SPECIAL ISSUE: The Very Best Mac Hardware and Software

MacUser

THE 6TH ANNUAL
EDITORS' CHOICE AWARDS
Your guide to the
94 BEST NEW
Macintosh products
of the year

MACUSER LABS picks the best personal PostScript laser printers

• SHOOT-OUTS:
  Mapping and 32-bit color paint software for business

• SNEAK PREVIEWS:
  Excel 3.0 and the unique GO PenPoint
You do it by the...
When we introduced Microsoft Word six years ago, we weren't planning on making history.

We had just one goal, and a fairly simple one at that: to make a word processor that suited people's needs.

Then again, we knew that the people we wanted to suit were a wildly diverse, independent lot: Mac users. So it made sense to let them tell us exactly what to put into Word.

Which they did.

First, there were some folks who didn't like tabbing much. Fair enough. For them, we developed Tables—an easier way to set up side-by-side paragraphs, columns of numbers, even forms. No tabs. No hassle.

Then we heard from a few more people. "The Tables gig is working," they said. "Now, about this text-numbers-graphics combo all in one document..."

We made that simple with "warm links." Once you've linked Microsoft Excel data to a document, keeping that document updated with the latest Microsoft Excel figures is easy. Just click your mouse.

Then there were those senders of mail, who didn't want to click-click-click-click-click. So we built support for Microsoft Mail right into Word. Now, with just a click, everyone stays in the loop. And work in progress stays in progress.

Apparently, listening to what people want is a pretty good way to design software.

How else can we explain Word 4.0 being the most popular word processor in Mac history?

And those cards and letters are still coming. "Listen," someone'll say. "In case you guys are working on the next Word..."

Which we are. In fact, if you've got some input for us, feel free to drop us a line. Or if you'd like to find out more about Word, call us at (800) 541-1261, Dept. N26.

Our goal is still simple: to make Word the best word processor around. With the latest technology—translated into human terms, of course.

After all, we're only making history because we make word processors the way you like 'em.

Microsoft
Making it all make sense
You don't become the most popular word processor in Mac history by thinking big.
The 6th Annual Editors' Choice Awards
By the Editors of MacUser
This year nearly three dozen Eddy awards will go to the best and the brightest products for the Mac as well as to several outstanding people behind the products. The categories cover everything from the best animation program to the best work-group product. Now see if you can guess what won the two Product of the Year awards — Hardware and Software — before finding out what we chose.

Personal PostScript Printers
By Bruce Fraser and the MacUser Labs Staff
With some priced close to $2,000, ten printers bring PostScript power to settings in which you once had to settle for QuickDraw. You don’t give up much compared with what you get from more-expensive machines either. Image quality is good to excellent, and several stand out in areas such as graphics-printing speed, footprint, and ease of setup.

Painting Programs: The Fine Art of 32-Bit Color
By Darryl Lewis, Kelli Wiseth, and the MacUser Labs Staff
Who needs nearly 17 million colors in a painting-program palette? Package designers, book illustrators, commercial artists, and many others — that’s who. Studio/32, PixelPaint Professional, DeskPaint, and Color MacCheese all exploit 32-bit cards, but each appeals to a different class of users, ranging from those who seek simplicity and low cost to those who demand spectacular results and are willing to work to get them.

Putting Your Business on the Map
By Jeffrey A. Steinberg
Geographic-analysis and -presentation software can help you do everything from reapportion sales territories to prepare boardroom presentations. We compare and rate five such packages: ATLAS*MapMaker, Descartes, GeoQuery, MapInfo, and Tactician.

‘Any new software application from Adobe Systems is more than likely, in the words of Guy Kawasaki, to be “deep, indulgent, complete, and elegant.” This is more than true of this year’s Software Product of the Year.’
FlexiTrace brings OCR to charting, GraphMaster allows easier control of 3-D plots, and Virtus WalkThrough lets you create your own virtual reality and explore it. Plus news, updates, and more.

Resources
Don’t tell us you’re still loading your $5,000 laser printer with copier paper. Here are 26 worthy alternatives.

Step by Step
See how painting-program filters let you dress up line art and scans with special effects.

Ethernet
Five new Ethernet products from Apple make Mac-based Ethernet LANs more of a plug-and-play proposition than those offered on any other platform.

Sneak Preview
GO Corp. reveals PenPoint, a new object-oriented operating system that may finally make a reality of pen-powered computing.

