

Nonprinting ruler guides are drawn by clicking anywhere on the edge of a ruler. Page numbers are added by placing an insertion point at the lower outside corner of the page with the text tool, and typing Option-Shift-3. The tag line, Special Report, is positioned similarly in the lower inside corner.

PageMaker can display a publication in any of several sizes: actual print size, reductions of 50 and 70%, expansion to 200%, or condensed so the entire page fits in the window. All editing and design functions work regardless of the screen display, except that text is too small to be edited in the Fit in Window mode.

The Actual Size option is used to place the page numbers and tag line as accurately as possible. Although the 200% size has the largest number of fractional markings on the rulers, and ought to be the most accurate, in many cases items that appear to be...
GO AHEAD! MAKE MY PAGE!

placed correctly in 200% are slightly
off in Actual Size. The screen display is
often inaccurate to some degree, but
the printed version best matches the
Actual Size screen.

Master items that print are locked
onto individual pages. They can be
altered on the master page at any time,
but changes are then reflected on
every page. Save the publication now
and often, especially after a major
operation such as Place.

Assembling Individual Pages

The report contains a cover letter,
two information pages, one newsletter
page, and a page for a company calen­
dar (which is not shown) for a total of
five pages. New pages should be in­
serted before design begins by selecting
Insert Page... from the Page menu.

It helps to work with separate files
for each section of the report. Position
files by using the Place... command.
Open the file from the miniﬁnder and
place it using the cursor shaped like half
a square with text in it.

Adjust the cover letter text slightly so
that it will appear centered vertically on
the page. Selecting text with the
pointer tool causes a windowshade to
appear at the top and bottom edges of
the text block. Moving the top shade
down slightly pushes all the text down
the page, but the bottom shade re­
mains in the same position, so some of
the text disappears. The "±" appear­
ing in the pull tab on the shade in­
dicates that there is carryover text. The
bottom shade can be pulled down until
all the text is exposed and positioned.

The position of the columns is
repeated for page 2. Page 3 requires a
slightly different format because of a
vertical illustration. These pages re­
quire illustrations to be mixed with the
text. Space should be left for graphics
before text is placed.

When a text file is too large to fit its
allocated space, use the text placement
cursor and windowshades to adjust it
to fit the space. If text is too big for
space allocated, PageMaker still re­
serves space within itself for the over­
run and keeps all the text in its original
order. Cutting a piece of text from a
text block may leave an equal-sized
block of white space in its place. To
clear the space the windowshades must
be closed and then cut.

Chart files are placed the same way as
text files, but the placement cursor will
be a pencil, indicating a MacDraw
document. When a chart is ﬁrst placed
it may exceed its limits in any direction,
overlaying text and extending over
margins. Use the arrow cursor to adjust
it, as you would in MacPaint.

The sample newsletter page will be
formatted slightly differently from the
rest of the pages. It will be presented as
if a standard-sized page had been
shrunk to fit into the text areas.

Before the columns are established,
the title of the newsletter must be
typed in. This title is longer than the
line length of the columns, and would
be truncated to fit if the columns are
(continued on page 150)
WITH SONGPAINTER, ANYONE CAN MACPAINT™ THEIR OWN SONGS IMMEDIATELY.

With SONGPAINTER’s unique, musical picture painting, you’ll be creating your own composition in no time. Or, you can listen and learn, by playing one of our 37 pre-recorded songs. Compose, create, or listen and learn. All done the easy way, with SONGPAINTER.

IF YOU’RE A SERIOUS MUSICIAN, COMPOSE YOUR OWN ORIGINAL SOFTWARE SYMPHONIES.

SONGPAINTER allows you to combine instruments, pitch, rhythm, chords, and even special effects to allow total flexibility. And, SONGPAINTER uses a single screen operation to keep you from breaking your continuity by going back and forth between screens.

SONGPAINTER’s FEATURES MAKE IT THE EASIEST TO USE MUSIC MAKER ON THE MARKET.

By turning your Macintosh into a 4-voice, polyphonic synthesizer, SONGPAINTER is amazingly sophisticated, but at the same time, amazingly simple to operate. With 8 instruments, built-in chords and scales, musical building blocks, special effects, accents for rhythm, adjustable tempo and volume control, and single screen operation, SONGPAINTER has it all.

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MacNifty Switch: Your Mac will never turn its back on you! With MacNifty Switch you won't have the problem of turning your Mac around to change plugs for any nine pin port. MacNifty switch will allow any port on your Mac to have two different peripherals attached at once and with the turn of the knob you can switch between any two devices. Examples of using the switch are: use your modem port for both a modem and a digitizer. Have two different printers on your printer port. If you have a hard disk drive the MacNifty Switch offers a main frame of options. This remarkably powerful switch retails for only $34.95: Order today and never see the back of your Mac again.

NEW ABCD Port Switch: For those of you who have found even more things to plug into your Mac than we thought of, you can now get the MacNifty ABCD 4 port serial switch for $54.95.

Keyboard: Music, music, music will come floating from your Mac with the new MacNifty Polyphonic Keyboard. Our new keyboard comes standard with a music driver, but to get the most from the keyboard, you should buy Concertware Plus from our friends at Greatwave Software. With the keyboard and Concertware Plus, you can touch the keys and see the notes appear on the musical staff. You will be able to design your own sound envelopes and turn your MacNifty Keyboard into a concert music synthesizer. Keyboard only $149.95, Concertware Plus $69.95.

MacNifty Joystick Converter: How would you like to mouse around with a joystick? Sound impossible? Not with the MacNifty Joystick converter. All you have to do is plug in our converter to your mouse port and joystick away. You say you don't have a joystick? Well, we thought that some of you might not, so we've included our own. This nifty little joystick fits nicely in your palm and makes playing games, using spreadsheets or almost any application a real joy. For even more power with your MacNifty Joystick Converter, the hyperwarp control can decide just how fast your cursor moves. For only $44.95 take control of your mouse.

MacNifty Stereo Music System: To hear or not to hear, that is the question. The answer is the MacNifty Stereo Music System, it will bring out the true power of your Macintosh sound capabilities. The MacNifty Stereo takes the mono sound from your Mac's audio output and produces synthesized stereo separation. The MacNifty Stereo Music System lets you hear the power of the Macintosh in bold studio quality sound for only $79.95. Order today and hear what you've been missing.

Music System Features:
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DéjàVu sharpen short-term memory concentration, teaches simple words and complex shape recognition, and also improves reaction time—all in an exciting game setting. The educational applications of DéjàVu are literally limited only by the imagination. And, because of the variable levels of difficulty available with DéjàVu, the age and skill range is wide enough to be a learning tool from playschool to high school and beyond. The sky is the limit! Use DéjàVu to challenge your own senses at any level you choose! Use DéjàVu to challenge your friends! Use DéjàVu to improve educational skills! Any way you use DéjàVu, you'll be opening up a whole new world of skill and learning that expands with each use.

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OVER THE TOP WITH OVERVUE

Here is speed, versatility and work space of epic proportions in a fine-tuned product... and did I hear you say Charts and Macros?

By Richard Herbst
**OverVUE 2** is a powerful, versatile database manager that goes far beyond the basic services offered by comparable products. It is RAM-based, written entirely in assembly language and without a doubt the fastest database ever offered for the Macintosh. ProVUE (OverVUE's publisher) has gone to great lengths to anticipate any need a data manager could have and has installed menu access to so many routines that it could be a business software tutorial.

With more than 500 Mac software products out and a good many of them databases, it is time to be discriminating. Users want more than just a place to store information—they want software that will sort and retrieve fast, letting them manipulate the data so that it provides meaningful conclusions in and out of context. They want to generate reports and labels, do mail merges, create relational files and most important, they want software that can exchange data with as many other software sources as possible. This is **OverVUE 2**.

### There Are Databases and Then There Are Databases...

Basically there are two types of databases: text and spreadsheet. The text database's biggest drawback is that it only displays one record at a time. The trouble with spreadsheets is that they are not really intended for the text entry, sorting or report generation required of a database. Fortunately, **OverVUE 2** provides the best of both worlds. The primary datasheet resembles a spreadsheet: fields are displayed in column format, records are read from left to right. In the lower right-hand corner of the data sheet is a Zoom button that displays all the fields in a single record on screen at once. Data entry can take place from either the datasheet or within the record display. Clicking on a blank row of the datasheet and zooming in produces a blank record in text format. Just like a text database. Simply tab from field to field to enter information.

### Who Uses OverVUE?

**OverVUE** is a finely tuned program that combines endless sorting and summarizing techniques with extended math capabilities such as one would expect of a good spreadsheet. Its macro capabilities can make it into a powerful tool that can be customized to exacting personal requirements. **OverVUE** answers the needs of execu-
OVER THE TOP WITH OVERVUE

OVERVUE's data is displayed in columns. Clicking on the ZOOM button brings an entire record to the screen.

rives and business managers who need to keep track of the details of their operations and have the options of interpreting data statistically and presenting it graphically. It is for the user who has to deal with systems other than the Macintosh and needs the availability of data from these programs.

In the following sections we will examine some of the applications available to a database user and compare the options available using OverVUE.

Planning a Database

Rarely, if ever, does a database provide information for calculating the size it can grow to. OverVUE tackles this problem. Each data sheet accommodates up to 64 columns of data containing 62 characters each for a maximum of 3,988 characters per record. The number or records available is limited only by the memory available in your Macintosh as outlined below.

Macintosh (128K) ......... 28,000 char.
Macintosh (512K) ......... 345,000 char.
Mac XL (512K) ........... 200,000 char.
Mac XL (1024K) ......... 700,000 char.
Mac XL (2048K)* ......... 1,700,000 char.

*Using 2-megabyte AST expansion board.

Using the table above it is possible to calculate the maximum number of records possible in a file by dividing the workspace by the average length of each record. In a simple directory containing first name, last name, company, street address, city, state, zip, area code and telephone number, the following are typical results.

First + Last names .... 10.5 characters
Street address .......... 17.0
Company ................ 10.5
City ..................... 8.5
State .................... 2.0
Zip ....................... 5.0
Area code ............... 3.0
Telephone .............. 7.0

Average record width = 63.5

Workspace ÷ average record width = 345,000 ÷ 63.5 = 5,433 records*

*Records available with a 512K Macintosh.

The more uniform data entry can be made, the more accurate the database. Conventional databases can assure only uniform field names. OverVUE includes several features to speed things up and check errors.

Typically, data is entered into a text database by first setting up a screen format consisting of fields, each of which must be assigned a maximum number of characters, a name and a format value such as numeric, dollar, time, text or date. The overall format must then be saved as a master template into which data is entered. Changes to the type of data being entered usually require basic editing changes and a new format. The field size is constant, meaning that whether you key in 2 characters or 20 characters, you have used up the maximum number of characters allowed for a field and reduced available workspace by that amount. OverVUE's data columns can be added at the right or inserted into an existing datasheet. Workspace is reduced by only the actual number of characters entered, not the field size specified.

Since a text database displays only one record at a time, the only way of comparing records is to print a report. OverVUE's records are on-screen for immediate visual comparison and reference. To get into a text database's records a search is necessary and without a reference, some sort of indexing is required, usually implying a specific sort criteria. Although Omnir 2 has such an on-screen directory, records must still be selected. Again, since OverVUE's records are always available on-screen, any cell or field in a collection of records can be either scrolled to or pinpointed by making a menu selection in that column.

Streamlined Entry

The more uniform data entry can be made, the more accurate the database.
"Input Patterns," available from the SetUp menu, are templates for dates, phone numbers, and things like social security numbers. Subsequent entries require only integers or characters. Here's an example:

<table>
<thead>
<tr>
<th>Data</th>
<th>Input pattern</th>
<th>Appears as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>number (     )- (212) 302-2626</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>//</td>
<td>09/04/85</td>
</tr>
<tr>
<td>Speed</td>
<td>mph</td>
<td>147.5mph</td>
</tr>
</tbody>
</table>

Another way of saving time is to save steps by using macros. A macro is a single command that performs a sequence of instructions. *OverVUE* offers a complete macro language. Since *OverVUE* offers endless sorting and summarizing routines it would become tedious to have to perform the same routines again and again. The program can create up to twenty macros on a single datasheet. Macros can be created on the Note Pad or in *MacWrite* and transferred via the clipboard to the Do menu, where they appear as mouse commands with keyboard equivalents. The macro language includes any command that can be found in a menu plus some interesting special commands.

A command character can also be included to perform the macro's function from the keyboard. By including a "Hide" and "Show" instruction at the beginning and end of a macro the screen is reconstructed just once during execution.

**Again and Again...**

Repetitive entries are time consuming and often result in inaccuracies, especially in large databases. *OverVUE* offers an interesting function, "Clairvoyance," which searches a column as data is entered and presents the entire entry if it finds a match. A quarterly statement containing multiple billings or checks written to the same party makes good use of this feature. Besides greatly speeding up data entry, Clairvoyance ensures data uniformity. Consider the problems encountered in building large databases where frequent search operations will be required. A typical database might have any number of variations of a company's name in it:

- Mac User
- Macuser
- MacUser Publications
- Mac User Inc.
- MacUser Corp.

Input with Clairvoyance eliminates these inconsistencies. Just remember: To do it wrong you must do it wrong the first time.

The SetUp menu also includes a function called "Value Bar." If a column is going to contain the same names or values frequently, frequently used entries can be defined in advance. By double-clicking on a cell, a dialog window appears with its choices available by clicking on-screen buttons.

The Fill command is used to fill an entire column with the same data, such as a constant that will be part of an equation throughout the datasheet. The Empty Fill command fills all of the empty cells in a column with the same data. An information sheet might require a number of similar entries such as "Not Available." The Missing command analyzes missing elements of a sequence such as 120, 130, 140, 170, 190, ... and adds the values 150, 160 and 180 to complete the sequence in the proper locations. Tracking a checkbook's records can be greatly simplified with this function.

**Math**

*OverVUE* performs simple algebraic equations with both numeric and text values using the basic operators: * (multiplication), / (division), + (addition), - (subtraction) and () parentheses. In addition there are a choice of relational operators. These include = (equal to), <> (not equal to), < (less than), > (greater than), <= (less than or equal to) and >= (greater than or equal to). Boolean functions such as AND and OR are found in the Find menu. Boolean operators are available as well. For instance, a Zip code directory can be queried for entries between 10011 and 20362. (Greater than 10011 AND less than 20362.) From the Zip codes column choose Select and click on >10011. Next select <20362. The result will include the specified range.

The Boolean OR function works in a similar way. To find Zip codes in both Arizona and New Mexico select all records in Arizona then, using the Select More command, specify New Mexico. This sort of command power would normally be reserved for spreadsheet users, but here they are in *OverVUE*.

A typical file containing expenses, check numbers, parties to whom they were written, amounts, dates and an opening balance would normally be a job for a spreadsheet. All that information, and more, can be listed in *OverVUE* and math operations performed upon the data. *OverVUE* will total a column of amounts, do a count of checks written (or any other records), average the amounts, display a maximum or a minimum amount and present a running total or running difference. Checks can be sorted by...
number, date and amount. The file may contain columns listing checks from two or more banks. *OverVUE* lets you write an equation combining the values of more than one column. You can multiply two columns, add the result to a third, invoke a fixed value such as a formula for the area of a circle and divide by 100 for a percentile ranking. Equations can also combine columns of text, calculate elapsed time between dates and perform many other functions. Text can also be modified in a text equation.

**Sorts and Summaries**

Analyzing information from most databases can be a fairly tedious operation that requires using limited numbers of sort fields. *OverVUE* provides extensive and almost limitless sorting and summarizing procedures. The basic sort operand is SortUp. This, and SortDown, work on text as well as numeric values. The check database can be directed to select all checks written to a specific party, or written within a specified period of time, and will isolate those records in a summary. Subsequent math operations can be carried out on the summary records. The Find menu is a gold mine of functions including Select, Select More, Select All, Select Summaries, Select Reverse and Select Unique.

Sorts can be extended to many levels to filter information. A file containing information such as sales figures and salespersons and including listings by city, state and region can be modified to show useful summaries. Sorting and selecting will produce summary records that can show a salesperson’s activity on a city by city, state by state or region by region basis. All of the math functions in *OverVUE* are applicable to summary records.

When managing columns of figures such as bank balances, phone bills and inventory records, it is sometimes necessary to categorize certain areas and perform math functions on the isolated areas. Why not do it the modern way with *OverVUE*?

Start with a phone bill. By choosing the Charges column and selecting Total from the Math menu, a summary record, the grand total of charges, appears at the bottom of the bill. To get a getter idea of where telephone money is going, first sort up by city, now group by state, go back to the charges column and select Total. The result will be a sheet showing states in alphabetical order, cities within those states also in order and totals per city. Each total is a summary record and to view them alone, select Summaries. *OverVUE* also performs nested subtotals and two-level nested subtotals.

**Graphics**

*OverVUE* creates five different chart formats including bar, column, line, area and pie charts. Data comes from specified Value columns, up to eight at a time. In addition values can be stacked where it would be helpful to display two or more values next to a specific legend, such as a telephone usage analysis showing Time and Charges and Carrier together. *OverVUE* can store up to six chart templates per datasheet, any of which can be modified by format or value. Charts can be modified graphically in *MacPaint*. Command-Shift-3 creates a *MacPaint* file of the chart and if *OverVUE* is used with Exclswitcher, charts can be created, copied to *MacPaint* and enhanced for presentation quality results. Charts can be copied to other Mac software as well, such as MS Word, MacWrite, ThinkTank 512 and Jazz by creating the chart, copying to the clipboard, entering and pasting the chart in the other program.

**Report Generation**

All databases print reports and *OverVUE* is no exception. Usually the reports from most databases are structured when the datasheet is first formatted. *OverVUE* can print formatted data and data summaries; whatever is available in a current datasheet can go into a report. Reports can also include headers and footers, page numbering and date and time stamping.

*OverVUE*'s editing features permit the data to be arranged in virtually any manner. A Blank Report is chosen from the Print menu and Edit Report Template selected. This brings field labels to the screen which can then be moved around to suit report requirements. Closing the size box at the junction of the scroll bars defines the depth each record will take on the printed page. Mailing labels can be generated in this manner. A special menu bar appears when a report template is edited. When the mailing fields are correctly arranged, select 1 Up, 2 Up, 3 Up or 4 Up from the Layout menu. When it is time to print, choose from among five fonts provided: Pica (12 pt), Elite (10 pt), SemiCondensed (8 pt), Condensed (6 pt) or Ultra Condensed (5 pt). *OverVUE* normally prints 66 lines per page. Choosing the page length command from the Layout menu overrides this default setting. *OverVUE* overrides any page length command when printing on the LaserWriter.

Using the Print Report to Disk command creates a text document that can be edited by *MacWrite*, Word and other word processors. Tabs can be set in these reports by using the Shift-Tilde key combination.

(continued on page 154)
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GETTING UP TO SPEED
by Steven Bobker

SINCE THAT JANUARY DAY IN 1984 the Macintosh has earned a reputation as the neatest, spiffiest, most advanced and slowest personal computer. And it's all true.

That watch cursor is always there! Because the desktop metaphor and the easy-to-use operating system all make very heavy demands on the CPU (the computing part of the machine), so often what you see appears to be slow. It doesn't matter that the CPU is actually running about twice as fast as its IBM equivalent and more than five times faster than the Apple II CPU. It seems SLOW.

Are you forever stuck with this great but slow machine? No. Simply No. Apple itself took the first steps toward speeding up the Mac.

Fatten Up

In September 1984 Apple released its 512K memory upgrade well ahead of schedule. The memory upgrade does not increase the actual speed of operations but does reduce the number of trips to the disk required (since more code can be stored in internal memory), making things appear to happen faster. This extra memory can also be used for utility programs that vastly speed up your Mac.

Thus the first and most important step to the Fast Mac is be sure that you have a Fat Mac. Then you can start exploring the wonderful world of MacSpeed.

Switch for Speed

Begin with Switcher, written by Andy Hertzfeld and distributed free by Apple. Switcher allows several applications to reside in memory at the same time, operating as a group of smaller (less than 512K) Macs.

The advantages are twofold. First, and most important, no more time-consuming trips to the desktop; now simply click and you're off and running in the next application.

Speed is also gained in transferring data from application to application. No longer is it select, copy, quit (slow), open (slow) and paste; now simply cut or copy to the clipboard, SWITCH, and paste in the target application. Now putting graphics into word processing is quick and simple.

An Extra Disk Drive, Free

Move on to the RAMdisk. A RAMdisk is an area of Mac memory set up to act as an extra, electronic disk. Since it is merely an electronic fragment of the Mac's memory it runs at the very high speed of the Mac's internal memory rather than at the slow speed of the Mac's disk drives.

Copy files that are used often to the RAMdisk and experience about a 1000% increase in speed when using those files.

RAMdisks are a wonderful solution except for two features: they are limited in size (typically to between
GETTING UP TO SPEED

300 and 350K on a 512K Mac), although the advent of the MegaMac (and the 2-meg and 4-meg Macs) will ease that problem; and they are volatile. Volatile means that everything in memory disappears when the power does. You can and will lose everything in memory (and that includes the whole RAMdisk) when the power fails—or the Mac is shut off or reset. The unexpected bomb will literally disintegrate a RAMdisk. If the data on the RAMdisk has not been saved to a regular disk (floppy or hard) it is gone forever. The volatility problem can't be eliminated and only good work habits, such as frequent saving to disk, will prevent RAMdisasters.

Every RAMdisk user eventually has at least one horror story about an accidental crash or about forgetting to save the data to disk. Some users simply give up on RAMdisks after a couple of episodes like that.

RAMdisks are relatively cheap. There are even several in the public domain, but at the prices of the commercial programs ($20 to $50 list—half that at discount) stick to them. The more polished commercial products have features and enhancements that make them better values overall.

Among the best commercial RAMdisks are Mac Memory Disk by Assimilation, MacMate! by SMB Development Associates, and QuickDisk by Symmetry. Details may be found in our MiniFinder section.

To Buffer or to Spool?

Printing ties up the Mac for an inordinate amount of time. Part of the blame lies in the word processors (particularly MacWrite) and part lies in the ImageWriter. MacWrite sends less than a page of data at a clip to the printer and then sits and refuses to budge until the printer reports back that it has printed the batch.

A possible solution is to send all the data somewhere and let that device worry about parceling it out to the printer. This sort of solution is called buffering and the device the data is sent to is called a printer buffer. It usually takes the form of a “black box” that connects between the Mac and the printer.

Printer buffers are not a good solution right now for two reasons. First is the huge amount of data that is required to create a MacWrite page or a MacPaint document on a printer. This mass of data requires a large buffer or the user is no better off than before. The buffer must also be intelligent enough to send the proper acknowledgements to the Mac so that the Mac will feed it the whole document instead of waiting until the small amount of data it normally sends is printed.

So the ideal printer buffer is a hardware device with intelligence and a lot of memory. Today, if you could find one, it would be very expensive. As hardware, and particularly memory prices, continue to fall, printer buffers will become a more attractive option.

Right now, the best way to avoid being tied to your printer's speed is to use a print spooler. Spooling involves the creation of a print file. That file is then taken over by the spooler which prints it when and where it can.

A good spooler can handle multiple files and runs in the background. Spoolers are small programs although there must be room on the the disk(s) for the print files they use.

In the Mac universe print spoolers are most easily and commonly implemented as desk accessories. Several come along with hard disks. For instance, PCPC's MacBottom and Tecmar's MacDrive have effective spool-
Cashing In with Caches

Another tool obtainable at the MacSpeed shop is the disk-caching program.

A what?

"Disk cache" is terminology from the world of mainframes. A cache program reserves an area of RAM for its exclusive use. Into this reserved buffer go frequently used tracks and resources. When the Mac is started up the buffer area is empty. As applications are run, the caching program adds resources to the buffer. As the buffer fills up, algorithms determine what stays, what's added and what goes.

As a session goes on operations become faster as the program optimizes its cache. Disk caching is ideal for users who run long sessions using one or, at most, several programs. If sessions are short or numerous programs are run there will not be as much speed gained and putting the System and Finder on a good RAMdisk would prove more efficient.

What sort of speed increase the user sees is directly related to the program's algorithms. Typically speed increases range from 200 to over 500%.

There are two disk-caching programs currently available, Mainstay's MacBooster and Nevins' TurboCharger. While both are similar in concept and overall speed gain, they work in very different ways.

For example, TurboCharger tries to keep the Finder in its cache all the time, causing quitting to the desktop to become nearly instantaneous and without any disk accesses at all. MacBooster, on the other hand, opens new documents and applications faster, but is somewhat slower quitting.

MacBooster is less expensive than TurboCharger but also less convenient to use. MacBooster wants slightly more disk space for itself and can not be used with many copy-protected disks. TurboCharger works with all software with the exception of ThinkTank 512 or similar programs which want all of memory for themselves. Neither product currently works on a Mac XL or on hard disks although both programmers promise upgrades to eliminate that limitation.

When a disk cache is first installed a buffer size must be selected by the user. TurboCharger's 256K default value seems optimal for most uses, although large programs like Jazz require much smaller buffers.

MacBooster has a much larger default value; set it back to 256K for optimal performance in most cases. MacBooster will also run with a RAMdisk installed on the same disk. Don't do this unless your Mac has at least a megabyte of RAM. Running both a cache and a RAMdisk on a 512K Mac restricts the size of each so much that neither is effective and memory is simply wasted.

TurboCharger also allows users the
option of write buffering data. Normally disk-caching programs immediately write all data generated to the disk so that nothing is lost in the event of a crash or a power failure. These repeated disk accesses slow the programs down a bit. If write buffering is selected an area of the buffer is used to hold data. Only when that buffer is filled is that data passed on to the disk. Thus the data is volatile until the buffer is filled and flushed to the disk.

MacBooster's author felt that write buffering is dangerous and he does not permit it. TurboCharger allows it, but forces acknowledgement of an explicit warning when this feature is activated.

Cost No Object

An expensive but often effective way of increasing speed is to acquire a hard disk. Hard disks increase the speed of operations in two ways. Disk reads and writes are much faster—the slowest will still provide a 300% increase in disk read/write times, and 1000% increases are typical of units such as General Computer's Hyperdrive.

Another and often overlooked benefit of hard disks is the lack of disk handling. No more swapping—no more multiple disk operations. After the hard disk is set up, the only time a disk should be inserted is to satisfy some copy protection requirement or to make backups. Backups, particularly of data, are very important and should be made regularly. They are not quick and easy, however.

If your applications handle large amounts of data and large datafiles, a hard disk is probably necessary for proper program operation. Right now the hard disk is too expensive to be considered as a solution if more speed is all that is desired. If you do opt for a hard disk be sure to get one that comes with a good print spooling accessory.

Speed Tomorrow

There’s a lot more speed in the Mac’s future. There’ll be CPUs that run at least 50% faster than the 68000 now does; there’ll be large-capacity (20-megabytes and more) hard disks with both built-in disk caching and printer spooling; there’ll be MegaMacs and monster Macs with megabytes of memory so that RAM-disks and caches and print spoolers can all exist together. Apple will release a ROM upgrade for current Macs that will contain many of the resources that currently run from RAM, and will have a new, improved file structure. The long-promised double-sided disk drives will arrive and will be much faster than the current drives.

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A step by step guide to achieving your own professional graphics.

WHY BUY MacDraw when MacPaint is free? Because MacDraw overcomes many of MacPaint's shortcomings, and the two programs complement each other. Although in some very simple cases both programs can achieve the same results, the way in which each creates an image is very different. Basically, MacPaint offers a loose, freestyle way of working on a fairly small scale. MacDraw imposes a more structured, technical approach—on any scale.

Attributing the Difference

MacDraw and MacPaint each have a different way of recognizing images on screen. MacPaint produces "bit-mapped" images—that is, in memory, they are exactly as they appear on the screen; a series of pixels that are either black or white. Once a circle is drawn in MacPaint, the program no longer recognizes it as a circle, but rather sees it as a collection of black pixels. For this reason, a MacPaint image can never look better than it does on the screen, even when printed out on the LaserWriter.

MacDraw, however, stores shapes by their "attributes." Rather than storing a number of pixels, it recognizes a circle
of height X and width Y, with a certain line thickness, filled with a given pattern, and in a particular position on the drawing area. So when a *MacDraw* document is printed on the Laser-

Writer, information about a circle is sent to the LaserWriter in a form which the printer can then convert into its own much higher-resolution image. Even with the humble ImageWriter set to print high quality, the resulting printout looks considerably better than *MacPaint* can produce. This method of working with attributes also means that *MacDraw* can be used with plotters, an impossible dream for *MacPaint* users.

*MacPaint* has a limited page size because its way of storing images, as bit maps, uses large amounts of memory and disk space. On the other hand, *MacDraw* documents are usually very small; most average out at around 4K or less, though there are exceptions, especially when complex polygons are used. The Bimota motorcycle drawing, for instance, is a mere 22K document, despite the fact that there are some 549 separate objects involved.

It's possible to paste *MacPaint* images into "MacDrawings," offering the best of both worlds. Images can also be pasted in from other popular programs, like *Chart*, *MacWrite*, and *MacVision*. The latter is a particularly useful facility, since, if you have some form of reference material for your drawing, digitizing it and pasting it into *MacDraw* means that you can work on top of it, tracing the outlines. When complete, the digitized image can be deleted easily, leaving the outline intact. In *MacPaint*, removing the original digitized image would involve a great deal of work in FatBits.

Images can also be copied from *MacDraw* and pasted into other programs. One advantage of pasting drawings into *MacWrite* is that the images can be resized without any loss of quality, since they're still stored as attributes. This is not true when *MacDrawings* are pasted into *MacPaint*, however, since *MacPaint* instantly converts pictures into bit maps.

One important feature that *MacDraw* lacks is the ability to rotate objects a single degree at a time, instead of in 90 degree steps as at present.

---

**Starting Off**

After double-clicking the *MacDraw* icon, the screen presents a full size "proper" window, complete with scroll bars, resizing facilities, and all the expected aids. The left-hand side of the window has icons representing the drawing tools, most of which will look vaguely familiar to *MacPainters*.

Perhaps the most noticeable difference between *MacDraw* and *MacPaint*—and one that emphasizes the former's technical orientation—is the grid set up on the blank screen, which allows users to work to precise measurements. Initially, this grid (which never appears on the printed document) is set to half-inch intervals, although selecting the "Custom Rulers" option from the Layout menu lets computer artists set up a metric grid or even remove the grid entirely. There is also an "invisible" grid, much like the one in *MacPaint*, that limits the movement of the cursor. This makes it much easier to align objects to the visible grid. Again, this can be turned off if it's not needed.

---

**Handling Objects**

Selecting a familiar tool (such as the rectangle) and drawing with it is just as easy as it is in *MacPaint*. However, once the rectangle has been drawn, the similarity ends. Select the object again (by clicking on it) and eight small black squares (called handles) appear, one at each corner and one halfway along each edge. This feature will be familiar to *Filevision* users, who will already be used to working with what is essentially a "cut-down" version of *MacDraw*. 
Setting Up Rulers

Selecting the Show Rulers option from the Layout menu sets up rulers at the top and left side of the window, and these can be customized quickly to whatever scale you want to work to. The position of the cursor is displayed constantly on these rulers. MacDraw even has an option to display numerically the dimensions of the shape being drawn at the side of the cursor. In this way, drawing a box that is, say, 2 inches by 2 inches, positioned 1 inch down from the top of the paper and 2 inches in from the edge of the paper, takes but a fraction of a second to carry out.

Resize and Fill

Picking up one of these handles and moving it resizes the object; if you move a corner handle, the object is changed in both dimensions. If you grab an edge handle, the object is altered in just that direction. This method of reshaping is consistent for all objects—even small groups of objects; if you select a very small object, the middle handles are not drawn. As in MacPaint, pressing the Shift key while drawing an oval or rectangle produces an exact circle or square. When an object is highlighted, the thickness and pattern of the outline can be altered, together with the “Fill” pattern, chosen from the Fill menu. There are 35 different patterns available, but unlike MacPaint, these patterns can’t be edited.

Grouping Objects

Because of the way MacDraw handles shapes (usually referred to as “objects”), each can be treated or manipulated separately, and enlarged or reduced to any scale without losing quality. It is also possible to group objects together so they can be manipulated as if they were one, after which they can be separated and moved individually. Among MacDraw’s other powerful facilities is the “Align Objects” option, where any number of selected objects can be lined up in any way, such as by their right or left sides or tops. Another option, “Round Corners,” offers a number of different on-screen radii to the user.
Text Talk

MacDraw's handling of text is not all that users would hope for. Within a particular block of text, it's not possible to vary elements such as fonts, styles, size and so on. Paragraphs of text can be resized, but the procedure is clumsy. For example, if a block of text is pasted in from MacWrite, all formatting except for paragraph indents is lost and the text appears in a single long line. It can be transformed back to its original state by going through it and inserting returns, but that's a lot of work.

There is a quicker way around the problem: First, the text needs to be copied or cut. But don't select it in the normal way using the arrow pointer—instead, try triple-clicking the text with the text editing tool. Then a rectangle of the appropriate width should be drawn and, while still selecting this rectangle (by keeping the mouse button pressed), type any two letters. Next, the text should be pasted so that it conforms to the width of the rectangle. It can now be reshaped into the size you want.

This method of working with text is particularly vital, since an application of MacDraw is to use it as a "rough and ready" page make-up tool. It may not be as complete as dedicated programs like PageMaker, but MacDraw does allow users to manipulate text and graphics on screen—the name of the game in page design.

Getting into Print

A number of important extras are included on the disk. The System files provided are LaserWriter compatible. That's very important because MacDraw is an ideal program for the LaserWriter. It can take full advantage of the Laser Writer's high resolution output to produce images that few people would ever suspect were produced by a computer.

The MacDraw disk also contains an upgraded ImageWriter driver. This new driver allows full use of the 15-inch ImageWriter, printing at 50% reduction, and is usable with most other programs.

(continued on page 151)
Reshaping Polygons

One of the most useful tools in MacDraw is the "polygon" (the bottommost of the nine icons). Using this tool any shape can be outlined, with a straight line leading from the first handle to wherever you click for the second, and then to the third, and eventually back to the starting point. Once drawn, a polygon can be manipulated in any number of ways. It can be smoothed, so that a fluid line flows between the handles, and any of the handles can be moved to reshape the outline. This technique is called rubber-banding, and if you see it working you'll know why!

Duplicating Objects

Any object, or group of objects, can be quickly duplicated by selecting them (more than one object or group can be selected by pressing the Shift key) and choosing the "Duplicate" option from the Edit menu. This is a much more powerful system than MacPaint, and is "intelligent": if you move the first duplicated object to the exact position in relation to the original you require, and then duplicate it, the new copy will be placed in exact relation to the first copy, as the first copy was in relation to the original.

Using the "Arc"

A particularly interesting tool is the Arc (the third icon up from the bottom of the on-screen toolbox). Initially, this draws a quarter circle of whatever size you choose — and this can then be reshaped to suit. Try filling the shape with a pattern from the Fill menu and you end up with something that looks like a slice of cake on screen, ideal for constructing pie charts and the like.
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Fontastic (create your own fonts) ........................................... $36.
Ann Arbor Softworks
Animation Toolkit 1 .......................................................... 31.
Apropos
You must have Multiplan to use. ......................................... 55.
Financial Planning ................................................................. 55.
Investment Planning ............................................................... 55.
Arrays/Continental
Home Accountant ................................................................. 59.
External drive recommended.
Assimilation
MacTracks .......................................................... 20.
Mac-Memory-Disk ............................................................... 20.
MacSpellRight ................................................................. 58.
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Teach Yourself Multiplan .................................................. 32.
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Axian
Art Portfolio ................................................................. 35.
Card Shoppe ................................................................. 35.
Blyth Software
Omnia 2 (requires external drive) ...................................... 139.
Omnia 3 (requires MacWrite 4.5) ......................................... 249.
Borland International
Sidekick (unprotected) ..................................................... 45.
BrainPower

Casady Company
Fluent Fonts (two-disk set) ............................................... $29.
Central Point Software
Copy II Mac ................................................................. 20.
Computer Software Design
MacLion (relational database) ........................................... 189.
External drive recommended.
Creative Solutions
MacForth - Level 1 ......................................................... 79.
MacForth - Level 2 ......................................................... 129.
DataFood
DrawForms ................................................................. 30.
MacForms ................................................................. 30.
DataVis
MacLink with cable ......................................................... 69.
Desktop Software
1st Port (communications software) .................................... 49.
1st Merge ................................................................. 49.
1st Base ................................................................. 99.
Digital, Etc.
Maccountant ................................................................. 139.
Full-featured accounting program.
Dillithum Press
PC to Mac & Back ......................................................... 65.

Dow Jones
Straight Talk ................................................................. 45.
Spreadsheet Link ............................................................. 57.
Must have Multiplan, modem and Dow Jones Straight Talk.
Market Manager PLUS ................................................... 109.
Track portfolio information.
Enterset
Quickpaint ................................................................. 30.
Quickword ................................................................. 36.
Quickset ................................................................. 55.
Icon-driven true accessory with powerful calculations.
1st Byte
Smoothtalker (version 2.0) ............................................... 59.
Voice synthesis software for the Mac.

Fountsoft
Typing Intrigue ............................................................... 31.
Factfinder ................................................................. 38.

FileMaker ................................................................. 109.

Great Wave Software
ConcertWare + .............................................................. 29.
Compose and listen to your own songs.

Harvard Associates
MacManager (business simulation) ...................................... 28.
Desktoppers (new desk accessories) ................................... 29.
Hayden Software
DaVinci Buildings ........................................................... 29.
DaVinci Interiors ............................................................ 29.
DaVinci Landscapes .......................................................... 29.
DaVinci Building Blocks .................................................. 46.
DaVinci Commercial Interiors .......................................... 115.
Art Grabber with Body Shop ............................................ 30.
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I Know It’s Here Somewhere ............................................ 36.
Musicworks ................................................................. 46.
Hayden:Speller .............................................................. 47.
For MacWrite 4.5 and Microsoft Word.
Score Improvement System for the SAT .................................. 59.
College entrance-exam study guide.
Videoworks ................................................................. 59.
Ensemble ................................................................. 155.

Hippopotamus Software
Hippo Computer Almanac ............................................... $21.
Hippo-Link (file sec program) .......................................... 69.
Hippo-C - Level 1 ........................................................... 75.
Hippo-C - Level 2 ........................................................... 75.
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Ideaform
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MacDraft

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Kanagawa

Professional Type Fonts for Text ........................................ 30.
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Linguist’s Software
Tech (1000 different symbols) ............................................ 60.

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MacHebrew ................................................................. 69.

MacKana/Basic Kanji ......................................................... 69.

MacKorean ................................................................. 69.

MacSuper/French/German/Spanish ..................................... 69.

MacSuperGreek ............................................................. 69.

MacGreek/Hebrew/Phonetics .............................................. 119.

Living Videotext
ThinkTank 128k ............................................................. 75.
ThinkTank 512k ............................................................. 125.

Magnum
McPic - Volume I ............................................................ 30.
McPic - Volume II ........................................................... 30.
The Slide Show Magician .................................................. 36.

Manhattan Graphics
Ready Set Go 2.0 (requires 512k) ...................................... 69.

Mark of the Unicorn
Professional Composer (requires 512k) 249.

Microsoft
Entrepreneur ................................................................. 32.
Learning Multiplan and Chart ............................................. 39.
Chart ................................................................. 75.

Logo ................................................................. 75.

Basic (version 2.0) .......................................................... 69.

Multiplan ................................................................. 107.

File ................................................................. 112.

Word ................................................................. 112.

Business Pack ............................................................ 342.
Includes Word, File, Chart, and Multiplan.

Mills Computing
Mac the Knife - Volume 1 .................................................. 23.
Mac the Knife - Volume 2 .................................................. 27.

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Novell Microsysterms
Turbocharger ................................................................. 57.

Odeza

HeliX ................................................................. 225.

Requires 512k and external drive.
Organizational Development Software
Commercial Report $119.

Paladin
Crunch (requires 512k) $169.

Palantir
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Accounts Payable $89.
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QED Information Sciences
Typing Made Easy $36.

RealData, Inc.
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Commercial/Industrial Applications $65.
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Real Estate Investment Analysis $89.
On Schedule $119.
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Constrution Estimator $45.

Scarborough Systems
MasterType $29.

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MacOneWrite (cash disbursements) $139.

Silicon Beach Software
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Typing Tutor III $31.

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Electric Checkbook $45.
Symmetry $24.

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Click Art Publications $30.
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Telos Software
Filevision $99.

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Mind Over Mac $31.
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MacEdge II Learning programs in math and reading $31.

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The Desk Organizer $55.