Trouble Shots
How to avoid scrambling zone lists in the Chooser.

Power Techniques
Extend your command of Apple’s Extended Keyboard with shortcuts and paths to hidden characters.

Beating the System
ClickChange lets you fine-tune your interface without the risks of ResEdit.

The Expert’s Edge
Did you know that you can digitize 35mm slides with a little-known $900 device?

Power Programming
Save yourself a lot of late nights fixing applications when System 7.0 ships: Make them 7.0-proof now.

Tip Sheet
A macro for inserting month/day/year-format dates in Word 4.0, how to rub out INIT startup icons and expendable digitized sound resources, and more.

Help Folder
Why you can’t, yet can, resell your software; the A-B-CDEFs of viruses; red-hot SIMMs; and more.

FileMaker Pro
A major upgrade that’s not any faster but is easier to learn and even more elegant. The new layout area adds color and better positioning.

Norton Utilities for the Macintosh
Norton Utilities’ forte is crashed-disk rescue and disk maintenance, and nothing does it better.

Nisus
Substantial improvements place Nisus in contention for king of the word-processing hill.

Typist
A hand-held OCR hardware/software package from the maker of OmniPage, at a third of the price, a third of the speed, and triple the error rate.

Navigator and CIM
Automate your CompuServe activity with much-needed Mac front ends for speedy automation of your on-line activities or direct browsing.

Software Bridge for the Macintosh and Word for Word/Mac
Two new PC/Mac file-conversion products: Bridge is a large collection of AFE translators, and Word for Word is a stand-alone program.

MacroMind Director
Script your way to interactive animations.

Claris CAD
This upgrade offers an alternative to MiniCad+.

Quick Clicks
ClickChange, Personality, DiskLock, The String Quartet, MacRAM Portable, Screenshot, the Hewlett-Packard 48SX Calculator, and Editorial Advisor.

Departments
Jon Zilber
The myths of the Macintosh.

Robert R. Wiggins
The best case for DOS.

Guy Kawasaki
How to keep Mac software thriving.

John C. Dvorak
The real taste test.

Letters
Readers keep reporting on the new Macs.

Advertiser Index

Marketplace
point and click to select numbers right in your document. 

activate Cheshire with a single keystroke, pick a chart format and...

your numbers are plotted and the chart pastes into your document.

Buy Cheshire.

Cheshire also works with Microsoft® Word, MacWrite® II and PageMaker®. It comes with over 20 bar, column, line and surface charts, plus the ability to easily add more. Cheshire works on all Macs and is available from your favorite software catalog or dealer.

It's a better, easier way to do charts.

ABBOTT SYSTEMS
It's like owning a disk drive with a bulletproof vest.

Introducing the Metro with SCSI Sentry

EMAC has found a way to prevent unnecessary Macintosh hard drive fatalities with SCSI Sentry: an engineering breakthrough in disk drive reliability. It protects your disk drive from damaging shorts that can trap data inside your hard disk. Which makes any drive with the SCSI Sentry substantially more reliable.

And only EMAC Metro drives have it.

Metros are zero-footprint disk drives – so they fit perfectly under a Mac Plus or SE. You can also stand Metro on its side next to any Mac II, keeping your desk free for papers, phones, or photographs.

But Metro's engineering goes far beyond pure aesthetics. With some of the most stringent testing in the market – and mean-time-between-failures ratings of 50,000 to 70,000 hours – these drives were built to keep you up and running. And, if your Metro drive ever does have problems, our modular design makes diagnosis and repair quick and easy.

When you add the SCSI Sentry to such reliable disk drives, you know your data's safe with Metro. If you want to own a disk drive with a bulletproof vest, call EMAC at 1-800-821-0806, extension 2222, (In Canada, 1-800-663-5161).

EMAC has a division of Emtec Systems, Inc., 4035 Milpitas Boule, Fremont, CA 94538

Please circle 154 on reader service card.
IT TAKES PERIPHERAL VISION TO PREPARE FOR THE NEXT CRASH.

Space age technology isn’t worth much when it comes crashing to earth.
And when your hard drive fails, it ceases to be a commodity. That’s when you need Peripheral Vision. We replace drives in 48 hours or less.
Our high performance 350 mb, 650 mb, and 1.2 gb drives are so dependable, they’re warranted for five years. Yet our prices are very aggressive — including our 45 mb removable, DAT and tape backups.
You really can get quality, price, service and support from one source. But only if you have Peripheral Vision. Call us at 1-800-800-7868.