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MacChallenger $29.
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Scarborough Systems
Run for the Money ...................................... 29.
Best with 2 players.
Make Millions .......................................... 29.
Enter the world of high finance.
Sierra On-Line
Frogger .................................................. 24.
Ultima II .................................................. 35.
The ultimate fantasy role-playing adventure.
Sillon Beech Software
Airborne! (great graphics and sound) ............... 21.
Soft-Life Corp.
Mac Slots .............................................. 25.
The best one-armed bandit going!
Spectrum Holobyte
GATO ..................................................... 27.
Sierra On-Line
Airborne! .................................................. 24.
Frogger .................................................... 27.
Dragon World .......................................... 27.
Farohen 451 ............................................ 27.

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Mac-Port-Adaptor ...................................... 59.
Mac-Daisywheel-Connection ......................... 69.
MacTurbo-Touch ...................................... 69.
Computable
Mac to Hayes Smartmodem cable .................. 17.
Mac to Epson FX/RXJK printer cable ............... 17.
Cuesta Systems
Datsavser AC Power Backup .......................... 19.
Curtis Manufacturing
All surge suppressors have an on/off switch.
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
FX-85 ................................................. 28.
FX-85 ................................................. 28.
FX-85 ................................................. 28.
XR-85 ................................................. 28.
LQ-1500 (letter quality dot matrix) ............... 28.
Hayes
Smartmodem 300 ..................................... 28.
Smartmodem 1200 ..................................... 28.
Smartcom II (communications software) .......... 89.
Computable's Mac to Smartmodem cable 17.
IONEGA
Back-Up Box (5-megabyte storage) ................. 1319.
5-meg Cartridge ...................................... 39.
Head Cleaning Kit ................................... 59.
Johnathon Freeman Designs
Universal Printer Buffer .............................. 175.
Kensington
External Disk Drive Cover ............................ 8.
Mouse Pocket .......................................... 8.

MAC DUST COVER .................................... $10.
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Wide Imagewriter Dust cover ........................ 10.
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Mouse Cleaning Kit w/Mouse Pocket ............... 16.
Disk Case (holds 36 Mac disks) .................... 20.
Disk Drive Cleaning Kit ............................. 20.
Tilt/Swivel ............................................ 23.
Polarizing Filter ....................................... 32.
Surge Suppressor ...................................... 34.
A-B Box .............................................. 60.
Control Center ....................................... 65.
Modem (300 baud) ................................... 89.
Koala Technologies
MacVision (digitizer) ................................ 175.
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QuickStick ............................................ 45.
Microcom
MacModern (Hayes compatible) ..................... 469.
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Microsoft
MacEnhancer ......................................... 159.
Additional ports and terminal software.
Mitsuba
Super 5 External Drive ................................ 239.
Mouse Systems
A Optical Mouse ...................................... 59.
Paradise Systems
Mac 10 (10 megabyte hard disk) .................... 1029.
Supercap Business Software
MacSpeak (external speaker) ....................... 15.
MacSpeak (with earphone jack) ................... 18.
Systems Control
MacGarb ............................................... 55.
Surge and static protection, provides two outlets.

DISKS
Innovative Concepts
Flip & File (Holds 40 disks) ......................... 19.
Pacific Wave
Flip Sort Micro (Holds 40 disks) ................. 12.
Flip Sort Micro (Holds 60 disks) ................. 15.
BASF 3½" Disks (Box of 5) ........................ 15.
Verbatim 3½" Disks (Box of 10) .................... 25.
Sony 3½" Disks (Box of 10) ........................ 25.
Full 3½" Disks (Box of 10) ........................ 25.
Memorex 3½" Disks (Box of 10) .................... 25.
MAXELL 3½" Disks (Box of 10) ..................... 25.
3M 3½" Disks (Box of 10) ........................... 25.

INFORMATION SERVICES
Compuserve
Compuserve Information Service .................. 19.
Includes subscription, manual, 5 hours of
connect time, and monthly publications.
Source Telecomputing
The Source (subscription & manual) ............. 30.

MISCELLANEOUS
American Tourister
Mac Carrying Case .................................. 69.
Automation Facilities
Floppiclete (ten cleaning disks) .................. 25.
Refill Kit (ten disks) ................................ 10.

Clean Image Ribbon Co.
Clean Image Ribbon Kit ............................. 12.
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External Disk Drive Cover .......................... 4.
Imagewriter Cover .................................. 8.
Wide Imagewriter Cover ............................. 8.
Mac & Keyboard (two covers) ..................... 10.
Divisions
Underwear Ribbon ................................... 10.
Underwear Colorpens ............................... 10.
Jumbo Colorpens ................................... 13.
ColorPack ............................................. 19.
Includes one black ribbon and set of five
Colorpens.
Environmental Software Company
The Clutch (holds 6 disks) ......................... 9.
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High quality rip-stop nylon dust covers for your
complete Macintosh system. Available in
navy-blue, burgundy-red, or silver-gray.
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Numeric Keypad Cover ............................... 7.
Imagewriter Cover .................................. 11.
Wide Imagewriter Cover ............................. 13.
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UC Design
Imagewriter Transfer Ribbon ...................... 10.
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and accessories. Reinforced bottom.
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Teakwood Roll-top Case (holds 45 disks) ....... 16.
Teakwood Roll-top Case (holds 90 disks) ....... 25.
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Microsoft Multiflash: Of Mice and Menus .... 12.
Inside MacPaint .................................... 14.
MacWorks MacRay ................................ 14.
The Apple Macintosh Book ......................... 14.
Moustrak
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Moustrak Pad ......................................... 8.
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Ribbons Unlimited
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red, yellow, orange and silver.
Imagewriter Ribbon ................................. 5.
Imagewriter Ribbons Six Pack .................... 27.
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Smith & Bellows
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HI S C L O S S  A N T E N T I O N

F I N A N C I A L S I M U L A T I O N S A N D INVESTMENTS

By Tracie Forman Hines

In less than two years, Michael, an elementary school teacher, took over four of the five industries on Wikki Wikki Island. Although with a net worth of nearly eight million dollars he could easily afford to buy up all the stock in the last remaining company, he was having trouble getting his major competitor to sell, “I figure I’ll raise the price of his supplies and cut demand for his products,” chuckled Michael. “That ought to force him off the island once and for all!”

Jeff, an accountant, wasn’t able to talk to us for long. He had just lost nearly $30,000 on a bad lumber deal and was frantically buying options on pork bellies to recoup his losses—before he left for work.

Public relations aide Stephanie was trying to decide whether or not to buy a free-standing medical building in Wichita. “It’s got a negative cash flow,” she explained, “But Hewlett-Packard is setting up offices in the area, so property values ought to go sky-high.”

These people aren’t rich. They’re as financially insecure as most of us are. What they have in common is a love of the Mac—and an interest in financial simulations. Simply put, money games are hot.

Would-be Wall Street wizards can test and hone their decision making skills and their abilities to predict future payoffs, without having to risk a cent of real cash. These programs are more than just games—they can help potential investors get comfortable with the world of high finance.

One of the first games to come to market for the Mac, MacManager (Harvard Associates) involves cutthroat competition between widget manufacturers. Blue Chip Software’s entire line of software revolves around financial simulations of different types. Tom Snyder, well-known in the educational game field for hits as diverse as Snooty Toots, Agent USA and Run For the Money (a children’s introduction to the theories of supply and demand), has turned his attention to big business.
strategies in *Make Millions* (Scarborough). The genre has proved so popular that more financial strategy games are on the drawing boards at a lot of major companies.

**"Playing" the Market**

Blue Chip Software built its own financial empire with its line of investment simulations, *Millionaire*, *Baron*, *Tycoon* and the forthcoming *Squire*. The programs all share the same basic playmechanic, strategies and structure, while the topics range from the stock market to real estate brokerage to commodities trading.

The programs can be bought for any popular microcomputer, but the Mac editions are unquestionably the best. The other editions of *Millionaire*, *Tycoon* and *Baron* consist of simple bare text embellished with illustrative charts. The player gets the feel of the game only through reading the text. But the desktops of the Mac versions are alive with graphics. Each type of commodity (or stock or property) is illustrated with an icon at the left side of the screen that, when selected, automatically puts the player in mode to see price changes, buy or sell, or get information about that item. (On other computers, the route is more circuitous, requiring players to type in a series of letters that represent what they want to do.)

In *Millionaire*, the object is to amass a fortune by buying stocks low and selling them high. Weekly market fluctuations are the result of whatever the fictionalized Financial Journal has reported on in recent weeks. Only by paying careful attention to the news—and analyzing how it will affect the price of various companies' stocks (including Apple Computer)—can a player start out with $10,000 and turn it into a cool million.

*Tycoon* introduces users to the confusing world of commodities trading. Starting with a pitance, the player’s objective is to build a financial empire by trading essentials like orange juice, cattle and pork bellies, moving up to commodities like coffee and cocoa and, later, to such exotic items as Swiss francs, Japanese yen and gold. The simulation offers high-level players the option of buying long (betting the price of a commodity will rise) or short (betting it will fall). As in *Millionaire*, the Financial Journal provides the clues as to future prices of all commodities.

*Baron* offers a glimpse into the offices of land barons like Donald Trump and Leona Helmsley. As in the other games, investors start out with a small sum, barely enough to buy a few acres of land, and must eventually trade up to sprawling ranch estates and shopping malls, again with the assistance of their trusty Financial Journal. The key to the game is patience, since players who buy and sell at frenzied paces end up losing much of their capital on causing costs and fees. Unfortunately, rundown properties can’t be renovated, and you can’t hike the rent on low-paying tenants, but happiness really is a full portfolio just the same.

A session of *Baron*, for example,
usually goes like this: First, the player is shown a graph that charts the progress of land holdings in five key markets: New York, California, Florida, Texas and Kansas. Each market has its own submarket in land properties, residential housing and business property, such as a medical building or a small shopping mall. The first graph shows a composite price of all types of properties; the second targets a specific area, such as California’s composite.

When the charts have been displayed, next stop is the Financial Journal, which in this case might say, “HEWLETT-PACKARD TO SET UP OFFICES IN WICHITA.” Afterwards, all graphs affecting properties owned by the player (California Residential, Florida Commercial, etc.) are displayed. Finally, a chart listing the current dollar values of all types of property — with an asterisk marking those at historic highs or lows — is shown on-screen, with a special column detailing the exact dollar amounts gained or lost that month.

Once all the information has been presented, the user plays out all the moves he or she wants to make that month. This is the time to peruse the list of available properties, buy what you like, and option land or buildings you think may have potential. Good candidates for optioning (paying a set amount of cash which entitles you to buy at a set price for the next six months) have the potential to skyrocket in value, but may lose large sums, either through negative cash flow or because of an unstable market.

But if the real-estate market looks stagnant, the player can invest in second mortgages, or in the more risky ventures like limited real estate partnerships or even Uncle Herman’s real estate project. High-risk investments are so unstable that the computer automatically deducts your investment from your net worth. If the venture pays off (it rarely does), the huge dividends are added to your fortune.

During each month, players have a few extra options: to check out their portfolio’s current value; take loans against old properties to buy new ones; pay off those loans; thumb through back issues of the Financial Journal; or to see the most current charts reflecting, say, Wichita commercial properties, or New York housing trends.

Learning Economics the Easy Way

These games have enough resemblance to the real-life behavior of the various markets that they form the basis of a number of high school and
college economics courses. Ilene Slapin, Vice President of Blue Chip, was "surprised to learn" that the disks were being used to teach classes as young as fifth grade. Realizing the simulations' value in teaching basic economic theory, Blue Chip organized "The Blue Chip Challenge," written by Charles E. Lapp, Associate Superintendent of Schools at Community Consolidated School District 47 in Crystal Lake, Illinois.

"The Blue Chip Challenge" is billed as a comprehensive economics mini-course designed to be used in classes from 5th grade to university level. The classes are divided into teams, who play through consecutive games of Millionaire, Tycoon and Baron. Final scores are tallied, and the team with the highest ending net worth is awarded a certificate of merit based on its achievement. A complete teachers' package is available direct from Blue Chip Software, 6744 Eton Avenue, Canoga Park, CA 91303, (818) 346-0730.

**Heavy Lies the Head...**

The actual nuts and bolts of running a profitable company are explored in depth in a number of programs, including Scarborough's *Make Millions*, Harvard Associates' *MacManager*, and Blue Chip's forthcoming *American Dream*.

*Make Millions*, written by Tom Snyder, is such an engrossing business simulation that one might be tempted to call it a role-playing game. It seems your wealthy industrialist father urgently summoned you to his office on Wikki Wikki Island, but you arrived only to find his office deserted. The answer to the mystery lies in the office safe, which requires five different keys to open. Each key has been salted away in each of the five manufacturing plants on the island, and to acquire them you must gain a controlling interest (25,001 shares of stock) in each company.

A key lesson in your ambitions. Your rival is a well-funded conglomerate appropriately named Humongous, a gaudy, greedy, and intelligent entity who's trying to force you off the island by taking control of all its industries. The lumber shop, woodcutting company, guitar manufacturer, distributor and music store are all up for grabs in this financial free-for-all, but there's only $250,000 in the company coffers—hardly enough to buy even a marginal interest. To earn enough money to take control of a factory, you'll have to play the stock market.

The game is displayed graphically, with each player starting out in an office. A picture of Dad hangs on the wall, the plant is wilting and needs to be watered, and your desk—complete with telephone and Mac—is all set up and ready to go. The game is played in three phases: The first goal is to acquire stock in one of the Aloha industries; next, run the factory profitably enough to raise its stock price and/or dividends (an alternate strategy is to run it badly, sell off stock, and buy back in at a cheaper price) to acquire more Aloha industries; and finally, figure out how to force Humongous off Wikki Wikki Island entirely.

When playing *Make Millions*, most players will learn far more about the nuts and bolts of the business world than just how to manage money. So you thought a good head for figures is all it takes to succeed? Try telling that to the manager of Aloha Music Stores, when he argues every change you make until you’re ready to fire him (you can't). The larger your holdings, the more messages you'll find on the memo board. It won't take long to realize how many truly trivial questions people feel compelled to ask their bosses, and it will probably make you think twice before approaching your own employer with some minor observation.

Information unavailable in the Wikki Wikki business journal can often be had at a hefty price from Rent-A- Sleuth. If you’d rather save your cash for investment, try to be in the office when Manny the Mouth calls.

**A Dog Eat Dog World**

Harvard Associates' *MacManager* was revamped by Microsoft, and it's now called *Entrepreneur*. It simulates the day-to-day operations of a software business, with one to nine players competing against each other and/or the Mac by taking turns operating their own factories. Selling price, production and marketing are the keys to running a successful operation, with the relative net worth of each company displayed on-screen as progressively larger buildings.

During each turn, players step into the offices of their factories to check on the company cash flow, profit & loss, balance sheet, operations report, decision report, industry report, and current rankings of each company. Figure out the right price, manufacturing, and marketing arrangements to prosper and earn larger, more comfortable quarters; if things don't go as you’d hoped, you can always take the easy way out and resign while in the office.

While *Entrepreneur* is fun in competition against other players, it isn’t strong enough to provide solo entertainment. If you plan a good strategy in the first round, there’s no need to do anything else for the duration of the game! Compared to the other business and financial simulations available for the Mac, *Entrepreneur* loses out in terms of realism, complexity, and entertainment value.

**Slicing a Piece of American Pie**

*American Dream*, due out soon from Blue Chip Software, wasn’t available for testing as of press time. Its basic scenario is promising: As the CEO of a major robotics manufacturing business, the player has a total of 72 months to increase the business' market share relative to the prevailing economic conditions, and to increase profitability.

Seven different department heads report directly to you on the doings of the sales, manufacturing, engineering, production, research & development, materials management, quality assurance and finance departments. Change a few variables to (hopefully!) improve the unit's efficiency, or leave it alone if it's doing well. According to Blue Chip press releases, *American Dream*’s challenge is to "assimilate the business data available, decide what changes are called for and implement them," as well as is possible under varying economic conditions. As in Make Millions, the business operations have a momentum of their own. Make no changes, and things will continue in the same general
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Looking for a good time? New entertainment software offers something for everyone.

What's new in gaming? Plenty! The programs described below are set for release before the end of the year. They're so new that many were not available for hands-on review, but were previewed especially for entertainment software expert Joyce Worley. Here's a sampling of what entertainment minded Mac users can expect to find in the software goodie bag soon.

A Real Conversation Piece

Searching for a really unique conversation piece to liven up parties or meetings? Racter (Mindscape), taking cues from Eliza-like predecessors, makes idle on-screen chitchat when you're out of things to say. The program contains a databank of nearly 3000 words, phrases and cliches, and draws on these to form conversational sentences. Talk to Racter via the keyboard on any topic, and the computer uses its bank of catch phrases and words to respond, even picking up some of the user's remarks to echo back in the course of the conversation.

The chatter isn't guaranteed to make sense, and most computer owners have better things to do with their time and conversational arts than talk to a computer. But Racter nevertheless is entertaining and unusual.
notes using an on-screen piano keyboard, then modify the tempo and change the instrumentation. Cut and paste sections, repeat choruses, and rewrite themes until it sounds just right. Finally, add lyrics for a complete operetta or ballad, then print it out all sheetmusic style. The piano keyboard flashes as each note is entered or played, helping nonmusicians learn to pick out a tune on a real baby grand.

**A Play on Words**

Crossword Magic (Mindscape) allows the user to create crosswords, with the computer taking care of onerous matching-up details. Simply type in a word, place it on the grid where desired, then type another word. The computer automatically locates the spots where it fits, or if no space is available, holds the word in its memory and reintroduces it when an opening arises. The computer guides users through clue list preparation, making certain nothing is overlooked, then prints out the puzzle, the clue list, and even a completed crossword to use as an answer key.

In Perplexx (Hayden), the gamer competes against the computer to build words on a grid that intersect either horizontally or vertically with words already on the board. There are eight difficulty levels, and players can also custom design the point values for letter placement. Perplexx contains a 90,000 word dictionary, so it's a formidable opponent even for a skilled lexicographer.

**No More Lost Puzzle Pieces — Ever!**

Masterpieces (Hayden) transforms any MacPaint picture into an on-screen jigsaw puzzle. The program comes with a few sample paintings on disk to get puzzlers started. Jigsawers choose how many pieces the puzzle will have, from 9 to 196. Remarkably, the pieces are individually shaped with no two alike. Several skill levels make this suitable for all ages. While you could theoretically do the same thing with MacPaint's lasso, you'd have to be very careful to avoid overlapping images.
generally fly farther, or at least in more interesting paths, than standard fold-your-own affairs.

**Computer Analysis**

*The Luscher Profile* (Mindscape) draws psychological profiles based on color preferences, to help you better understand yourself or your friends. In four different tests, users rank their color preferences from an enclosed color book, or choose shapes or shades of gray most appealing to them. The computer analyzes a person's choices and rejections of certain hues and shapes to reveal their basic nature, printing out a 1- to 2-page profile of that person's personality as the result.

**State-of-the-Art Adventures**

*Deja Vu* (Mindscape) is a 1940's-style mystery designed expressly to take advantage of the Mac's graphic capabilities. Using the Mac windows the player can see several parts of the adventure simultaneously or even move objects from one window to another. Click on any of the on-screen pictures to see information about the object or its contents.

The story sets the player up as a murder suspect with amnesia. The object is to discover your real identity and solve the murder. But since your character has no memory, you can't even be certain if the crime happened recently or is a dimly remembered act from the past.

Bantam's *I, Damiano* (Bantam/Imagic) is an illustrated text adventure based on the “Damiano” science fiction/fantasy trilogy by R. A. MacAvoy. The player takes the part of the wizard Damiano, then searches through a 14th century intrigue-ridden society for a powerful artifact. Pillaging armies, the plague and sorcery makes the quest hazardous. The cast of characters includes both Lucifer and the Archangel Raphael.

*Sherlock Holmes In “Another Bow”* (Bantam/Imagic), another illustrated adventure, is an original mystery. The player becomes Holmes, then must solve six intertwined cases. The adventure takes place aboard a cruise ship, shortly after World War I, and uses an authentic ship plan as its setting. The cast of luminaries aboard includes Thomas Edison, Alexander Graham Bell, Picasso, Lady Astor, Louis Armstrong and Henry Ford. Players must interact with these stars in order to solve the crimes, and the computer takes the part of faithful Dr. Watson.

The latest James Bond flick inspired *A View to a Kill* (Mindscape). In this full-text game, Agent 007 must thwart a madman who's trying to destroy the high tech industries of Silicon Valley.

This adventure boasts wandering characters that appear at various locations and have changing moods, so they react differently at each encounter.