PERIPHERAL VISION
STORAGE SYSTEMS
You’ll see the difference.
CALL 1-800-800-7868

MacUser

How to Reach Us

GO ZMAC
If you’re a CompuServe subscriber, you can reach us on Zmac, the on-line service for MacUser.
Just type GO ZMAC, or look elsewhere in this issue for information on how to sign up.

Product Announcements and Updates
Please send your letters or press releases about new products or upgrades to Michele Stokol, Assistant Editor, MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or type GO MACUSER on Zmac.

Help Folder
If you’ve got a Mac question or problem, send it to Help Folder, c/o MacUser at the above address, or for a personal answer to your problem, type GO TECHSUPPORT on Zmac. We should also take advantage of local user groups. You can find the one nearest you by calling Apple toll-free at (800) 538-9696, ext. 500.

Tip Sheet
We love getting tips from our readers. Send your tips to Tip Sheet, c/o MacUser at the above address, or type GO TECHSUPPORT on Zmac. We can’t print every tip, but we’ll try our best to pick the most interesting ones for publication.

Calling All Programmers
We’d like to hear from any programmer who is interested in contributing to our utilities disk or labs-benchmark disk series. If you’re interested, contact Michele Stokol at the above address.

Writing for MacUser
If you have an idea for an article you’d like to write, we’d like to hear about it. Send a query letter with samples of your writing (published, if possible) and information about your background to Nancy Peterson, Administrative Assistant, MacUser, at the above address, or type GO MACUSER on Zmac. No calls please. We rarely buy unsolicited manuscripts, so don’t send us a completed article without writing to us first. Allow four to six weeks for a reply.

Permissions and Reprints
Material in this publication may not be reproduced in any form without permission. Send permission requests to Chantal Lavelanet and reprint requests to Claudia Hardison, Ziff-Davis Publishing Co., a division of Ziff Communications Co., One Park Ave., New York, NY 10016.

Complaints about Advertisers
MacUser’s editors are not responsible for the content of the advertisements in the magazine, although our publisher makes every effort to prevent fraudulent and misleading advertising from appearing. However, if you bought a product advertised in MacUser, are dissatisfied, and can’t resolve the problem, write to (do not call) Lisette Willemsen, Advertising Department, MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Include copies of relevant correspondence, and please be as specific as possible.

If you want to subscribe to MacUser, have a question or complaint about your subscription, or are moving, call or write MacUser, P.O. Box 56986, Boulder, CO 80321; (800) 525-0643 or (303) 447-9330 outside the U.S., or type GO SUBSCRIPTIONS on Zmac. New subscriptions and address changes take six to eight weeks. For back issues (subject to availability), send $7 per issue, $8 outside the U.S., to Back Issues Department, Ziff-Davis Publishing Company, P.O. Box 5131, Boulder, CO 80322. MacUser (ISSN 0884-0997) is published monthly by Ziff-Davis Publishing Co., a division of Ziff Communications Co., One Park Ave., New York, NY 10016. Editorial Offices: 950 Tower Lane, 18th Floor, Foster City, CA 94404. Telephone: (415) 378-5600. U.S. subscription rates are $27 for 12 issues, $45 for 24 issues, and $62 for 36 issues. Additional postage for Canada, Add $18 per year to the U.S. rates for surface mail. Single-copy price is $2.95 in Canada, $3.85, POSTMASTER: Send address changes to MacUser, P.O. Box 56986, Boulder, CO 80321. Second-class postage paid at New York, NY 10016, and at other mailing offices.
Few Things Bring More People Together Than FastPath.

The Original AppleTalk To Ethernet Router Supports AppleTalk Phase 1 & 2, TCP/IP, DECnet and SNMP. Or any combination of these protocols. Plus AppleTalk encapsulation in UDP (IPTalk), IP forwarding and network device filtering. With full SNMP support, FastPath can be a key part of company-wide network configuration plans. It's been the number one AppleTalk to Ethernet router since 1986, proven in multi-protocol environments worldwide.

FastPath Supports Diverse Network Services. Including terminal emulation (TELNET, CTERM), file transfers (FTP, DEC FAL), file servers (NFS, TOPS, AppleShare), E-mail gateways (such as GatorMail Q), database services to access host-based databases (Oracle for Macintosh, Clear Access) and network print sharing with filtering options.