Horror fans have a treat in store with Stephen King's *The Mist* (Mindscape) based on the novella of the same name from the book “Skeleton Crew.” This text adventure is a nightmare-turned-real, set in a quiet New England town that's shrouded in a dense fog. It boasts many standard King ingredients, such as screams in the night that hint of things too horrible to contemplate.

**For Adults Only**

Text adventures leave a lot to the player's imagination. In contrast, *MacStrip* (Artworx) leaves little unrevealed. There are three poker opponents, two ladies and a gent, each with their own style of play. The software actually plays a credible game of five-card draw against the user, but the fun is in the wagering. You may lose your shirt against one of these good-looking card sharks, but you probably won't mind too much when the on-screen cuties lose a few hands and have to peel.

**A Call to Arms**

*The Ancient Art Of War* (Broderbund) contains eleven built-in historic war campaigns, complete with barbarians, archers and knights. The gamer chooses the troops and the terrain, then faces historically accurate opponents armed with their authentic battle weapons. An animated war map keeps the armchair general in control, and a zoom feature provides closeups of battles showing individual soldiers.
A GALAXY OF NEW GAMES

Many Mac owners seem reluctant to let their youngsters use the computer. While this nervousness about the equipment will probably pass within the next year as parents realize that jelly-smearred fingers aren't necessarily a mouse's death warrant, it means that most educational software for the Macintosh is aimed at older users. This winter, Mac owners will be honing their talents, training their brains, perfecting skills and expanding their minds with a variety of programs meant to educate adults.

The First Lesson is Typing

Everyone needs to know how to type, and that's even more true for computer users. Fortunately, the computer teaches this skill superbly. The computer console provides the keyboard, and the microprocessor monitors the lessons so the typist is continually challenged to improve both speed and accuracy.

"New Improved" MasterType (Scarborough) turns typing practice into a high-speed game. The object of each drill is to defend a space ship against assaults by enemy words or letters. Typing them properly blasts them from the sky. After each game, there's a tally of the player-student's score, average speed and number of mistakes. There are eighteen skill levels and a special section to teach typists BASIC programming keywords.

Typing Tutor III (Simon & Schuster) measures students' typing and error rate, then adjusts lessons to suit individual ability. It displays improvement on bar charts that show how the typist did on each letter or symbol. The built-in game, "Letter Invaders," provides a break from the drills as letters zoom from space to be blasted by typing them. This high-speed entertainment makes typing practice almost fun!

Train Your Brain

Think Fast (BrainPower) is a unique approach to memory improvement. First it measures, then develops, short-term and long-term memory. By presenting users with varied memory tasks, it helps acquire stronger recognition and recall ability. Since the left half of the brain handles verbal and quantitative information, and the right side takes care of abstract visualizations, creative activities and intuition, the program contains specific tasks designed to enhance these separate areas. To improve the left side of the brain, users compare sets of letters and numbers, then try to recall them. Exercises for the right side of the brain require the user to study and recall graphic images. An on-screen clock times the tasks, and difficulty increases automatically as the user improves.

SAT Practice Makes (Almost) Perfect Scores

Although SAT scores aren't the only measuring rod used by college admission boards, even a small improvement can make a big difference in how a student ranks nationwide.

Score Improvement System for the SAT (Hayden) uses pretests to determine the student's areas of strength and weakness. Review modules provide tutorial help, as well as drills and analysis. Finally, two practice tests give the student experience with SAT-type questions and instructions, to determine exactly how the real test will go.

The review modules feature "tutormode," a special study-aid that gives a complete explanation of all the answers. The student can use tutormode with every question, or opt for explanations only on those answered incorrectly. The manual includes a study guide and schedule so serious students can follow a program of study and exercises in the months and weeks before the examination date.

The Perfect Score: Computer Preparation For the SAT (Mindscape) reviews all the verbal and math subjects included on the Scholastic Aptitude Test, then offers a timed, simulated SAT. It comes with a 150-page comprehensive manual and study guide, and is well-suited for self-paced learning.

in detailed animation as they carry out your commands.

The Accent's on Action

For old-fashioned arcade thrills, Bill Budge's Pinball Construction Set (Electronic Arts) offers a complete pinball palace on a disk. Players place bumpers, flippers and springs on the field, then modify gravity, change the speed of play, alter scoring methods, and even change the music and sound effects to create a personalized game. The customized pinball set can even be decorated to order by painting patterns on the field or even paste-in pictures from any MacPaint file.

King's Quest II: Romancing The Throne (Sierra) is an animated, high-res graphic adventure. Players enter a fantasy world, and use the mouse to control an on-screen character who can walk, jump, even swim rivers. This hero must rescue the fair maiden in a quest that leads him through an enchanted kingdom filled with peril. The adventure is notable not only for its outstanding graphics, but also for a rich musical score. Multiple solutions keep the adventure fresh through many play sessions.

The Sporting Mac

In Sierra's Championship Boxing, players stage bouts between any of fifty world champions whose statistics are contained on disk, or even create their own pugilists. The graphics put players right in ringside seats, displaying the fighters battling it out in a side perspective. Refight historical matches, or promote battles between boxers who never met. This is your chance to finally learn once and for all if Joe Louis could actually flatten Muhammed Ali!

The Mac Universe Expands

No matter what your taste in entertainment, the Mac has something to offer. So, set aside the database, put away the word processor, forget about the spreadsheets and get down to some really serious fun!
Some ideas need more than words and pictures.

In Motion

The Professional Animation System for the 512K Macintosh

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Try this state-of-the-art animator's delight, now playing on your local Macintosh.

by David Biedny

LIGHTS! CAMERA! ACTION! GIMME A sound check! OK! Have you got those special effects ready? OK! Music ready? OK, let's go, start the Macintosh!!!

Seeing Magic

VideoWorks is a full-screen animation program that allows users to integrate Mac graphics in complex and lengthy animation sequences. The program makes exceptional use of the Macintosh user interface. Select or modify an element in a window, and all windows that reference that element will change accordingly. The software package consists of three disks: a program disk, a movies disk full of excellent examples and an art disk packed with high-quality, ready made artwork.

The Users' Manual is exceptionally well organized. It begins with a complete tutorial section, and moves on to clear, concise explanations of the art of animation, VideoWorks style. An excellent reference section concludes the manual.

Magic Explained

VideoWorks treats video very much the way a multi-track recorder works with sound. In multi-track audio, various channels, or layers, of sound are combined in order to produce a full, lush audio image. In a similar way, VideoWorks combines multiple layers of graphic images that are independent of one another to create the illusion of a complex series of events. These individual channels can contain either a single graphic element or a series of progressive elements called sprites.

Sprites are complex graphic objects that can be manipulated by the program as though they were a single point. In VideoWorks, any MacPaint image in a video channel is a sprite. The program doesn't have to worry about the graphic complexity, it merely controls the movement. The underlying sprite software takes care of the complexity, regenerating the entire image of a video channel as the animation sequence progresses. Without sprites there could be no fancy animated graphics. They are the core upon which animation sequences are constructed.

Creating Magic

The scene opens with the standard menu bar across the top, a control box in the upper right part of the screen
MAC MOVIES!

Fig. 1: The CheapPaint window contains all graphic elements; sprites modified in the CheapPaint window will be reflected in the animation sequence.

Fig. 2: Notice the position of the pointer relative to the Tweak window: It's 149 pixels on the X plane, and -148 pixels on the Y plane. If Do It is pressed, the moon will move in the indicated direction.

Fig. 3: The diver on the left is in channel A in the Score window; by selecting and copying channel A, a new sprite can be created in channel B. While it is the same object, it can be placed in a different location and time frame on the screen. In the above sequence, the selected diver in channel B will appear where it currently is after the first diver appears, in effect creating two divers. The soundtrack channel is above channel A.

“Art Grabber” that comes installed on the VideoWorks program disk. This desk accessory allows users to open any MacPaint document from within VideoWorks, move around on it until a useful segment is found, and copy the selection using a standard marquee box. “Art Grabber” also has a ShowPage function that works exactly like MacPaint’s ShowPage.

Making Movies

VideoWorks allows users to animate objects in two different ways. For those wishing immediate gratification, the program follows mouse movements and generates real-time animation. Simply grab any element in a Cast window, drag it onto the screen, and push the Play button on the control panel. Drag the element around on the screen; VideoWorks will record all movements in real time, and then play back the same exact sequence.

More precise control over the movement of an object on the screen can be achieved by constructing sequences frame by frame. The Tweak window permits moving an object or sprite pixel by pixel, in both horizontal and vertical directions. The control window displays, in pixels, the X and Y screen positions where the selected object will

(screen can be scrolled while remaining in FatBits.

Graphics can be imported into VideoWorks via the Scrapbook or through a handy desk accessory called

Easels to build sprites in are created by simply clicking the Easel icon. Pasting graphics into Cast cells also automatically generates an easel in CheapPaint containing the graphic object.

Many of MacPaint’s shortcuts also apply to CheapPaint: Shift-Command-clicking on any area in an easel will take you into FatBits mode; pressing the Option key while using the pencil tool will transform the pencil into the Scroll Hand, so that the

the Panel), and a Cast window in the lower left part of the screen. The Panel box controls animation status, speed, frame insertions, screen background (black or white), and has a toggle switch to turn the sound on or off. The matrix on the right of the Panel shows some of the 24 video channels at your disposal; a darkened cell indicates that there is a sprite occupying that channel at that point.

CheapPaint is where the graphics are generated and modified. This feature sports a set of tools that should be familiar to MacPainters: paintbrush, eraser, pencil, text tool, box, circle, line and marquee (or selection) box.

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move to when the Do It button is pressed. Tweak control is not limited to the size of the Tweak window, so that even if the control line is pulled outside of the Tweak window, the displacement will still be registered.

**Editing Movies**

Any animation that is created, be it real time or frame by frame, will register in the Score window. Each row in the Score window corresponds to a discrete video channel.

The Score window provides three pieces of information for each video channel: the status and direction of movement of the sprite in that channel, the video effect assigned to that sprite, and its position in the cast window.

The top channel is the soundtrack channel. Highlighting an area in the soundtrack and selecting a sound from the sound effects (Sfx) menu will cause that sound to be inserted into the frames selected.

One of the more powerful features of VideoWorks is its ability to select a sequence in one video channel and copy it to another channel, while modifying the screen position and time framing of the copied sprite. One of the tutorial demos features a family of frogs jumping across a road. Only one frog was created; it was just cloned in the Score window and pasted into different areas on the screen.

**Special Effects**

VideoWorks offers a vast selection of special visual and audio effects. The special effects (Efx) menu gives users the power to do everything from adding various levels of transparency to creating matting effects between two or more sprites. The program can also differentiate between 24 levels of foreground and background. The

**The Future Looks Good**

VideoWorks is not a static product. Planned improvements will make this program even more useful and powerful. MacroMind, the program's creator (the publisher is Hayden), hopes to market the source code of the program to developers interested in creating software containing high-quality animation, so don't be surprised to soon see games that will rattle your eyeballs. A utility that will allow users to compose single-voice music in MusicWorks, another Hayden product written by MacroMind, and move it into VideoWorks should be available soon. The music will appear in the Score window in the sound effects track, (under the User Defined menu selection) like other sound effects.

A print utility will ease the impact of one of the major failings of the current VideoWorks, its inability to print. This program will allow users to print out individual frames or entire storyboards (reduced printouts, similar to Print Catalog in MacPaint). Currently, the only way to get hard copy is to generate a screen dump to disk, and then print out the resulting MacPaint document.

Last, but not least, there is a Jukebox program for VideoWorks, already released into the public domain by MacroMind. The Jukebox can play back VideoWorks movies, complete with sound, without actually having the VideoWorks program on the same disk.
lower video channels correspond to the background of the screen while the highest channels place an object in the foreground.

There is also an ample selection of sound effects. From machine sounds to three different types of explosions to musical passages, over 81 sounds are available. The inclusion of sound does not slow down animation appreciably.

The menu structure of the Sfx menu is a Mac first. When a sound category is selected the main Sfx menu is replaced by a submenu in the menu bar. In this way all 81 sounds fit into a small area and are still easy to select.

Creative Applications

VideoWorks is more than just a program to play with; there are some very interesting and practical uses for the program. For example, in the field of video production, VideoWorks can pay for itself overnight.

One of the nicest features of the Mac is the availability of a multitude of distinctive fonts. Combine these with VideoWorks to turn the Mac into a very effective and flexible title generating machine.

Text can move across the screen vertically and horizontally at any speed. By taking advantage of the special graphics provided, titles can flow through one another, interweave, and even merge with each other. Text can leap out of the background, or gradually zoom out of a blank screen. And none of that is hard to create. These capabilities were previously achievable only on costly, dedicated hardware; the Mac now brings this power to virtually anyone.

VideoWorks can also be used to create powerful business presentations. Included in the demos on the movies disk are sequences featuring flying pie charts, growing bar charts (with digitized food products in the background) and a wonderful musical three-dimensional chart. Animation can be a major tool in pitching that BIG contract; and creating presentations with VideoWorks is so easy that any business user can do it.

Wrap

VideoWorks is one of the best Macintosh programs on the market. It will appeal to many people, from the corporate user to the to the frustrated would-be animator who who can’t handle the advanced mathematics required to create this level of animation on most other machines. This is a fairly complex program, but it possesses an intuitiveness beyond that of most Macintosh software, utilizing the Mac user interface to its fullest. And at a price of less than $100 (list!) it is one of the best buys in the market.
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Brains and Brawn.
The powerful Keeper file server is all you need to vastly enhance a variety of essential functions: It acts as a print server and spooler for the Imagewriter™ and Macintosh simultaneously. Because disk volumes expand and contract automatically when files are added or deleted, there’s no need for complicated calculations to “partition” the disk. And with removable hard disk cartridges, storage is virtually unlimited. The Keeper is available in 10, 20 or 30 megabyte capacities, as well as in combination with a 5 megabyte cartridge drive.

Typical network setup using two Keepers

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Please circle 70 on reader service card.
"The best $40 I've spent on my Mac."

That's what a lot of happy owners of Quick & Dirty Utilities are saying these days. This disk, the first in a promised series, contains seven applications and nine desk accessories, all utility programs. The programs range from good to great. There are several items here (Catalog Keeper, Font Manager, Time, Q&D Filer) that will make you ask: "How did I get along before without this?"

The applications are Catalog Keeper, DA (for Desk Accessory) Finder, DA Installer, Font Manager, Launcher, Switch and Reboot. The desk accessories are FileInfo, Mouse Position, Q&D Dialer, Q&D Filer, Q&D Terminal, Q&D Xmodem, Screencracker, Super Note Pad and Time.

Applications

Catalog Keeper is the gem of this disk. It is the easiest to use, most versatile, most forgiving cataloguing program you can use on your Mac. Users can create catalogs with up to 2400 files listed in each, and simply exclude all the files such as DeskTop that appear on every disk.

Sorting by name is automatic; sorts by size, type, creator, date last modified, or volume name are also possible. Both on-screen reports and printed reports are easily formatted, with control of the font, type size, and title header information. Headers and footers can automatically pick up the current date. Reports print well on both ImageWriter and LaserWriter.

Well, not really, But this
cost-effective
collection of programs
makes your Mac even more useful.

DA Installer has two purposes. The first is to automatically open up to four desk accessories at once, and the second is to more efficiently manage memory on a 128K Mac so that more (or larger) desk accessories can be opened without running out of memory.

DA Installer lets users save, load, delete, rename and get information
THEY SHOOT UTILITIES, DON'T THEY?

About the desk accessories in the System file. The desk accessories must be in the form of resource files.

**Font Manager** is a tool that is quicker and more versatile than Apple’s **Font/DA Mover** for working with fonts. It does all the expected font manipulations and then some. Font numbers are shown and, if necessary, can be changed. The details and mechanics of font numbers and font number assigning are well covered in the manual.

When a font in the selection window is selected, the whole font is displayed in its actual size at the bottom of the application window. As many fonts can be displayed as can be selected (and that’s all that are in the System).

Users can create and merge font files. Although these files are unfortunately not compatible with standard Apple font files, **Font Manager** can read both **Font Mover** and Font/DA Mover files. Fonts can also be bound directly into applications — a technique of use to more advanced users.

**Launcher** is a small application that allows the user to select a document — for example, a basic MacWrite memo blank. Then whenever that disk is booted that application will automatically appear, ready to work on. This is an extension of the Finder’s ability to set a start-up application. A particularly good use for this program is to select a **Switcher** document as the autostart document. You will then go directly into a fully loaded and ready **Switcher**. This application is both simple to use and error-free.

**Switch** is a tiny application that, when run, makes the disk that the application is on the start-up disk. This program works well but is not really necessary, as launching (double-clicking) a disk’s Finder while holding down the Option and Command keys accomplishes the same thing.

**Reboot** is another small application that simply ejects whatever disks are in the drives and soft reboots the Mac. This program closes open files before ejecting the disks to avoid the danger of corrupting files or programs. **Reboot** does not work on a Mac XL and should not be used with a hard disk.

**Desk Accessories**

The nine desk accessories are as varied and versatile as the applications. Let’s look at each one in turn.

**Finder** lets the user examine a file’s type, creator and finder and directory attributes. The type and creator tell the Finder what kind of file it is dealing with (application or document), which icon to use, and if it is a document, which application it belongs to.

The directory attributes let users make a file visible or invisible, locked or unlocked, and protected or unprotected, as well as modify other useful attributes. Users can easily change any of the data that appears in the on-screen box.

The ins and outs of types and creators are covered in the manual, along with a brief explanation of the meanings of most of the finder and directory attributes (not all have been documented by Apple).

**Mouse Position** simply displays the current position of the cursor in the upper right corner of the screen. While this data is primarily useful for
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The THEY SHOOT UTILITIES, DON'T THEY? section of the document discusses various utilities for Macintosh users. It mentions the features and benefits of each utility, such as Q&D Dialer, Q&D Terminal, and Q&D Xmodem. The Quick and Dirty Utilities, Volume One: Report Card section lists the utilities and their attributes, along with their version numbers and descriptions. The Adding It Up section describes the products and their features, including the cost and availability. The Font Manager section shows the file data for a font manager. The Catalog Keeper section describes its features and benefits. The Catalog Keeper section also includes a table with the list price and most usable on 128K Mac options. The list price is $39.95 and most is usable on a 128K Mac. The publisher offers to pay a bounty of $5 for each verifiable bug that users report. The publisher also offers a reward of $5 for each verifiable bug reported. The publisher's basic philosophy is to produce products that customers find worth the money. The Dreams of the Phoenix's basic philosophy is to produce products that customers find worth the money.
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Microsoft BASIC has two levels: the obvious and... In this first article in a series, we get our feet wet in the ROM waters.

Microsoft BASIC is both a very powerful and familiar language. The latest versions (2.0 and up) allow programmers to access the ROM functions that make the Mac so unique.

In a group of articles we'll guide you on those first tentative steps beyond the safety of "normal" BASIC programming. We'll start with the familiar "Save/Save As" and "Open" dialogs.

While it is easy to create dialog boxes from scratch in BASIC programs, it's even easier to tap into the Mac's system dialog boxes when you want the user to be able to save files or open existing ones. The two forms of the FILES$ function access the "Save/Save As" and "Open" boxes and allow creation of a routine to mimic the desktop's folder-document arrangement.

by Sharon Zardetto Aker
The FILES$(0) function accesses the Mac's "Save" box; use any string you want to prompt the user to name a file.

The FILES$(1) function puts the "Open" box on the screen. The syntax b$ = FILES$(1) is all that is needed to access the Open box. Again, the Cancel, Drive and Eject buttons are functional with no further programming, and so is the scrolling window in which the file names appear. The name of the selected file is stored in the string variable, prefixed with the appropriate disk name; an empty string is returned if the Cancel button is used.

A basic "Open" routine looks like:

```basic
b$ = FILES$(1)
IF b$ = "" THEN GOSUB choose.action
OPEN b$ FOR INPUT AS #1
INPUT #1, [information in program]
CLOSE#1
```

Filetypes

One of the problems with the basic FILES$(1) function is that so many disk files show in the window: any BASIC program saved in text format, any BASIC program created in the current version (decimal or binary) of BASIC, all data files (random and sequential) created by BASIC, and any text files on the disk. Cut down on the number of files that must be scrolled through by creating a "filter." The technique is to define a file type in BASIC, and select only files of a certain type to appear in the Open window.

In fact, an "envelope" system that lets the user store files in a specific envelope is simple to construct. A list of envelopes can be shown in the Open...
window, and then another Open box can show the files in the selected envelope. (This is analogous to the desktop folder system, although it does not affect the desktop at all.)

A file type is specified with the FILESS() function by using the type's four-character label:

- FILESS(1, "APPL") shows only applications in the Open window, while
- FILESS(1, "TEXT") shows only text files. You can string file names and types together, so FILESS(1, "APPLTEXT") shows both applications and text files in the window.

The NAME AS command not only allows renaming disk files, but also lets a type be specified. The syntax looks like:

```
NAME originalname AS newname, type
```

By "typing" files as soon as they are saved, programmers can later call up categories of files to appear in an Open window.

The Envelope Routine

The program in Listing 1 is the routine that lets a user save a file to a specific envelope.

The empty file named "New" serves as an original envelope name; when it is selected, the program branches to a subroutine that lets users name a new envelope. Use NAME AS to type this file as "ENVL". Use a Save box to name the datafile and an Open box to let the user scroll through envelope names.

If the "New" envelope is picked, branch to the "new.envelope" subroutine. Since the selected name is added to the disk name, it is only necessary to look at the last three characters of the string to see if "New" was chosen.

In the "name.envelope" subroutine a Save box is used to let the user name a new envelope. The routine checks to be sure the file name is only four characters long. It slices the string to get past the disk name using a routine that checks to see if a colon is the fifth character from the right, which would mean the file name is four characters. The string is sliced again to get the last four characters for the type identification.

Finally the empty file is saved as a file of type ENVL.

Back in the main program, save the original file, then use NAME AS to type it according the envelope it belongs in.

This rather complex-looking routine works as it stands, although it saves only empty data files to the disk. When you use it in your own programs, insert the lines needed to have the correct information stored in the data files. ("Envelopes" are always empty; they serve as type-identifiers only.) Also add a "trap" in case the Cancel button is pushed.

A bonus in using the system dialog boxes for saving files is that the "Replace existing [file]" dialog box automatically comes up when a duplicate name is used.

Selecting From Envelopes

Listing 2 shows how envelopes can be "opened."

Use the Open box to list all files of type "ENVL". Then use the selected envelope as the type definition for the next Open box, and slice the last four characters from the file name to get rid of the disk name.

If the Cancel button is used in the second Open box, return the user to the envelope selection. Open the file.

Remember to add a line that allows for the possibility that the user pressed the Cancel button in the first Open box; what will happen in that case depends on the program in which this routine is used. And the user's data disk will probably have the "New" file on it that was created when the "Place in an Envelope" routine was last used; you must either allow for that potential problem within this routine—don't let it be selected for opening or use the KILL command to erase it from the disk at the end of the other routine.

That wasn't hard at all, was it? Next month look for a peek at QuickDraw and patterns.

**SOME BASIC FILETYPES**

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<th>Filetype</th>
<th>Description</th>
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<tr>
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<td>Decimal BASIC programs, compressed format</td>
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<td>MSBP</td>
<td>Decimal BASIC programs, protected format</td>
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<tr>
<td>MSBC</td>
<td>Binary BASIC programs, compressed format</td>
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MacUser plays midwife to a 512K upgrade

There's a little bit of the do-it-yourselfer in all of us. When it comes to working around the house, or on the family car, decorating a cake or doing the landscaping, many of us tend to be adventurous. But some of the same people who don't think twice about tackling other jobs that call for a "specialist" will blanch at the suggestion of popping open their Macs and installing their own memory upgrade.

Now, we're not talking here about the whole "hacker" routine. This article isn't full of tips on how to shop for chips in surplus electronic stores or the ins and outs of the Mac's 68000 address lines. Rather, there are a number of kits on the market that are advertised to everyday Macintosh owners as a means to save a bit of money when fattening a computer. Home owners have heard the term "sweat equity" to describe how building a new room can increase the value of a home — these new kits offer a form of "solder equity" to the rest of us.

How hard are such kits to install? We took a look at one from Micro Conversions Inc. as being representative of the field. Turns out that it's not as difficult as many people might think, although it certainly shouldn't be one's first project with a soldering iron.

While the pictures tell the story in a step-by-step manner we'd like to add a few of our own observations too.

First off, we were surprised at just how much was packaged in the Micro-C kit. We expected 16 256K RAM chips, and the spare seventeenth one was our first confidence-builder. The sockets included in the set made us feel that we were not only upgrading our Mac's memory but that we were also adding to its overall design. Those plug-in sockets will make the next memory upgrade (and
you know memory is getting bigger and cheaper) far easier. The small parts; the resistor and capacitor, multiplexer chip and board were all there too.

And ah, the array of tools! What a welcome addition. A special little pry bar and hex wrench would make it simple to open the Mac's aptly-named clamshell case, cutters with which to attack the old chips, an IC insertion tool, tweezers and an X-ACTO® knife; even two thicknesses of desoldering braid. All this and instructions too, rolled from out of the neat, cylindrical package. “Give us a lever and a fulcrum to rest it upon,” we thought, “and we will move the world. Or at least fatten one little Mac.”

The manual was very specific in its instructions. It would have been helpful if the pictures had been larger but, with a little effort, they all made sense.

 Unsoldering the sixteen old chips was, indeed, a task that would have tried the patience of Sisyphus in its exacting repetitiveness. Using the included tools, every leg is cut from the old chips. Then, each leg is individually desoldered and removed from the board. Although the instructions are excellent as to this desoldering technique and, in our case, it went without a hitch, we feel constrained to point out that this is the most delicate part of the operation. Too heavy a hand and you can indeed fry the traces on your digital board.

Following the over and over and over again cutting and desoldering of the old chips came the equally repetitive task of cleaning the solder from all of those tiny holes. The included desoldering braid worked well but, again, a steady and careful hand is needed. Then we got to install the new sockets. Our advice: when doing these kind of tasks take your time, and if your mind begins to wander, go do something interesting for a little while and return later on.

The rest of the job, installing the multiplexer chip, which helps the Mac figure out how big it’s gotten, putting in a capacitor and a resistor, cutting one trace on the board and removing one jumper was all a byte of cake.

Finally, we popped in a disk with a Finder (Version 4.1) and, sure enough, our 128K Mac was a great big, old fat 512K monster anxious and raring to go and compute something. If you have had experience with a soldering iron and have a yen to fatten your own Mac, then kits from reputable manufacturers seem to be a good alternative to consider. Check the pictures and see if the job looks like something you’d feel comfortable with. If you then feel hesitant, get a dealer upgrade.
DELIVERING A FAT MAC

1. About Finder (in Version 4.1, not 1.1g) tells you the truth about what's really inside your Mac.

2. Micro-C includes everything you need for the conversion: 256K RAM chips and low profile sockets, a multiplexer and resistors and a capacitor for the multiplexer. Tools include wire cutters, a chip insertion tool, an X-ACTO knife for cutting the critical trace and 3 rolls of desoldering braid. What you won't find is solder. If you need solder, you shouldn't be practicing on a Macintosh circuit board.

3. After removing all the cables (including the keyboard) and the programmer's switch, use the enclosed hex wrench to remove the five screws that hold the case. Don't forget the one hidden in the battery compartment.

4. Sliding the hex wrench between the tongues of the forceps (tweezers) forces the Mac case apart.

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Slowly and carefully remove the outer shell.

Those old 64K memory chips have to go. The cutters provided do an excellent job.

The RAM chip legs must be removed now by heating up the pin ends and drawing them out with tweezers.

If you're historically minded, the interior of the case is a graduate record of the original Mac development team. All the right signatures are here, from Jobs to Hertzfeld.

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PART 2

Your desktop is full of icons: fancy icons, plain icons. We know how to fix the fancies, but, oh, those plain icons. It's time to fix that.

YOUR OWN ICON. ONCE IT WAS A dream, now it's within reach. Building on the base established last month, we'll create a custom icon in a virgin application (that's an application that has only had the generic "hand on the paper" icon previously). ResEdit prototype 0.7 (the program used last time) will be used this time to build the entire file from scratch. To save some time, we'll put the new icon in a blank document. What? How can that be? Doesn't an icon have to be in an application?

No. A document can hold the required resources; it isn't necessary to build a whole application. This document will not do anything, nor will it be readable by anything (except ResEdit). It will, however, hold the new icon, and look pretty on the desktop.

Decide on two things before you start: the creator name and the filetype. If this were a commercial product, Apple would have to approve the creator selection. Since it's not, anything can be used, as long as its not the predefined stuff like ICON and ICN# and BNDL. Let's use MINE as the creator name and HLDR for the filetype.

Put your work disk back in, and launch ResEdit. (There is a minor bug in the prototype 0.7 version of ResEdit that will appear as we create some resources. The bug isn't destructive, and will be pointed out each time it pops up.)

First create a new file to hold the icon resources. Make sure that none of the files are selected in the work disk's window. ResEdit has a very powerful menu command called NEW. NEW can be used to create new files, new resources and new resource types. Pull down the EDIT menu and select NEW. A dialog box will appear, asking for a filename. Enter an appropriate filename, such as "Mylcon." A new window will open; this is your new file's ResEdit window. If MyIcon's window was closed now, and ResEdit exited, you'd find an empty (0 K) file, with a generic document icon.

Creating a New Icon's Resources with ResEdit

While the volume window is open, selecting NEW creates a new file. Now that the open window is our new file (MyIcon), selecting NEW will create a new resource. Make sure that MyIcon is still the top (selected) window, and select NEW again (Figure 1). Each resource type will be created in this way.

The new window that appears is the Create New Resource dialog box. The scroll rectangle on the left side contains all the different resource types that ResEdit knows about. The TextEdit rectangle in the top right corner allows users to enter resource types that
ResEdit knows about. The TextEdit rectangle in the top right corner allows users to enter resource types that ResEdit doesn’t know about. We’ll use both in the next few steps.

Do the fun resource first. Scroll down the Create New Resource list until you find the ICN# resource type. Double-click on ICN#, and the dialog box will disappear. In its place an “ICN#”s from MyIcon” window will open, and on top of that, an ICN# editing window with a randomly chosen resource number. It’s time to get creative again. In the left hand part of the ICN# editing window, create a simple masterpiece. I created the icon shown in Figure 2 for my application, Launcher.

After the icon is finished, the mask has to be created. ResEdit has a feature to help make the mask. The last menu, ICN#, has a choice called DATA — MASK. Select it. Notice that an exact copy of the icon in the left part of the window was copied to the mask region, on the right side of the window. Now just fill in the insides of the image in the mask. Normally, the mask should be what you would get if you surrounded the icon with the MacPaint lariat and filled it with black. However, you can achieve special effects by careful editing of the mask. Note the effect that the slightly altered mask has on the Launcher icon’s mask when selected (Figure 3).

After saving your masterpiece, change the random resource number that ResEdit generated. Pull down the FILE menu and select Get Info. Another window will open, with the resource number field already selected.

Type in 128. Choosing a resource number is pretty much up to you (within specified limits). All will work as long as the mapping is right in the BNLD resource. Since Apple’s examples all use the numbers here, they’re as good as any to use. After you type in 128, close the Info window. Now close the ICN# editing window.

Hacking around with the innards of a Macintosh application is not something to be taken lightly; ResEdit has the power to totally mess up your files. (Read that last sentence again!) Make sure that you are working on backups, not on originals; there is no reason for you to have to look down at a tear-stained keyboard while ripping out your hair. Don’t take the chance of trashing a file (or disk) that you have no backup for.

Fig. 1: Selecting GNRL allows users to specify any new type name. Type names must have four characters (numbers and/or letters).

Fig. 2: The new icon is created in the left half of the ICN# editing window.

Fig. 3: The icon mask has now been created. Notice the effect of the mask in the small illustrations at the bottom.
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window, bringing the "ICN#s from MyIcon" window to the front.

Here's where that bug can crop up. When the ICN# editing window closes down, the "ICN#s from MyIcon" window is not always updated properly. If the interior of the window is not redrawn, don't try to select any of the ICN#. Close the window before doing anything else. (Close it down now anyway.)

Now create the FREE. Since there is only one ICN#, only one FREF must be created. Select NEW again (from the FILE menu), and this time select FREF from the New Resource Type window. An FREF editing window (with a random ID#) will appear. Mouse down in the rectangle next to FileType and type in HLDR. Press the TAB key to advance to the next field (icon LocalID), and type in 0. Leave the filename field empty. Before closing the window, select Get Info from the FILE menu, and change the FREF's ID number to 128. The FREF's ID# is also somewhat arbitrary, and there is no connection between the ICN# resource being numbered 128 and the FREF resource being numbered 128. Close the FREF editing window, leaving the FREF in the MyIcon window.

Now for the version resource. Select NEW again (from the FILE menu), and this time instead of selecting a predefined resource from the New Resource Type window, type in MINE and then select OK. The dialog will go away, and two more windows will pop up. (This sequence should be familiar by now.) Select Get Info from the FILE menu, and change the resource number to 0. Close the Info box and the two MINE windows.

Finally, close this resource.

On to the last resource. With the MyIcon window active (on top), select NEW from the FILE menu, and create a new BNDL resource. Renumber the new BNDL resource to 128 (Figure 4). The first two fields of the BNDL are waiting to be filled in, so enter MINE in the ownerName field, tab to the ownerID field, and enter 0. Select the row of five asterisks (a rectangle will appear around it).

Now go up to the FILE menu and select NEW twice. numTypes will change from -1 to 1. Mouse down in the first type field (scroll back to it; the first type field is after the numTypes field), and enter ICN#, then hit the tab key and enter FREF into the second type field. Scroll back a bit, and click on the five dashes right below the ICN# type.

Go up to the FILE menu again and select NEW. The "# of this type" field will change from -1 to 0, and a couple of new fields will show up. Mouse down in the type field, in the word ICN#, then tab once to put the cursor in the localID field that just appeared. (That's another minor bug . . . ) Enter a 0 here, and tab to the next field, rsrclD. Type in 128. mouse down in the five dashes just after the FREE type field, and select NEW from the FILE menu.

Using the same technique described above, enter a localID number of 0 and a rsrclD number of 128. The completed BNDL should look like Figure 5.

Close down the two BNDL windows, close down the MyIcon window (saving the file when asked), and exit ResEdit. That's all ResEdit can do for now.

Bundle Bit, Creator Name and Filetype

The final steps involve setting the Finder info stored with the filename in the disk's directory. ResEdit can't do this; other tools are required to set these three fields. You can use either a shareware desk accessory called "FileInfo." The first three are available on MAUG (on CompuServe) and through user groups; FileIt is also on the June 1985 Software Supplement and "FileInfo" comes on Dreams of the Phoenix's Quick and Dirty Utilities, Volume One. All these tools have a slightly different way of setting the Finder info, though all will accomplish the same thing. Using a desk accessory allows setting up the remaining fields before leaving ResEdit.

Perform the same actions no matter which tool is used. First select the file MyIcon and display its file attributes. (This step is where these programs differ.) Now make sure the Bundle box is checked, the filetype is set to MINE and the creator or owner name is set to HLDR. When everything looks right, click the Set It or Change box.

Quit and reboot your disk. And there it is! Filled with your own masterpieces, your desktops will soon rival great museums.

WHERE TO GET IT

ResEdit is available from many sources. It is an Apple Computer developer's tool and prototype 80.7 can be found in the June 1985 Software Supplement. The latest version can also be found in MAUG's Macintosh Users Data Library 3 ("GO PCS23" on CompuServe). Various versions can also be had from the libraries and bulletin boards of many user groups. It is free.
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Bill Atkinson may be best known for his brilliant MacPaint program, but his importance at Apple and to Mac owners goes much deeper.

Is QuickDraw the same on the Macintosh as it was on the Lisa?

Yes. It was very important for compatibility that the two were identical. One of the difficulties was trimming QuickDraw down to fit into the Mac ROM (read-only memory). I kept squeezing it down, reorganizing, refactoring, finding code I could share. It took three and a half years to get it that small. I pride myself that it’s down to only 40,000 lines in assembly language.

Was Lisa originally conceived as a graphics-oriented screen and interface, or was that something you brought to it?

During Lisa’s development, we didn’t know what we were going to build. We knew we were going to build something a little more for the office, or small business, than the Apple II, and that the emphasis would be on graphics. That was my doing. I wanted QuickDraw and Lisa given more capability and power. Overall, I think it would be fair to say that QuickDraw was developed synergistically with the applications. I would try to stay two or three months ahead of where I knew the applications for Lisa were going to be. When the application developers came to a point where they were running out of horsepower, or they needed a new capability, I had usually foreseen this situation and was working on a solution.

How would you describe the Macintosh, in terms of the concept and philosophy of the design?

Initially, we thought of it as “VolksLisa.” We had something really neat in Lisa, but it was just too expensive to reach many people. We wanted to make a machine that was far more for us, instead of for them. I think of Lisa as sort of a prototype Mac. We shipped it and it was a good machine, but our next round of building and development was a whole lot better. We built on top of what we knew, incorporating all the good stuff, but we streamlined it and cleaned it up. We also knew we had to give up some elements. We had to pare down what could work in a small amount of...
RAM (random-access memory). The hard disk would not be as integral to the design. The first barrier was just making it more compact and more personal.

How did the Macintosh user interface—the desktop and windows—develop?

We really evolved this whole thing. It didn’t just come to us. It was very slow and painful. It took a lot of people to get from one step to another. And for a long time everything we were doing was with mock-ups. There were no applications behind the screen, and everything was just for show. It took a long time to get the first pull-down menus. At first they were across the top of each window as opposed to where they are today, at the top of the screen. We ran into all kinds of problems with that, such as what happens when the windows are small and the menus are long and go off the bottom? Do they hang off or bounce back upward? What happens when a window is very narrow and you can’t see all the menu titles? We ended up going to a much simpler scheme of things that always gives the maximum height and always has the full screen width: putting the menus at the top of the screen as opposed to the top of the windows.

And then for a while we were kind of confused about the difference between a folder and a window. We had them all lined up along the bottom of the screen kind of like a file drawer with all the tabs of folders onscreen—very confusing. None of this came easily for us. We evolved the look of the Macintosh screen by trial and error, and watching people interact with it.

Which came first, the Macintosh or MacPaint?

The Macintosh came first. It’s hard to say whether MacPaint existed or was the evolution of a little sketching program that I threw together for Lisa. It was called Sketchpad, and it just had a single palette along the left with patterns in it and there was only one tool. That tool was similar to the Filled Free-form tool, except that you could make multiple clicks.

How did you come up with the Tool Shelf—tools on-screen, not hidden in a menu?

We had this idea for a structured graphics editor for the Lisa—that essentially you would select a rectangle and say what to put in it. We got it in our heads that it was good to select first and then operate—something like in a word processor, where you select something and then say cut it, for instance, or select something and tell the computer to make it boldface. And so we had this model of a structured graphics editor, but it was a joke...it was really bad. I felt that it worked for editing—for changing the attributes of existing stuff—but for fresh creation, and particularly in graphics, you needed a pre-fix operation. Fundamentally, you cannot make a curved line by stretching out a rectangle and saying, “Put a curved line in there.” You really have to say to the computer ahead of time, “I’m about to make a curved line, so now you can give me good feedback while I’m making the curved line”—good feedback being the curved line itself. That was the religion in those days: post-fix was the way to go—you make a blind selection and then tell the computer (continued on page 147)
GOT A MAC PROBLEM? SOMETHING THAT YOU’D LIKE EXPLAINED? SOMETHING THAT 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, OTHER MEMBERS OF THE MAC TEAM WILL HELP OUT. SO ASK WHAT YOU NEED TO KNOW AND GET YOUR ANSWER STRAIGHT FROM THE SOURCE!

SEND YOUR QUESTIONS TO DAN COCHRAN, 25 WEST 39TH STREET, NEW YORK, NY 10018. DAN WILL READ ALL OF YOUR QUESTIONS, BUT UNFORTUNATELY, HE CAN’T ANSWER INDIVIDUAL QUERIES. WATCH THIS SPACE FOR THE PICK OF EACH MONTH’S Q AND A CROP.

WHAT DOES THE MAC MEAN WHEN IT SAYS, “AN APPLICATION CAN’T BE FOUND TO OPEN THIS FILE”?

Each application puts a unique signature on each document that it creates. These signatures consist of two sets of four characters each (letters and numbers). The first is the file type and the second is the code name of the file’s creator application. Uppercase and lowercase are significant so that MAC and MAC are different to the Finder, the program that interprets these signatures.

Many applications that also create special formatted files can create unformatted files of type TEXT. Many applications can open TEXT files, regardless of creator, but usually both parts matter, and must be what the application expects.