FastPath Supports Itself With Battery-Backed Up RAM. FastPath won't let you or your network down — even when the power goes down. Battery-Backed-Up RAM ensures uninterrupted operation and saves your network configuration.

We're working to make FastPath even better, with more powerful performance and management features. Call Shiva now to find out how FastPath can solve your network communications problems.

1-800-458-3550.
617-252-6500.

FastPath4
by Shiva
The Network Communications Company
One Cambridge Center, Cambridge, MA 02142

All product names are trademarks of their respective manufacturers.

Please circle 367 on reader service card.
How MacInTax Plays for You.

Kristin Kozlowski, National Account Manager for a Fortune 500 Company

On organizing her life...
"My job can be demanding, requiring a good deal of travel. There's precious little time to organize my personal finances. In the past, I would begin my taxes about a week before the April 15 deadline. Poor Uncle Sam. Before using MacInTax®, I would spend an entire weekend organizing piles of receipts—frantically itemizing my expenses and deductions."

On discovering MacInTax...
"My sister recommended MacInTax. She had been using a Macintosh® for years, so she knew best. MacInTax proved to be very simple to learn. I was up and running in about 5 minutes. I liked the fact that I could enter my tax information just once, because forms and schedules are linked together, and provide updates and calculations automatically. Make a change on any one of the IRS schedules that apply to you, and your 1040 is instantly updated. MacInTax is a great product — really fun to use."

The difference MacInTax can make for you...
"You often hear companies making claims about supporting their customers. The MacInTax folks really stand behind their products. Last year I had a problem with my Schedule E. You know how complex real estate can be. I called tech support. They showed me some built-in features and walked me right through the problem.

MacInTax has more forms than I could ever use. All just a mouse click away. When I needed to itemize, I used its built-in itemizing capabilities. It seemed like every time I needed some feature, it was right there. MacInTax made even the most complicated part of my taxes seem simple. I know why MacInTax has won so many awards. It's just the greatest program. Everyone should buy a Macintosh just so they can use MacInTax."
• Now with Forms Guide, a step-by-step interview that leads you to the specific tax forms that apply to you.

• Graphic tax forms on screen eliminate confusion and minimize learning time.

• Display and access multiple forms on screen — simultaneously. Watch instant calculations and linking between forms, and work just like you would at your desktop.

• Reach complete IRS instructions and helpful tax hints by double clicking the mouse on any line item.

• Completeness Checking and Auto-Find functions direct you to errors, missing information and estimates — for correction prior to final submission.

Critical acclaim!

• MacUser Editor's Choice Award

• Macworld World Class Award

• Software Publisher's Association
  — Excellence in Software Award
  for Best Personal Productivity, 1986.

• Software Publisher's Association
  — Best Vertical Market Application,


• Byte, Award of Distinction, 1988.

All forms shown above were printed using MacInTax. No other tax preparation program can do this!

MacInTax has been the best selling Macintosh-based tax product for 5 years in a row, with 750,000 returns filed. With over 80 commonly used tax forms, schedules, worksheets and statements, MacInTax will organize and complete your taxes whatever income bracket you happen to be in. Easy to learn and enjoyable to use, MacInTax continues to be the industry leader — and anyone of our customers will be glad to tell you why.

• Use the estimating feature for tax planning and “what if” comparisons. Find and change estimates quickly with Auto-Find functions.

• Full integration with Softview’s State Supplements, including—
  CA, CT, DC, IL, MA, MD, MN, MI, NJ, NY, OH, PA, and VA.
  Imports financial information from all popular financial programs.

• Prints exact duplicates of all IRS forms from dot matrix and laser printers.

• Electronic Filing Option is also available.

Learn how MacInTax can make a difference for you. See an authorized MacInTax dealer, or call direct and get a free catalog that includes our entire line of tax products — including TaxView for professionals.

For information, call: 1-800-622-6829.
Please circle 36 on reader service card.
All “registrar marks” and “trademarks” are of their respective companies.
©1990 Softview, Inc.
Z88 Laptop Computer is Mac Owners’ Most Popular Portable

1. Weighs Under Two Pounds, Lightweight and Compact
2. Notebook Dimensions: Same Size as this Page, Less Than 1 Inch Thick
3. 20 Hours Use on 4 AA Batteries
4. Built-in Software for Word-processing and Spreadsheets
5. Up to 2 Mb Memory
6. Easily Transfers Files to and from Macs
7. Silent, Spill-proof Keyboard
8. Task Switching
9. Instant On: Everything is where you left it
10. Toll-free Technical Support

From $439
Call 800-441-2780
Order direct from Cambridge Group
200 Stonehenge Lane • Carle Place NY 11514
The Only Authorized Dealer

MONEY BACK GUARANTEE
Please circle 105 on reader service card.
Unlocking Corporate Data

ORACLE for Macintosh gives users direct access to PC, mini, and mainframe databases.

We all remember 1984, when Macintosh promised to put the power into the hands of the rest of us. Well, it's taken six years, but the door to the corporate vault is open. Now, the full power of corporate data is easily accessible to anyone with a Macintosh. More specifically anyone with Macintosh and ORACLE.

Using ORACLE for Macintosh, Mac users can now point and click their way into, around and out of just about any mainframe, mini, workstation or PC database. That includes any data stored in DEC's RMS, IBM's DB2 and SQL/DS. They can do it without the limits of Mac-only databases or the masquerade of terminal emulation. In fact, they can do it right from their favorite Mac programs like Microsoft Word and Excel. And they can do all this without compromising the systems administrator's control over access and security.

As for Macintosh developers, ORACLE lets them work in flexible programming environments including HyperCard, SuperCard, PLUS and Acius's 4th Dimension. To name a few.

And all Oracle products are backed by a 30-day money back guarantee. As well as the largest database service and support organization in the world.

Call us at 1-800-633-0516 Ext. 7611 for ORACLE for Macintosh or ORACLE for 4th Dimension.

Or sign up for an Oracle Client/Server Forum in your area. At last, Apple's promise has come to fruition.

ORACLE Compatibility • Portability • Connectability
Chinon's New CD-ROM/Audio Drive Handles Them All Beautifully.

CD's can hold a lot of data in an easy to handle, durable form. They're useful for much more than music. Each CD holds about 600 megabytes of data. That's roughly 250,000 pages of text! With quick and easy access that makes it a snap for you to find what you're looking for, whether your favorite passage of music or information from a large database.

Chinon's new CDA-431 is at the forefront of this new technology. This drive offers one of the fastest access rates anywhere — 350 milliseconds — at a price you will find surprisingly affordable. Use it with your Mac to access huge amounts of information quickly — or hook it up to your audio system to play any kind of music on CD. Chinon's CD Audio-Play software makes it all easy.

Every day there's more software published on CD — reference works, databases, graphics libraries and more — all in a convenient, easy-to-use format that can take a lot of heavy use. The CDA-431 reads any disc written in the "High Sierra" or HFS standard formats, giving you access to a vast library.

Experience the CDA-431 for yourself. Call TOLL-FREE for the dealer nearest you, or for more information. Whether for work or play, data or audio, it'll be music to your ears.

CHINON
Chinon America, Inc., 660 Maple Avenue, Torrance, CA 90503
Toll-free (800) 441-0222 In Calif. (213) 533-0274

Please circle 400 on reader service card.
New Mac Cheers and Jeers

I enjoyed your coverage in the December '90 issue on the new Mac models ("Three Cheers for Three New Macs," page 90) recently introduced by Apple Computer. In your review, you indicated that the new Macintosh Classic ($1,000,000 for the name!!!) was a direct descendant of the Mac SE. If that's true, why is it that the Classic and the SE did not perform identically in your tests of overall speed and speed in disk-intensive tasks? Even the other tests show differences I would not have expected. I'm sure other readers are as interested as I am in why the SE seems to outperform the new Classic. Many of your pictures of the Mac models show that they use Conner hard-drive disks. What hard drive is used in the Classic?

Finally, I'm very interested in what third-party color video monitors are fully compatible with the Mac LC and the Mac IIsi. In particular, the NEC MacSync 14-inch, Sony 1304 14-inch, Magnavox 14-inch, and the Seiko 14-inch monitors are all sold for Macs. Are any of these directly compatible with the built-in color video without the need to purchase a separate color-video card?

Craig Peterson
Santa Monica, CA

The Classic is a re-designed and cost-reduced SE with newer ROMs. Nonetheless, the raw processing power of the two machines is nearly identical. However, the new Conner hard-drive disk in the Classic is slower than the Quantum drive in the SE. As a result, "overall" performance is slightly lower.