An application can usually only open files of its specific type. If a document has already seen its creator application since the last power up, it will be able to open, although it will ask for the disk with the application if it is not currently mounted.

Sometimes a document will send the “Can’t open” message if the creator application is mounted but has not had its bundle bit set. The bundle bit is one of the Finder attribute bits that tells the Finder that the document is associated with a bundle resource which points to the creator application. There are many methods of setting bundle bits; try such programs as SetFiler or Fedit.

WHY ARE JUST ABOUT ALL THE COMPONENTS AND CHIPS SOLDERED ONTO THE MASTER LOGIC BOARD?

There are three reasons for all this soldering: (1) reliability, (2) manufacturing requirements and (3) economics.

Many manufacturers use chip sockets on their circuit boards. The sockets, rather than the actual chips, are soldered to the board and the chips are then manually inserted into the sockets.

Sockets make life much easier when an upgrade occurs or when a defective chip needs replacement (it’s a lot easier to pull a chip out of a socket than it is to unsolder it). Sockets, however, don’t provide the reliability factor we expect from our products. While a socket can be soldered to a circuit board as reliably as a chip, the sockets themselves can collect debris, become contaminated and ultimately result in faulty contacts between the chip and the socket. And it only takes one faulty socket connection on a 32-pin chip to bring everything to a grinding halt.

Soldering the IC directly to the board results in a much more reliable contact, and ergo, a much more reliable product. Then there’s manufacturing. The Macintosh plant is a showcase of state-of-the-art, automated manufacturing techniques. A robotic production line collects the necessary components required for each logic board and then automatically inserts the various components into their respective locations on the board. When all of the components are in place the bottom of the board is then passed over a thin wave of liquid solder. Using sockets would complicate this process since it’s much easier for a robot to drop a chip into a set of holes in the circuit board then to force it into a socket.

Of course, manufacturing techniques are economically motivated; we didn’t build the Macintosh plant just to be the first one on the block. Building reliable products in an economic fashion benefits all concerned — Apple, our dealers and ultimately the marketplace.

HOW IS A FOREIGN VERSION OF A MACINTOSH SOFTWARE PRODUCT CREATED?

Most software products (with some obvious exceptions like accounting and tax programs, and especially productivity tools, games and computer languages, have international appeal. The main differences between, for example, a French version of Multiplan and a domestic version are found only in the program text, menus and in the formats used for numbers, currency, dates and time.

Like anything else, there is a right way and a wrong way to do international products. The Macintosh developer actually has to go out of the way to do it improperly. A well-constructed Macintosh program will not have even one line of text hard coded directly into the program. Rather, all program text, whether it’s contained in menus, alert boxes, or help files, is stored as resources. These resources can be edited (using tools like the Resource Editor) by a person with no technical training. So if
you are converting a domestic product for the French marketplace all you really need is a translator who knows how to use a keyboard. The same thing holds true for currency and date formats. The International Utilities Package should be used by all Macintosh applications and contains programming routines that enable the developer to make an application country-independent.

Can leaving a disk in the drive while the power's off damage any of my equipment?

Chances are it won't. But when a disk is left in the drive, the electromagnetic sensor that reads data is directly over the disk, ready to go. A small burst of static electricity through it could accidentally erase a small amount of information on the disk. While the damaged area might be tiny in terms of actual number of bits erased, the missing data could disable the whole program.

Our technicians have calculated the odds on this happening. A disk left in the drive has a 0.02% chance of being damaged. If the disk was removed its chances of being damaged in the average disk storage environment are half that or 0.01%, so on the whole it is better to remove all disks from the Mac when you shut it off.

How is an Apple font created? What tools are used? How are sizes set?

The wide variety of fonts available to the Macintosh user are an important and critical element in maintaining the real-life Macintosh metaphor. The history of literature and written communication is paralleled by the evolution of the symbols used to most effectively and aesthetically translate our abstract thoughts to hard copy.

Visual aspects of our written communication are equally important to the actual content and can often be the difference between effective communication and a wasted effort (try writing a complaint letter in Times font on an Apple LaserWriter and you'll see what I mean). Indeed, it would be a dull world if everything was 12-point Geneva.

A Macintosh font is a set of up to 255 distinct characters and all characters have to be defined in a single font (Note: select the Key Caps Desk Accessory from the Apple Menu, hold down the Shift and Option keys simultaneously, and note the many empty boxes within the Key Caps windows — these are all undefined characters in a font).

Each character in a font is defined by pixels arranged in rows and columns that correspond to the width and height of the font. The size of the characters is given in points, a typographical term that stands for 1/72nd of an inch. Therefore a 10-point font is approximately 1/7 of an inch high.

While early pioneers in written communication had to work with stone and chisel, modern-day authors now have the luxury of typewriters and personal computers. Today's font designers enjoy similar amenities. Macintosh fonts are created using utility programs like the Font Editor and the Resource Editor (available with the Software Supplement). These programs work very much like the FatBits option in MacPaint. The font designer is presented with a grid within which he or she can turn pixels on or off to define each character associated with a particular font.

The font designer must explicitly design the font for each point size desired.

When an application program, such as MacWrite, requests a particular font size the Resource Manager (part of the Macintosh ROM) will find the requested font and read it into memory. QuickDraw is the part of the Macintosh ROM that is responsible for displaying everything you see on the Macintosh display, including fonts.

Before QuickDraw can display a character it lets the Font Manager know what size and scaling factors it requires. If the exact size requested isn't available the Font Manager will look for a similar size font that it can scale up or down. Scaled fonts don't look as impressive as non-scaled fonts (compare 18-point London to 24-point London).

What exactly is public-domain software? Is all of the software on electronic bulletin-boards in the public domain?

Authors who choose to put their software into the public domain essentially give up all their rights to the product, including their rights under copyright law to control the reproduction, modification and distribution of the software. Software products that bear copyright notices, either in the object code, in a sign-on screen, in the documentation or on the diskette label are not in the public domain and may be reproduced only with the owner's permission.

One reason this distinction is important today is because of the proliferation of electronic services and bulletin boards. These services are extremely useful and provide a very timely and cost-effective means for distributing computer programs and files. If, however, all software that appeared on electronic services became public domain simply because of the fact that it was electronically available it would discourage use of this media for distributing programs and information.
Join the MAUG™ Community

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 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.

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We hope so, Ralph. We hope so!

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MacUser is not a lifestyle magazine. We’re more interested in getting the most out of the beast rather than satisfying some “yuppie computer” marketing hype. And frankly we don’t subscribe completely to “the computer for the rest of us” ethos. The Macintosh is certainly a wonderful machine, and it is intuitive, and its users tend to be innovators who don’t buy computers based on a philosophy that no-one ever got fired for buying Big Blue. But, like any machine, the more you know about your Macintosh, the better you can use it. And that’s the whole point of MacUser.

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InTouch is a full-featured telecommunications program. It has its own communications command language (the most powerful in any Mac comm program) that lets users do complete unattended sessions. Supports Xmodem, MacBinary and Kermit. Has a macro key function. Ease of use is increased by the large number of communication documents and sample command language files provided. $149. Software Masters, Suite BB, 3330 Hillcroft, Houston, TX 77057.

MacDashar is a communications program with one purpose: to emulate a Data General D210 terminal. It does an excellent job at that. $45. Kaz Business Systems, Suite 1620, 10 Columbus Circle, New York, NY 10019.

MacTerminal provides basic telecommunications and terminal emulation for the Mac user. It emulates DEC VT100s, IBM 3278s and plain teletypewriters (TTYs). Its usefulness as a telecommunications package is somewhat limited since it does not have macros nor any sort of auto redial/auto logon capability. It is really for those people needing faithful VT100 or IBM 3278 emulation — it is superb at those. $99. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

MITE offers basic communications capabilities along with VT100 emulation. Complete but somewhat awkward to use. $145. Mycroft Labs, Inc., PO Box 6045, Tallahassee, FL 32314.

Mouse Exchange BBS turns a Mac into an electronic bulletin board system. Allows private electronic mail, public message areas and file distribution. Users can be granted different access levels and password security is supported. Supports Xmodem file transfers. External drive or hard disk recommended. $39.95. Dreams of the Phoenix, Inc., PO Box 10273, Jacksonville, FL 32247.

SmartCom II balances power and ease of use. Capable of unattended operation and has a very powerful command language. Does real-time graphics when run on a 512K and connected to a 512K Mac. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived both to the printer and to disk. This is a very complete program marred only by the lack of keyboard macros. $149. Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092.

Straight Talk is a simple, straightforward communications program that includes a link to the Dow Jones News/Retrieval Service and other major on-line services. It runs at either 300 or 1200 baud only. Special features work well with DJNR. Includes a free password to the Dow Jones network with 1 hour of unrestricted use. $79. Dow Jones & Co., Inc., PO Box 300, Princeton, NJ 08540.

Telescope is the power telecommunicator's terminal program. It can be configured to emulate any terminal and has all the advanced features (except unattended operation). Features include a small electronic mail miniBBS option. Unfortunately the documentation does not adequately explain the 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 is a power telecommunications program. Features include DEC VT100 and VT52 emulation, Tektronix 4014 graphics terminal and Data General D200 emulation. File transfer protocols supported include Xmodem and MacTerminal Xmodem. The MacBinary standard is implemented. Auto redialing and auto logon facilities are included, and users can create a directory of frequently called phone numbers. VersaTerm is easy to use and well documented. $99. Peripherals, Supplies & Computers, Inc., 215 Mt. Penn Ave., Perkiomen, PA 19460.

1stPort is a superb data transfer package. It can handle many document formats, including SYLK, DIF, 1stBase and plain vanilla ASCII. The documentation is clear and precise. The program is also more than adequate as a simple terminal emulator. It supports Xmodem transfers. Another feature is a build-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.

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. Data can be exchanged with other Microsoft products and charts can be pasted into MacDraw, MacPaint and MacWrite. Has on-screen help. Limited to 100 data items (4 in a series) on a 128K Mac, approximately twice that on a 512K Mac. $125. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009.

ChlpWlts is a combination game and teaching tool. Players create programs to maneuver robots through a set of eight mazes. The programs are written in ChlpWlts’ built-in icon-based programming language (IBOL). IBOL is a 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 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 a proof that learning to type can be fun. In this...
MINIFINDERS

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, Tar-rytown, NY 10591.

Mind Prober is a demonstration of a very simple expert-style system. How well do you know your friends? Answer certain statements as either true or false, and the computer prints a 3- to 5-page psychological profile of subject in business, stress, sex and other situations. $50. Human Edge Software Corp., 2445 Faber Place, Palo Alto, CA 94303.

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. The manual is very clear. $39. BrainPower, Inc., 24009 Ventura Blvd., Calabasas, CA 91302

Turbo Turtle is a turtle graphics program primarily designed as a learning tool for children. It uses Logo commands for graphics, but is not a full implementation of Logo. Commands and common operations are displayed on pull-down menus, executed in a graphics window as they are entered. Procedures can be written and combined for complex designs and recursive operations. Simple to use, good introduction to Logo for young children. $39.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

Balance of Power is the world's first computer peacegame. This astonishing simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. The goal is to expand your country's sphere of influence while avoiding nuclear war. Extraordinary artificial intelligence routines and general play make this game a true classic. 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.

Cutthroat 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, 55 Wheeler St., Cambridge, MA 02138.

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. Robot can sometimes be appealed to for extra info. A new source of energy must be found before self-destruct. Energy levels, metabolism, danger signs appear on control panel left of text area. Word and sentence understanding is very good. Absorbing game for adventurers. $39.95. Broderbund, 17 Poul Drive, San Rafael, CA 94903.

Eat New York is a unique Mac database. It is a list of over 700 New York City restaurants. You can search for a place to go by category or location. The minireviews that appear on the screen can be edited (as users will often disagree with them) and new entries added. Indeed, all the New York entries could be deleted and a restaurant database for any locality created. $39. Kaz Business Systems, Suite 1620, 10 Columbus Circle, New York, NY 10019.

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 Corporation, 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. Weapons include bullets and bombs. Twisting the mouse rotates turrets on the ship. Death arrives with three ships lost or three troops carried away. Very average game. $34.95. PBI Software, 1155-B 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.

Forbidden Quest is a text adventure with pictures. Begins in a spaceship, with you in extreme danger. Indications are that if you don't do something very quickly, you will die a horrible death. The game provides several levels of online help, from simple hints to actual 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. Priority Software, Suite 22, 635 Sanborn Rd., Salinas, CA 93901.

Frogger where Frog meets mouse—and neither side wins. The object is to hop Froggie across a busy highway, then help him jump from log to log to his home at the top of the screen. Free with purchase of Sierra product. Sierra Online, 36575 Mudge Ranch Rd., Coarsegold, CA 93614.

Gateway, another Artext** game, comes with three full-color prints. You inherit a boring old building from a supposedly rich uncle, eventually learning that the building is a "gateway" to a lost civilization. You must find the gateway and cross through. Outcome is determined by choices made along the way. Both Forbidden Quest and Gateway have pull-down menus for conditions, inventory, and game operations. $49.95. Priority Software, Suite 22, 635 Sanborn Rd., Salinas, CA 93901.

Gato puts players in command of an American submarine in World War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." The game comes with 20 missions and you can create up to ten missions of your own. $39.95. Spectrum Holobyte, Inc. Suite 325, 1050 Walnut St., Boulder, CO 80302.

Gypsy is a computerized, customizable Ouija board. More than 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.

Legacy is a text/graphic adventure on two disks (Parts One and Two). A magical orb in Drab Castle must be found

ENTERTAINMENT

Airborne is 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. Troops and tanks land and attack across the desert. Game sounds digitized from actual recorded sounds add to the game. $34.95. Silicon Beach Software, Suite 201, 11212 Dalby Pl., San Diego, CA 92126.

Eat New York
Lode Runner is a 150-screen action-strategy challenge that requires 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 Drive, San Rafael, CA 94903.

MacAttack puts the player in command of a super tank defending the wastes of Alaska against invaders. This 3D simulation pits you against attacking tanks and warplanes that fire heat-seeking missiles. Defeat the horde and get treated to a graphic fireworks display over the town. $49. Miles Computing, Inc., Suite 212, 7136 Haskell Ave., Van Nuys, CA 91406.

MacBackgammon with Cribbage provides graphic versions of 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., Corvalis, OR 97330.

MacChallenger lets players land a space shuttle at either Cape Kennedy or Edwards AFB. The graphics of 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.

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 (which is very similar to Othello) is somewhat easier, even at the expert level. $49. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

MacJack II is a blackjack game pitting users against the house. Includes good graphics, insurance against dealer blackjack, splitting and doubling, and table limit that rises with your stake. The game plays very well, and can be quite addictive. $39.95. DataPak, Suite 401, 14011 Ventura Blvd., Sherman Oaks, CA 91423.

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 all fun to play, but not particularly absorbing. $50. Videx, 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 closest 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, which you follow 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. Newssoft, PO Box 4035, Newport Beach, CA 92661.

Pensate is a truly mind challenging strategy game. The object is to move a piece eight squares while avoiding contact with lots of other pieces that are moving in various patterns. There are multiple levels of difficulty and a play-ahead feature where users must plan moves in groups of up to four turns. The graphics are very well handled and the challenge addictive. $39.95. Penguin Software, 830 Fourth Ave., Geneva, IL 60134.

Planetfall leaves users shipwrecked on a seemingly deserted 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, 55 Wheeler St., Cambridge, MA 02138.

Pyramids of Peril is an action-strategy adventure in which a single 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 names, distinct personalities and playing styles, in a saloon setting. Game has three playing speeds. Dealing and play are very fast. Betting and play options shown on buttons. Game evaluates your hand, suggests cards to keep/discard. These features also accelerate play. Dynamic, exciting, addictive game. $39.95. Henderson Associates, #1, 980 Henderson Ave., Sunnyvale, CA 94086.

Sargon III is a capable chess program with 9 levels of play, problem-solving modes, take back, change color, hint, manual play, etc. Easy Play option blocks Sargon from stealing search time during player's move, effectively doubling number of levels. Pieces are moved graphically. 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 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.

Trivia has questions in Sports, History, Geography, Literature and Entertainment categories. Online instructions and
MINIFINDERS

playing options. Up to six players compete. Players set
time of response, target score for win. Player answers
question verbally from one of three levels, checks answer;
then hits Correct or Incorrect button. Categories limited;
questions replay if game not saved. Own questions can be
converted from Word or MacWrite files. $24.95.

Tycoon is a financial simulation based on the ups and downs of
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 lets players take the part of a character who travels
through land, sea, air, space, and even time itself in a
quest to find and defeat the evil sorceress Minax. Good
Mac interface; excellent game in spite of confusing
graphics. $59.95. Sierra On-Line, 36575 Mudge Ranch Rd.,
Coeursgold, CA 93614.

Ultima III allows up to four characters to cooperate to explore the
vast wilderness of Sosaria; dungeons, oceans, and the
Moon Gates help solve the adventure. Outstanding

Webster’s Revenge is a Boggle-like word search game. Super
graphics make it a pleasure to play. The dictionary is ade­
quate and the user can always override it if necessary.
Multiple skills levels make this a game for all. $34.95.
Shapedge Software, Inc., 119 E. Tyler, Athens, TX
75751.

Who’s Grandma’s Baby? “Grandma” has just inherited a fortune in
medieval jewels and has escaped from her native Hungary
past the watchful eyes of the KGB. Grandma has only one
living relative, but awaiting her at JFK airport are a bevy of
impostor grandchildren. You must compare bone struc­
ture, speech patterns and ask pertinent questions to find
the real grandchild. $49. BuTech, Inc., 7130 Barcadero
Road, Fort Worth, TX 76109.

The Witness is a full-text adventure casts the player as a detective
assigned to get to the bottom of a death threat. When the
victim is killed, you have only one night to find the real guil­
ty party. $39.95. Infocom, 55 Wheeler St., Cambridge, MA
02138.

Wizardry is an outstanding dungeon exploration adventure pitting a
party of up to six characters against the guardian
monsters of the evil wizard Werdna. Capture his amulet to
earn your reward. Even after solving the game, you’ll want to
go back into the dungeon. $59.95. Sir-Tech Software, 6
Main St., Ogdensburg, NY 13669.

Word Challenge is a Boggle lookalike. Features multiple (25) skill
levels and an extensive dictionary. Even “pro” Boggle
players should find a level that will challenge them. The
game plays well. $39.95. Hayden Software, 600 Suffolk
St., Lowell, MA 01854.

Xyphus is a role-playing game pitting four characters (fighters or
wizards) against multiple scenarios that grow increas­

Zork I is a full-text adventure game that lets players explore a
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, 55 Wheeler
St., Cambridge, MA 02138.

Zork II is where the adventure continues in the underground
empire. A wandering wizard keeps things interesting;
though there’s a way to beat him if you persevere.
$44.95. Infocom, 55 Wheeler St., Cambridge, MA
02138.

Zork III is the final chapter in the trilogy. Players come up against
the ultimate enemy — the Dungeonmaster himself. More
closed-ended than previous Zorks. $44.95. Infocom, 55
Wheeler St., Cambridge, MA 02138.

GRAPHICS & DESIGN

Animation Toolkit lets users prepare “film clips” of moving ob­
jects which play back at varying speed, like old-fashioned
flip books. Drawings are built in frames, using some of the
tools from MacPaint. They can be copied and altered easily
from frame to frame. Each film clip plays repetitiously as
it is being constructed. A limited animation tool, but a lot of
fun. $49.95. Ann Arbor Softworks, 308½ S. State St.,
Ann Arbor, MI 48104.

Art Grabber with Body Shop is a desk accessory that lets users
browse MacPaint documents, selecting and copying as
they chose. 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, 600 Suffolk St., Lowell, MA 01853.

ClickArt Special Effects is a MacPaint enhancement desk ac­
cessorry. Allows the user to distort, stretch, rotate and
use perspective on MacPaint documents. A necessary
addition for all serious users of MacPaint. $49.95.
T/Maker 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 architec­
tural drawings. Fun for even non-pro’s. $79.95. Hayden
Software, 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, furnishings included as a font that the user installs into a System
file. $199.95. Hayden Software, 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 posi­
tioning easy. Select letters to edit by clicking on a matrix
of the font. Allows scaling of existing fonts and preview­
ing 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.
Ave., Van Nuys, CA 91406.
THE MAC GETS DOWN TO BUSINESS!

—A step by step guide to designing power macros in Excel;
—Accounting on the Mac—a comparative review of nearly a dozen major products;
—MacCharlie—Is it a sin to run MS DOS on a Macintosh? (and how well does it work?)