Apple's latest monitor family uses one common 15-pin D connector that has certain identification pins shorted together to tell the host CPU or video card if a monitor is connected and what kind it is. The four you mention are designed to be compatible with the AppleColor High-Resolution RGB Monitor, so they all should have the correct pins shorted together.

A quick way to check is to plug the monitor into a Hi, and if the Hi's video circuitry jumps to life, the correct identification pins are shorted and the monitor will work with the IIsi and the LC. Remember, with any of these monitors and the LC, you'll get only 4-bit color unless you purchase the optional 512K VRAM SIMM.

—JP

Dear Mr. Sculley...

Apple paid $1 million for the rights to the name Classic, and the cynics laughed. The only laughter you hear now is from Cupertino and headed for the bank. Low-cost Macs—especially the Classic—are the key to release the downward trend in Apple's market share. No one will ever again argue against the viability of inexpensive Macintosh CPUs. The question now is, Where will the next bargain be?

Speak Up:
What should Apple's next low-cost product be?

Send your thoughts to Dear Mr. Sculley, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

Thomas E. Moore of Huntsville, Alabama, points to the Macintosh OS as the best reason to switch to a Mac: "It's said that people buy computers not for their operating system but for the applications. That may be because they don't appreciate how an OS that provides long filenames, associates files with responsible applications, and makes device drivers application-independent can actually free the user from solving computer problems to focus on real problem solving."

Speaking of problem solving, Brian Marantz, of Irvine, California, has a few problems with the Mac's ease of use: "1. Hooking up SCSI devices. When, where, how many? What, you mean it might have internal termination? 2. Application Unexpectedly Quit. Why? 3. INIT/edev conflicts. Despite these, I still don't consider PCs in the same league as Macs. I would rather have a Mac anywhere, anyhow, anywhere."

More on sound on the Mac: Neil M. Kosterman, of Wheaton, Illinois, believes that "Sound in and of itself is not where the action is but rather the improvement in productivity it can bring to the typical business office. We should soon be able to dictate memoranda, letters, and so on into the Mac for draft-copy output. Those of us who prefer to work directly on the Mac can then edit our own work, greatly reducing the overall turnaround time for handling correspondence."

We just hope that "mab," who typed Neil's letter, won't be out of a job.

—JP

MacUser March 1991 13
Correct Grammar
Rated Top Grammar Checker
- MacUser Magazine

NEW
Correct Grammar
2.0 now checks
style too!
$99

Sometimes you get so involved in your writing that mistakes slip by you.
You can catch the wrong spelling with your spelling checker. But other mistakes have been
tougher to catch — until now.
Now there’s Correct Grammar for the Macintosh.
It works like your own personal editor to correct mistakes in grammar, style, punctuation, usage, even spelling.
Instantly: it identifies inconsistencies, split infinitives, awkward phrases, wordiness, clichés
and other fine points of style. Then it suggests how you can correct them.
You can make the correction with a click of the
mouse, leave it alone, or rewrite the sentence
your own way. If you wish, Correct Grammar will
explain the grammatical rule that applies. So you can learn more about good grammar every
time you write.

Order from your favorite software dealer.
Or call direct: 1-800-843-2204, operator 17
LIFETREE SOFTWARE
33 New Montgomery St., San Francisco, CA 94105

Please circle 360 on reader service card.

Letters

16-megahertz processor?), and you can’t expand it with an accelerator or monitor
(not easily anyway).
The Mac LC isn’t much better. In some ways, it’s far worse! An 16-megahertz 68020
(basically obsolete) with no chance of even separately purchasing a math coprocessor
or PMMU is ridiculous, especially in view of the fact that Apple’s System 7.0 (if it’s
ever released) needs the PMMU chip for its virtual-memory option. Isn’t it really worth
$2,500 to get a crippled color computer that runs System 7.0 imperfectly with RGB
color (that’ll wow those poor PC users with VGA). In case this wasn’t stupid
enough, Apple provided only a single (direct-processor) slot (incompatible with all
existing Apple slots, as nearly as I can determine).

As for the Mac II, it’s so far out of my price range that it’s pointless to even
comment on its deficiencies.

It seems to me that Apple has produced a line of slightly less blatantly overpriced,
crippled Macs that won’t interfere with its existing product line and that it can maybe
sell to people who don’t know any better. Because these new Macs are cheaper for
Apple to produce, it can maintain its ridiculous profit margins. There’s less room
to grow with the computers than with IBM’s PS/1 (and that’s really saying something).