Plus:

Short reviews of StatView, Start Your Own Business, MacPlot, and more; And a roundup of desk accessories designed to help you organize the way you work—Sidekick, Battery Pak, and QuickSet;

In Other Areas of Interest:

—The gloves come off as four experts compare the merits of programming in Pascal, BASIC, Forth, and C in our Great Language Face-Off;
—We review JustText, a professional word/graphics processor for interfacing with PostScript printers and typesetters;
—Neil Shapiro offers a step-by-step guide to Getting Started in Telecommunications;

Plus:
—Serious literary entertainment with Text Adventures;
—The Mac musician takes an in-depth look at MIDI on the Mac;
—Our BASIC series continues with Part II of a Dip into the ROM;
—Over 150 capsule product reviews;

And, as always,
—The Macintosh Boundary from Doug Clapp;
—Dan Cochran with Answers from the Mac Team; and
—More irreverence from our contributing anti-editor, John Dvorak
MINIFINDERS

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, ⅓). $49. Miles Computing, Inc., Suite 212, 7136 Haskell Ave., Van Nuys, CA 91406.

Macaccessories Professional Type Fonts comes in two flavors: text and headline. Both sets consist of 16 digitized fonts, very similar to commercial typefaces. These extremely clean fonts are among the best available. The Text set comes in sizes ranging from 12 point to 24 point, while the Headline fonts are from 24 point to 72 point. The large fonts have to be seen to be believed; they’re really good. Some of the very large (48 and 72 point) fonts will only work a 512K Mac (they take up lots of memory!). $49.95 Text (1 disk). $69.95 Headlines (2 disks). Kensington Microware, 251 Park Ave, South, New York, NY 10010.

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, Inc., 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., 20528 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. Text must be entered via the keyboard, a serious drawback, and style and font changing ability is limited. 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 Ledger Hill Rd., Boston, MA 02132.


QuickPaint is a desk accessory that allows browsing through MacPaint documents. Selections 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. Movable 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 Devon St., Chatsworth, CA 91311.

TalkShow allows pictures, graphics, and speech to be combined in a single document. Unfortunately the components are so crude and the integration and implementation so poor that the program is of no value except as a curiosity. The skimpy documents do not begin to explain the program. $149. Rufe Software, Suite 214, 80 Eureka Square, Pacifica, CA 94044.

Underware Ribbon allows users to create MacPaint images and transfer them to cloth, typically to T-shirts. Fairly easy to do, although care is required. The transferred images can be colored using the special pens provided. Set of a ribbon and five colored pens. $24.95. Underware Divisions, Inc., 1550 Winding Way, Belmont, CA 94002.

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, 600 Suffolk St., Lowell, MA 01854.

ACCOUNTING

Rage to Riches small-business accounting has three integrated modules: General Ledger, Receivables and Payables. Each can handle 5000 accounts and 10,000 transactions. Runs on single drive, 128K but 512K or more, two drives advisable. Simple to use, effective use of menus, windows, and mouse operations. RAM-based. $145 each. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129.

Palantr Financial Series consists of three modules that will handle the accounting needs of a moderate-sized business. Good, powerful programs. Good documentation. Main drawback is that all require MS BASIC to run. $145 each. Palantr Software, Suite 100, 12777 Jones Rd., Houston, TX 77070.

HOME APPLICATIONS

Day Keeper Calendar is the ultimate computerized appointment and note book, 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.

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. Seven kinds of reports can be generated and either viewed on-screen or printed. Simple graphing and charting facilities are included. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301.

Electric Checkbook does exactly what the name says: keeps a run-
Use our convenient Reader Service Card to obtain further information about the products and services advertised in MacUser.

Circle the numbers on the card corresponding to the numbers appearing on the advertisements for the products or services in which you are interested. For quick reference, we have included both the page number and reader service number on the Ad index page.

Any comments you may have about MacUser are welcome in the space provided.

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Business as Usual
Superex Business Software gets the Macintosh down to business without changing the way you run things.

Three years ago, when the Macintosh was just a twinkle in Apple's eye, Superex Business Software understood that the businessperson should not be forced to change the way he or she runs things to suit a software program designed for the entire world. We believed then, as we do now, that software should be specific, that your software should conform to your operation, and not vice versa. After all, who knows your business better than you?

We asked you questions, studied your different needs, and created a line of business software to fulfill them. You don't have to change the way you run things to run our software. And it won't take you months to learn, either. Our programs are easily installed and easily used.

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**The Estimator** simplifies estimating for professionals in any field. Establish prices for up to 2,000 services and/or items and 1,000 clients. It stores bids, handles the calculations, and tracks billing components. 99.95.

**The Inventory Manager** maintains up to 2,000 items on flexidisk and 25,000 on 10Mb hard disk. It provides 15 fields per item, including a MacPaint drawing. 300.

**The Superex Macintosh Accounting Series** provides everything you'd expect in a business accounting package and more. It consists of Accounts Payable & General Ledger (500.), Accounts Receivable (300.), A/P&G/L with A/R (700.), Accounts Receivable with Inventory Control (450.), and each available as a separate package. Designed to stand alone or to run with our other business programs, the series handles up to 5 bank accounts, and maintains records for a full year. The Complete Series, 900.

**MacFee** simplifies goods & services accounting, providing unlimited billing rates and prices for goods. It issues statements, tracks invoices, flags credit limits, ages receivables, and maintains mailing lists. 300.

**MacFinance** handles sophisticated financial calculations, leaving you free to use your intuitive faculties rather than your memory for equations. It will even create charts and graphs based on your data. 99.95.

**MacStore** automates your retail business. It updates all files with each transaction, keeping accurate records of cash flow, price quotes, sales tax, sales inventory, receivables, etc. 450.

**MacWholesaler** eliminates tedium and margin for error in your daily operation. It records sales, cash flow, credit lines, inventory, backorders, price lists and quotes, sales tax, receivables, and supports 10 pricing levels. 800.

**SalesMac** turns your Mac into your star assistant, and you into a sales star. It remembers your appointments and contacts, reminds you when to call, tracks expenses, and lets you chart your progress with a choice of graphs. 150.

**The Video Store** tracks sales, rentals, and inventory at point-of-sale. It handles 30,000 items on 10Mb hard disk, and will generate reports including mailing list, inventory value, statements, and overdue rentals by customer. 800.

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Superex Business Software
Not a new way of running your business. Just a better way.

Packages & programs subject to availability. Prices are suggested retail. ©1985 Superex Business Software, 151 Ludlow Street, Yonkers, NY 10703 (914) 964-5200

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Financial Cookbook provides nearly 3 dozen "recipes" to help
users figure out financial formulas (e.g., 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 78775.

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.

Front Desk lets small businesses and offices easily keep track of
personnel schedules, activities, and payments. The pro-
cram can keep track of up to 15 employees, functioning
as a day-, week- and month-at-a-glance calendar. Highly
recommended for doctors and dentists' offices. Less
useful for offices less dependent on the human factor.
$149.95. Layered, Inc., 85 Merrimac St., Boston, MA
02114.

The Home Accountant is a complete and easy to use financial
system. Data entry is intuitive. All kinds of reports, in-
cluding charts and checks, are easily generated. Entered
data will update all relevant material. $150. Ar-
rays, 11223 South Hindry Ave., Los Angeles, CA 90045.

The Housekeeper is a home inventory database. Users can keep
track of assets for both tax and casualty purposes. Spe-
cialized reports are easily generated. $89.95. Aegis
Development, Inc., Suite 277, 2210 Wilshire Blvd., Santa
Monica, CA 90403.

I Know It's Here Somewhere stores information in a simple card
filing system. Ideal for hobbyists and collectors, general
household or small business use. File formats are flexi-
ble and 31 samples are included. Program can cut and
paste between files; display and 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.

MacOffix combines many of the simple and necessary office
functions in one easy-to-use package. Features include
simple word processing, forms design, form letter pro-
duction, report generation and filing. Good design
nearly makes the manual unnecessary. $149. Emerging
Technology Consultants, Inc., 1877 Broadway, Boulder,
CO 80302.

MacMuscle is a fitness program that lets users generate weekly
workout schedules. Features include a detailed chart of
the body and its 24 major muscle groups. An animated
figure demonstrates the primary exercises. Calculates
training pulse rate, which is shown by an animated heart
and sound. Limited program that emphasizes weight
training. $89.95. Tech 2000 Software, Inc., 263
Lugonia St., Newport Beach, CA 92663.

My Office lets you handle your files and papers in much the same
way that you did before you got a computer. Now your
folders and files are all in the computer and you can eas-
ily 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 Soft-
ware, Suite 401, 14011 Ventura Blvd., Sherman Oaks,
CA 91423.

SmoothTalker trains your Mac so 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.

The Desk Organizer is a free-form desk management system bas-
ed on index card-style files. Has many features including
alarms, report generation and calculation. The Meta
feature lets the program run along with another applica-
tion. $99. Conceptual Instruments, 269 W. Walnut Lane,
Philadelphia, PA 19144.

NUMBER CRUNCHING

BEAMAC II is for civil engineers. It performs full graphic and
numeric analyses of any statically determinate or indeter-
minate system. Simple to use, good use of the Mac inter-
facer. Money-back guarantee. $295. Erez Anzel, 5T, 5800
Arlington Ave., Riverside, NY 10471.

ClickOn Worksheet is a 50-row by 20-column spreadsheet that
loads onto any system disk as a desk accessory. Though
small in size, it has remarkable capabilities for a desk ac-
cessory. It produces line, bar and pie charts and changes
in the worksheet automatically reflect in charts. Especial-
ly useful while working in a word processor. $79.95.
T/Maker Company, 2115 Landings Drive, Mountain View,
CA 94043.

Multiplan, the first Mac product from someone other than Apple, is
beginning to show age. Still a very capable basic spread-
sheet with simple sorting, 63 columns by 255 rows, many
built-in functions, other standard spreadsheet features.
Design conforms well to Mac philosophy, with most func-
tions menu or mouse controlled. Multiplan's best feature
is the ability to link areas of one worksheet to portions of
another, in Multiplan's Chart. $199.95. Microsoft, 10700
Northup Way, Bellevue, WA 98004.

StatView is the statistician's dream tool. Excellent use of the Mac
interface combined with a super manual make any sort of
statistical analysis a breeze. Handles numerous techni-
quines and tests. BrainPower, Inc., 24009 Ventura Blvd.,
Calabasas, CA 91302.

WORD & OUTLINE PROCESSORS

Express contains word processing, mail list and mail merge ap-
plications in a single product. Also makes Mac an elec-
tronic memory typewriter! A converted PC product that
looks as though it was running on a PC. Compromises
made in interface to provide features, sufficient text area
on 128K Macs. $12K version will be more Maclike. Quick
and dirty letter processor that works. $29.95. Mirage Con-
cepts, 108, 4055 W. Shaw, Fresno, CA 93711.

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
search records. Requires MacWrite. Good for mass
mailings, including envelopes and labels. $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 and user-created dictionary. Suspect words appear

minifinder style, with changes made in simple dialog boxes and the user is able to select from a list

of words. A full-screen search is also possible. $24.50. Living VideoText, Inc., 2432 Charleston Rd., Mountain

View, CA 94043.

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.

MacroProject allows a user to plan and track a project from begin

ning 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.

MacSpellRight is a spelling checker that works with MacWrite 4.5 (not 2.2). Allows the user to create custom dictionaries. 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 compatibility. Easy to use and well documented. Free, except for consortium students. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

Microsoft Word is THE 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 Corporation, 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.

ThinkTank 128 is the first of a new type of program known as an outline processor. Lets the user create complex outlines and revise them using moves, cuts and pastes. 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; $12K owners should get ThinkTank 512 which has many more features and is more useful than the price differential would indicate. $145. Living VideoText, Inc., 2432 Charleston Rd., Mountain View, CA 94043.

ThinkTank 512 is a word/outline processor. It 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.

Databases

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., 1605 S. Garden St., Palatine, IL 60067.

FactFinder is a freeform information organizer or medium-duty database. Users enter data on to factsheets in any manner desired and select keywords. Factsheets are associated in groups called stacks. Searches are by name or keyword. The speed is barely adequate and only one factsheet can be open at a time. Printing and cutting and pasting between factsheets are supported. Has a good manual, on-screen help and on-disk tutorial. Publisher offers free telephone support (800 number). $149.95. Forethought, Inc., 1973 Landings Drive, 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 documents and reports a snap. Reports can include graphics and multiple data layouts are easy to construct. $195. Forethought, Inc., 1973 Landings Drive, 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 use 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.

Habadox is a telephone directory/database with some list, label and mail merge capabilities. Extreme ease of use is cancelled by the impossibility of selectively removing old data. That situation is aggravated by the extremely limited file size. An accessory ($50) allows actual telephone dialing. $99.95. Haba Systems, Inc., 15154 Stagg St., Van Nuys, CA 91405.

Helix is a relational database that makes extensive use of icons. Excels in database setup and forms generation. Setup is made easy by the adherence to the Mac interface. The manual is clear, thorough and well-indexed. Too complicated for most simple database applications, excellent where relational database application is required. Supports multiple windows. Requires a 512K Mac and an external drive, but is slow on that configuration. The recommended hard disk is really required to use Helix effectively. $395. Odesta, 3186 Doolittle Drive, Northbrook, IL 60062.

LaserBase is a versatile database that allows full integration of graphics in its records. Files can have multiple levels of password security. Good use of the Mac interface. $149.95. Kappa Group, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

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
Microsoft File is a flexible data manager. Creates files for variety of data, including simple graphics. Files created in simple row/column format, but reports, forms easily customized by moving field names around on a blank form. Sorting limited to approximately 5000 records on 128K Mac, much more on 512. Easy to use, well designed and full featured. $195. Microsoft, Corporation, 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.

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 you 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. Ensemble is compatible with MacWrite and MacPaint files, and any program using cut and paste operations. Capacity limited by RAM and disk size. Easy to use, light 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 Corporation, 10700 Northup Way, Bellevue, WA 98009.

Jazz provides extremely well integrated modules for word processing, graphics, worksheets, databases and communications. Each of the modules is substantial and the worksheet is packed with powerful functions. The truly exceptional feature is HotView, where data placed in any module automatically updates all other documents that use that data. 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.

Accessories

Accessory Pak 1 is a group 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.

Battery Pak is a set of eight handy desk accessories including scientific and RPN calculators, a background text file printer, a 250-page note pad with search and phone dialing capabilities, a disk file utility, an accessory to launch another application without returning to the desktop and a calendar with notekeeping and search capabilities. Comes with an installer and the best manual we've seen in a long time. $49.95. Batteries Included, 30 Mural St., Richmond Hill, Ontario, L4B 1B5, Canada.

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 (4.1) can back up virtually all Mac software. Features graphic displays of copy progress. Comes with MacTools, a multiuse utility that can recover damaged files. $39.95.Central Point Software, Inc., Suite 100, 9700 S.W. Capitol Highway, Suite 100, Portland, OR 97219.

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. ExperTrelligence, 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. ExperTrelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108.

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 unequivocally 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.

Mac Memory 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.

MacTracks allows users to store a series of keystroke and mouse movement operations to any command key. The various controls and index (so that you can see what you already created) 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.

MacAsm is a software development system that allows programs to be written in assembly language. Programmers can...
MacMatel combines RAMdisk and print spooling functions in a compact 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. [NEW]

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 reference 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.

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., PO Box 1540, Fairfield, IA 52556.

MacMate combines RAMdisk and print spooling functions in a compact 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. [NEW]

Macintosh Pascal is Apple Computer's version of this very popular programming language. Loaded as it is with innovative teaching features, this interpreter is an excellent Introduction to Pascal. Superb usage of the whole Mac interface makes this the best way to learn Pascal. The documents are mostly references so be sure to get one of the tutorial textbooks in your bookstore. $125. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

Macintosh 68000 Development System is a fairly traditional assembly language package. The two-disk set provides an excellent editor/programmer (RMaker), an efficient assembler, a linker, an executive and 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.

MacOsy 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. $70. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025.

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 it enormous power. Has a good manual. $75. Micro Analyt, Inc., 5802B Gloucester, Austin, TX 78723.

MS BASIC was the Mac's first programming language. It has come a long way since its infamous version 1.00. The current version (2.0) of this interpreter (it's not a compiler) now supports the ToolBox and the whole Mac interface can be implemented in your programs. For you nonprogrammers there are lots of programs available (in user group libraries and magazines) to run. Easy to use. There have been some improvements: be sure you get version 2.0 or higher. $150. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009.

MS Logo, from Microsoft's MacLibrary, written by LCS. An excellent implementation of Logo, taking full advantage of the Mac's user interface. Uses three windows: text along the bottom, for commands and actions; program, for defining procedures, and graphics for program execution. Turtle looks like a turtle, and its screen actions are very precise. Windows can be resized, removed, and moved about. $124.95. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98004.

Quick & Dirty Utilities, Volume One is a disk check full of the handiest programs you have ever bought. Included is a super disk cataloging program, a disk accessory mover, a font manager, a document launcher (when you boot a disk it launches a document), and more. Several desk accessories including a menu bar clock and a terminal are on the disk. "File Info" 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 a 512K Macs. Works well and has good documentation. $34. Symmetry Corporation, Suite 105S, 3900 East Camelback Rd., Phoenix, AZ 85018.

QuickSet is a set of desk accessories that will help users manage their files and documents. Simple to install and well documented, this set consists of a calendar, a phone directory, and a calculator. Also included are a notepad and a file encryptor. $99. EnterSet, Suite 408B, 410 Townsend, San Francisco, CA 94107.

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. Sleek 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 and included with some third-party applications. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014.

TimeBase keeps track of daily, weekly and monthly scheduling. Data from other Mac applications can be used within any schedule user creates. Files are limited to space available on the disk. Not easy to use unfortunately. $149.95. Soft-Design, Inc., 14145 S.W. 142nd Ave., Miami, FL 33186.

TurboCharger is a disk-caching program. It works by storing frequently 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.

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.
MINIFINDERS

**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. $135, Infosphere, Inc., 4730 SW Macadam, Portland, OR 97201.

**CONCERTWARE** is a sophisticated three-part program. Lets users either create their own instruments or use any of 34 provided in composition that are created in a writer module. A player module plays the best sounding music available from your Mac's sound circuits. Comes with over 20 compositions; many more are available in the public domain. $49, Great Wave Software, PO Box 5847, Stanford, CA 94305.

**ConcertWare +** is an enhanced version of ConcertWare. Has different instruments and the ability to use any four of a set of eight at any point 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. $59.95. 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. The manual is clear and thorough. $79.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854.

**Professional Composer** is aimed at music professionals. Produces performance-quality sheet music; has only limited playback facilities. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142.

**DIGITIZERS**

**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, 10500 Greenbelt Rd., Seafood, MD 20706.

**MicronEye** is a rather crude digitizer. Hard to use and capable of only doing a half screen at a time, with no facility for easily matching up parts. This was the first Mac digitizer and has been surpassed by newer models. $395. Micron Technology, Inc., 1475 Tyrell Lane, Boise, ID 83706.

**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 ImageWriters. Output has been optimized for LaserWriter. $229. Thunderware, Inc., 21 Orinda Way, Orinda, CA 94563.

**ACCESSORIES**

**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 of the desk results in a more efficient viewing angle for users. $99.95. Ergotron, Inc., PO Box 17013, Minneapolis, MN 55417.

**Mac Daisywheel Connection** is the most straightforward way to hook a Mac to a letter-quality printer. Works well with most popular printers and is easy to install and use. $89. Assimilation, Inc., 485 Alberto Way, Los Gatos, CA 95030.

**MacNifty Joystick Converter** plugs into the mouse port and allows use of any standard nine-pin joystick or controller, such as those manufactured for Atar or Commodore 64 computers. Package includes a tiny Amiga-style joystick, a pint-sized powerhouse that literally operates with a single finger on the stick. 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. $129. 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. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430.

**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.

**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 hand in guide over the text. $799. Oberon International, Suite 630, 5525 McArthur Blvd., Irving, TX 75036.

**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, Inc., 485 Alberto Way, Los Gatos, CA 95030.
puter what to do with the selection.

So I came up with this new model. At first I couldn’t get anybody in the group to go along with my idea that you should select a tool first. So I made a mock-up of a structured graphics editor with only a few basic tools—horizontal, vertical, and diagonal lines; box/rectangle; and text—simply to show what selecting a tool first would be like. This was the prototype for what turned out to be LisaDraw and, eventually, MacDraw. Once I brought it around the lab and made everybody try it, they said, “Of course,” and immediately dropped the other one we were working on. From there, MacPaint just sort of evolved as I kept adding new things I figured out how to do. Mark Cutter then implemented LisaDraw—and now MacDraw, too—with this palette of tools along the left edge of the window.

How did the small size of the Mac’s development team affect the end project?

Our goal was to make a machine with soul, and to do that the creators had to be of one mind. So, the size of the development team became very important. Lisa had 100 designers—a large team. A lot of time was spent disagreeing on what we wanted to build, instead of figuring out how to build it. With Mac, we kept the software design team down to only 10 people. You know, you can have 100 people paint a wall, but you can’t have 100 people paint a portrait and expect the result to be a masterpiece.

Having one mind allowed us to move very fast, stay up late and work long hours because we had the chance to do something that would rock the world. We knew that chance would disappear if we didn’t act on it.

Was the team restricted to 10 even in the later stages of the Mac’s development?

Yes. The software design team stayed the same size until the Lisa and Mac divisions merged after the Macintosh was shipped in January 1984. During this time period, however, we did court outside software developers. This was important because, in the long run, they would write 99 percent of the software for the Mac. Our job was to design and build the machine.

Are you more creative in a group setting or working alone?

I work better alone at home. I’m a real perfectionist, and that’s OK as long as you’re working for yourself. I wrote every line of QuickDraw. No one else saw it or touched it. I wrote the Window Manager, the Menu Manager, and the Event Manager for the Lisa, all three of which were ported over to Mac, translated into assembly language, and cleaned up by Andy Hertzfeld.

MacPaint is extremely easy to use for a first-time user. How important was this to your overall scheme?

One of the things I really tried to do was hide unnecessary features. A feature discovered after you’ve been using MacPaint for a while doesn’t intimidate you. But seeing all the features at once when you first approach the program can be very intimidating and can make a barrier that stops you getting in and using the program.

When you start in and pick up the Paintbrush—you don’t even pick it up; the program just comes up with the brush—you get a very gentle introduction into MacPaint that lets you do everything without looking at a manual.

People don’t read manuals—at least, 90 percent of people don’t read them. Well, we shouldn’t complain that they don’t, but figure out how to live under that constraint. You know, they don’t make manuals for video games, but people use them. If you want to look at a model for user-interface design go look in the arcades, because there the whole game—what they’re selling—is all user interface. It’s not doing any productivity work for you; all it’s doing is tickling your user interface. Those games that have more contact—more pull—are the ones that are going to get the quarters.
**MR. MAC PAINT**

What programming language did you use to create MacPaint?

I used a mixture of Pascal and 68000 assembly language. There are two files that hold the MacPaint code, one for the source, one for the object. (Source code is what most programmers write; it is written in a programming language like Pascal, which typically cannot be directly understood by a computer; object code is the translated, or compiled, version of the source code; often called machine language, it can be read only be a specific machine—in this case the Macintosh.) By source-code size, or the file size of the text, it is about 60 percent Pascal and 40 percent assembly language. By object-code size, it's 70 percent Pascal and 30 percent assembly language. By frequency of working on it, I would bring up the Pascal file 20 or 30 times for every one time I brought up the assembly language file.

Basically, the information in assembly language doesn't really need a lot of maintenance. The assembly-language portion contains things that are there for speed, or that were small and I knew wouldn't need a lot of maintenance. I put them in assembly language just to reduce the code size. By keeping the main control, flow, and logic in Pascal, the program was more pliable.

QuickDraw works in color. Will the Macintosh ever be available with color capability?

It would be real easy to build a color machine, but would people buy it? With the Apple II, we built a low-resolution color machine that people use basically for education and games. It was a situation where having low-resolution color wasn't a hindrance, and the fact that they couldn't print the color was not a problem.

When we wanted to build a machine to do word processing, it was no longer acceptable to have only 280 dots across the screen. It was important to have enough resolution so that you could see the lines wrapping on the screen in exactly the same places they wrap on the printer, meaning higher resolution than a standard television. So once we'd accomplished this, the next hurdle was color. One of the stumbling blocks was cost. We wanted to build a lean, mean machine that we could get out to a lot of people. We wanted to provide the most bang for the buck. It's not the most bang, it's the most bang for your buck.

I would rather see a high-resolution black-and-white Mac selling for $500 than a Mac of the same resolution with color for twice the price. I still want to get the price down so that more people can afford one.

A second point is that in the office, it is still a black-and-white world. How many copiers do you know that copy in color? How many laser printers do you know that print in color? Some dot-matrix printers print in every color—very awkwardly. There are some ink-jet printers that are just starting to work with color, but they jam up a lot.

Whenever we put out a machine, we need to get third-party vendors to write software for it, and they're only interested in writing programs when there's a million machines or more. If we can't sell a million of something, we can't sell it at all. Someday we're going to build a lap-sized Mac, and that is going to happen a lot sooner without color. The most bang for your buck really points quite heavily toward black and white, despite the fact that Apple Computer started with color. Again, we want to reach people, and if we could provide color for anywhere near the same price, it would be great.

FatBits is one of the most appealing capabilities of MacPaint. How did it come about?

FatBits took me a while to figure out. At first, I intended only the Pencil to work in FatBits—all you could do was to click on single-pixel dots. The major breakthrough was figuring out how to design FatBits so that all the tools could be "alive"—for instance, how to stretch out a circle while you were in FatBits. I remember that I was really excited when that happened.

I came by the FatBits name because it was catchy. I got a lot of flack from the marketing types who said that I should use the word *Magnify*, and I kept saying, "Can you imagine some kid walking down the street saying 'Wow, Magnify! Magnify?!'" FatBits is catchy and it is a little bit irreverent in the same vein that Goodies is, I guess. I was reacting a bit to the stodginess of Lisa. When we did the Lisa design, everything was considered very carefully so as not to step on anybody's toes, bending over backward not to offend a conservative businessman. And I felt that compromised the personalities of the programs themselves. It's OK to have a conservative program and it's OK to have one that's a little more flashy, but you have to be true to your own feeling when you're creating them in order to get one consistent feeling. I'm sure there are people offended by the word *Goodies* and people offended by the word *FatBits*, but for all those who are offended, there are those who think that's neat and enjoy it. I just had to be true to my own taste. I like the word *FatBits*.

As chief designer of the user interfaces for both Lisa and Macintosh, how do you compare the experiences?

On Lisa we would not have been able to get away with the palettes on the desktop, because that was not in the Lisa paradigm—you had to go up against a committee to decide about everything. But the deal I made with Apple about *MacPaint* was that I would do the absolute best I could, but correspondingly I got absolute say on every decision. I would listen to people and solicit input and get lots of feedback from people using it, but ultimately I wrote every line of code and made every decision according to my best judgment. I'm not perfect, but at least I has one person's feel to it and I think that's more important than conforming to any rigid set of rules. Since it has been such a success in the marketplace, they'll give me even more freedom next time. I don't think a programmer could ask for more than that.

I

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- **148 MAC USER NOVEMBER 1985**
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GO AHEAD! MAKE MY PAGE!

already in place. Before the columns are set, the title can be centered.

With the column guides in place, two graphics are placed and positioned. A photograph occupies the top of the first column, over an editorial. The photo will have to be attached later. A box is drawn to mark its position.

A small cartoon drops into the bottom of the right column, half a column wide. The "cartoon" chosen is a portion of a MacDraw-enhanced pie chart, and fits neatly into the space although the rest of the picture hangs over. The cropping tool will cut the unwanted portion of the picture without affecting the size or shape of the desired cartoon. Setting the graphics first sets limits on where text can flow, and makes it possible to bend text around the cartoon in a narrow column.

Output . . . Finally

It's done. The report is first saved and then printed out on a LaserWriter. For a report that would receive wide distribution, the boards printed out in PageMaker would be sent to a printer just as hand pasted boards would. The LaserWriter is not the tool to make several hundred copies. That's what printing presses are still for.

PageMaker does work with the ImageWriter, but the quality of work that can be achieved with this program is defeated by the poor resolution of the ImageWriter. PageMaker output produced on an ImageWriter often differs considerably from the screen version. This does not happen when using a LaserWriter. LaserWriter output is much truer to the screen.

There is one significant flaw with any output. PageMaker has no automatic or forced hyphenation. Word spacing, in justified text, can be very poor.

Conclusions and Caveats

PageMaker is a wonderful program with a few quirks. Disk crashes occur often in large documents, especially when you have Placed a single file several pages long. Cut/copy failures are frequent, but a crash can sometimes be avoided by selecting Undo immediately after the failure.

Using PageMaker with two floppies for documents of any size is insane! Printing a large document from a separate data disk can crash the program and destroy your files. Especially since PageMaker works quite well with hard disks. (Aldus claims that it works with all but the Corvus. It certainly works on the Hyperdrive.)

A thorough PageMaker system would include a good word processor, MacPaint and accessories, and MacDraw, all running under Switcher (this works quite well too) on a hard disk and connected to a LaserWriter or another PostScript-based typesetter.

With a system like that it is possible for Everyuser to play "Rupert Murdoch" in his or her own office.
Another bonus is an interesting new pictorial font called Taliesin. Somewhat similar to Cairo, this font sports a wealth of architectural and related symbols.

While the manual supplied with the program is of the high standards one would expect of Apple, it was completed in December, 1984 and the program has undergone some major changes since then. These changes have been documented in a seven-page update which is included with the manual. These sheets contain some of the most important information in the whole package, such as text handling and pasting MacPaint images, so make sure that you don’t lose them.

A word of warning: One of the main reasons that MacDraw has been so delayed getting to market was the problem of getting it to work within the relatively miniscule free memory of a 128K Mac. While MacDraw’s authors have succeeded, the 128K Mac imposes strict limits on the size (the number of objects in a given document) of a drawing that can be accomplished and printed. In particular, pasting MacPaint images into MacDraw uses enormous chunks of memory, and often will not be possible on a 128K machine; the program will also run much slower, demanding disk accesses every time you return to the menu bar. The Bimota motorcycle drawn here — using just 10% of the available memory on a 512K Macintosh — could not possibly have been drawn within the limits of the smaller machine.

Since objects in MacDraw are not dealt with on a pixel-by-pixel basis, there’s no FatBits facility and no eraser. Objects can only be removed by either deleting them completely, or drawing another object over them. Many people used to working with MacPaint find the lack of these two tools annoying.

Scaling the Drawing

MacPaint’s ultimate limitation is the tiny size of its window, and the difficulties involved in working on a larger page size. MacDraw has no such limitation — any drawing size can be accommodated, up to 96 inches wide by 48 inches deep, and a drawing can be made even larger using the LaserWriter’s enlargement capability. A MacDraw document can also be worked on at a variety of scales: from “Reduce to Fit,” where the whole drawing, regardless of its size, can be seen and worked on, up to normal size. When working on sizes larger than standard printed paper, the image is printed out in sections — and there’s even an option for continuous printing, ignoring the page breaks. Even at the smallest scale the rulers are still visible, so artists can still work to reasonable standards of accuracy. Cutting and pasting can also take place on top of the scale, and it is possible to copy huge objects from one drawing to another.
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ing. Indeed, most MacPainters are generally intimidated by MacDraw at first, for as a technically oriented package it loses the immediate user-friendliness and familiarity of MacPaint. For some the transition can be difficult.

For those new to MacDrawing, some helpful advice would be: persevere! Most people find it a difficult program at first, but after you begin to understand the way it works and the power of the facilities it offers, you'll find that you can work with amazing speed and precision, far more so than you could in MacPaint.

MACDRAW: REPORT CARD

Follows Mac Interface  *****  Best Feature: Efficient memory usage allows large, complex art.
Printed Documentation  *****  Worst Feature: Text handling, which is awkward.
On-Screen Help  ***
Performance  *****
Support  *****
Consumer Value  *****

Comments: Easy to use object-oriented graphics. Can create really high-quality drawings in very large sizes.

Published by Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (408) 996-1010.

Memory Matters

Users of the 512K Mac can ignore the space used and remaining information that appears when About MacDraw is selected on the Apple menu, but 128K owners must pay careful attention to this information, since it's extremely easy to run out of memory. And few things can be more frustrating than nearly completing a drawing, only to find out that you don't have enough memory available to finish it.

Although MacDraw is aimed primarily at architects, designers and illustrators, anyone who works with visual information will find the program useful. People who work with graphics will begin to wonder how they managed ever without it.

HEY, BIG SPENDER!

(continued from page 88)

manner.

Peak monthly profit, revenue and shareholders' equity are the yardsticks used to measure the player's performance.

Simulating Your Personal Goals

Squire, the latest in the Blue Chip spreadsheet-and-chart simulations, will only run on a 512K Mac. Unlike its forebears, Millionaire, Tycoon and Baron, Squire will not feature the elaborate windowing or graphics embellishments usually found in Mac editions, relying instead on the bare text style Blue Chip uses for its line of games on other computers. Designer Jim (Millionaire, Tycoon, Baron) Zuber explained that, with its integrated financial data and real-life simulation mode, the program just wouldn't fit on a disk if the usual Mac-style touches were included. Still, we think we'll miss the Mac's distinctive touch.

Squire integrates the elements found in each of the earlier games. But in addition to buying stocks, commodities and real estate, players have the option of investing in collectibles like stamps and antiques, and/or putting their money away in IRAs.

The most interesting feature in the program is the ability it gives users to input their own financial goals (retirement at age 35, or perhaps a college education for the kids), then "play out" their financial strategies in the simulated marketplace. As in the other Blue Chip games in this group, the Financial Journal provides the clues as to what will happen in the future; it's up to the player to use this information to maximum advantage.

Playing through a financial simulation might not help you balance your own checkbook any better. Still, all of the programs mentioned above provide both enlightenment and entertainment. You may not be able to win real cash playing ... But look on the bright side. You can't lose it, either.
OVER THE TOP WITH OVERVUE

(continued from page 62)

Joint Resolutions

Since most other databases have already been passed by, it is only fair to consider a value-added features in OverVUE. Datasheets can be joined together by creating a Relation file. A Relation file is simply a template that connects two identically or similarly formatted data sheets. The new format is laid out in MacWrite or MS Word. For example, two mailing lists exist as datasheets. Some columns have the same column names, some differ. The columns are joined by an equal sign:

Name = Company Name
Address = Address
Zip = ZipCode
Phone = Telephone

Save the layout as a Text Only file in MacWrite or Word. Load the first datasheet into OverVUE and choose the Join command from the File menu. A dialog box will appear. Click the new datasheet intended for the join and click the Append button. Pressing OPEN prompts a selection of the relation file. Select and press OPEN.

OverVUE Is Not an Island . . .

The import and export of data between different programs has led to several basic conclusions. One axiom is that the more programs software can communicate with, the more useful it is. OverVUE claims to be able to exchange data with almost any other software. Strong words.

The easiest way to export data is via the clipboard using the Clip and Quit command. Selected records on the clipboard can be pasted into other Macintosh programs like MacWrite and Multiplan. Data can be exported to Microsoft File by selecting Edit Report Template from the Print menu and choosing Microsoft File from the Special menu. The required export template is automatically created. Select chooses the records to be transferred to File and Print Report to Disk creates a text document that can be read in by File. These same features will perform a mail merge in Word.

DIF files are special formats used for moving data between Apple II and IBM PC computers. Generally, DIF files must be sent to a Macintosh via modem. Once received they can be moved into OverVUE. Selecting Import from the File menu brings up a dialog box. Select the file, check the DIF button and click OPEN. OverVUE imports the DIF file into a new datasheet. Microsoft SYLK files are created within the Microsoft programs. Import them by checking the SYLK button in the Import dialog box.

Files from dBASE II must again be transported by modem. Once the data file is on a Macintosh disk it can be imported by checking the dBASE II button in the Import dialog box.

Data can be imported from Helix, PFS:file, IatsBase, DB Master and Omnis 3. Techniques for doing this are beyond the scope of this review but detailed instructions are provided with OverVUE.

Documentation

The documentation for OverVUE reflects the meticulous care that went into designing the product and ProVUE's desire for all the powerful features in the program to be explained and made available for use. Too many products come to market with hastily executed manuals that skip over details not considered relevant for beginners. Only with a manual such as this one is expanded use of a sophisticated product made possible.

Conclusion

OverVUE 2 is a superior product. In terms of combining spreadsheet functions with extended sorting, summarizing routines, mail merges and report generation, it will find a welcome place in any business software library. The addition of macros and graphics round out this product's appeal. If its virtues extended there it would be one of the most attractive database products on the market today. But it is more. It is a data manager, and easily the fastest and most adaptable one for the Macintosh. ProVUE's decision to allow for import/export with virtually any other software and operating system including MS-DOS and CP/M in ASCII format adds up to one of the best all around software products available for the Mac.
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THE SLOB THEORY OF 68000 PROGRAMMING

Give the Macintosh to an eight-year-old and you’ll see what kind of person immediately falls in love with the machine. Like everything Apple does, kids love it. Apple could do worse than hire Mr. T to sell its products to the younger crowd. This is the real problem Apple has in finding a niche for the Mac. It doesn’t seem to understand the mentality of the user. But worse, it is way off course in understanding the mentality of the dedicated Mac hackers.

I think many of us can agree that the Mac-lover isn’t a typical businessman. And selling the Mac as a business computer doesn’t cut the mustard when a secretary says she thinks the keyboard is too high off the desk to be comfortable or when the user accustomed to business computers finds that there are no escape or control keys on the keyboard. Let’s not mention the lack of a numeric keypad except as an option. I could go on. The point is that the Macintosh as a long-term success will not be made so by Apple’s marketing department. It will be made a success by hordes of dedicated users who hack away at the machine until it becomes something not intended by its designers.

Even the Apple II is largely a creation of the community of users. That machine was originally designed as an uppercase machine like an old teletype. One company made a word processor that used the hi-res mode of the screen to draw its own upper and lowercase.

Besides attracting kids, for some reason Apple attracts a certain kind of random hacker and challenges him (or her) to do something with this equipment. At first I thought this was simply because the company is physically located in the center of entrepreneurial and hacker activity. Soon I realized it is more simple than that.

The latest attempt to create a hacker’s Mac, decode the ROM and upgrade to a couple of megabytes to create elaborate animation are all projects initiated by these hackers. The same holds true for the myriad of peculiar add-ons.

So who are these guys and how are they different? They are 68000 freaks. Many Mac hackers refuse to admit that the Mac itself is unimportant. They simply like the Motorola 68000 chip and the Mac is an interesting implementation of the chip. Once you understand the mentality of this group you can clearly see all the problems present and future that will be experienced by the Mac user.

The 68000 chip is preferred by certain hacker types for no other reason than the simple reality that it can directly address 16 megabytes of main memory without any concern for memory page segments. The 8080/8086/80286 family has these 64K page boundaries that have to be taken into account by any low-level software development. All kinds of problems are encountered by the assembly language programmer (the speed demons of the world) when they have to write complex and long programs for an Intel chip.

Forget all that. Who cares, say these guys. The chip can directly address 16 megabytes! This is important because most of today’s 68000 hacker types are simply too lazy to write the necessary extra code required for an 80286. LAZY is the operative word.

This 68000 laziness is reflected in everything from slurred speech to sloppy attire. Anyone who hangs around programmers knows for a fact that those who prefer the Intel family are neater dressers and tend to bathe more often than 68000 hacks. Hey, don’t get mad at me for this observation—blame your friends.

I know no 8086 hacks who smoke, while plenty of 68000 programmers puff on cigs all day. An ash-coated programmer is a perfect example of what I’m getting at. Now don’t get me wrong. I don’t think that all 68000 programmers are slubs, au contraire. A lot of the ex-Apple guys have enough money to buy new clothes and stylish jackets “like Steve wears.” And there are one or two bumbling 8086 programmers I have known (although I think they wished they worked on the 68000 chip). This is simply an overall impression that is endemic to the 68000 community for NO OTHER REASON than the 16-megabyte address space.

The net result of all this, in my mind, are products with nasty little bugs in the code that are never fixed. Why, for example, are there so many disk swaps on single-drive 512K Macs when there’s a ton of memory that should be storing some of the data? The 68000 programmer will shrug his shoulders and look for the potato chips and jalapeno bean dip instead of eliminating the irritation in the code. “Too much work,” they’ll say. “Manana.”

An Intel-chip programmer will straighten his collar, brush his pants and say, “It’s unacceptable. I’m going to fix it tonight.”

While 68000 programmers may be more fun than Intel programmers because they can chug-a-lug more beer, I’d rather have the products of those dedicated 8086/286 guys.
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