These products won’t rescue Apple from future extinction at the hands of the PC
clones; rather they will guarantee it.

David W. Griffin
Gautier, MS

The Classic is an SE at just over a third
the price — and you’re complaining? And
don’t worry about expandability — full-
page and two-page monitors are already
appearing; accelerators surely can’t be
far behind.

The LC is a one-slot Mac II at well
below half the II’s final price. The PMMU
and math coprocessor you crave are cer-
tain to be provided soon by third-party
vendors.

As for the Mac’s “future extinction,”
I’ll bet you a few shares of Apple stock that
Cupertino will be a happy town for years
to come, and tens of thousands of new
Classic owners agree. — RM

Trading Up

My single goal in January 1990 was to
be the proud owner of my own Mac before
the end of the year. In August 1990, I
bought a new SE with 4 megabytes of
RAM and an 80-megabyte internal hard-
disk drive, and it is serving me well.

On October 15, I drove 120 miles round-
trip to see the debut of the three new Macs
in Albuquerque. I was very impressed,
especially with the new lower prices.
If Apple had a “Mac Buy Back” pro-
gram, I’d trade my SE in for the new LC.
If I’m thinking this way, then other Mac
owners must be having similar thoughts.
Consider an idea whose time has come.
Gloria Masters
Tesuque, NM

Prime Rib

In your “More Than You Know?” quiz
(“Our Readers Write Back,” December
’90, page 196), number 3, you state, “Of
the Mac SE, the Mac IIfx, and the Mac IIfx,
it’s the only machine whose number of
expansion slots is not a prime number.”
The Mac SE’s number of expansion slots isn’t a prime number either. A prime
number is a number that has two factors.
The number 1 has only one factor, 1. The
Mac SE has one expansion slot, and
therefore its number of expansion slots
isn’t a prime number.

Jesse Rosenstock
Madison, WI

You’re a little bit wrong, and I’m a little
bit right. By your definition, no number is
a prime; every number can be multiplied
by 1 × 1 × 1 × 1 × 1 . . . leading to an infinite
number of factors. So there!”

The more common definition of a prime
is “a number whose only factors are itself
and 1,” which you learn in grammar and
high school. Then, when you graduate
from the AAA league of number theory to
the Majors, you learn that I is, by conven-
tion, not considered a prime number.
We’re both wrong, but if you really want to
nitpick — OK, I’m more wrong than you.
For numbers with prime numbers, check
out The Book of Prime Number Records
by Paulo Ribenboim . . . insanely fun
reading when the hypercollider is on
the fritz. — AI

Expensive Fruits

I think Mac vendors need a reality
check. Orange Micro’s 80286 NuBus
board retails for approximately $1,400.
You can purchase an 80286 PC clone with
1 megabyte of memory, a 40-megabyte
hard-disk drive, a monitor, and a keyboard
for $1,200.

Recently I read that a certain vendor
was going to offer an 80386SX add-in
board for $2,500. Well! You can purchase
a 16-megahertz 80386 PC clone with 2
FileMaker Users!

make the real “upgrade” to...

FILE FORCE

and establish a serious relationship
with your data for only:

$149

FILEMAKER II FILEMAKER PRO FILE FORCE

Relational NO NO YES
Automatic Labels NO NO YES
Automatic Reports NO NO YES
Business Graphs NO NO YES
Layout Templates 0 0 8
Ready-to-use Examples 8 7 16
4th DIMENSION Compatible NO NO YES

FILE FORCE can definitely hold its own in the database arena and it runs rings around the flat-file databases in capability.” Computer Currents

“What sets this program apart is its impressive array of features.” MacWeek

“...the program (FILE FORCE) has one of the nicest label-making facilities ever included in a mainstream database product.” MACWORLD

Find 100 of 1,000 Records 0.02 0.03 0.02
Sort 1,000 Records 31 32 30
Delete 100 of 1,000 Records 23 25 26
Import 1,000 Records 4.25 3.44 1.36

Benchmarks performed on a Macintosh Classic.

For those users who need to move beyond the flat-file managers, FILE FORCE is the logical next step, and we can recommend it enthusiastically.” MacWeek

“Buyers of FILE FORCE praised its ease of use.” PC WEEK

“ACIUS has paid careful attention to details that simplify life for casual users while offering a significant step up from the traditional flat-file managers such as FileMaker and Panorama.” MacUser

To receive your copy of FILE FORCE send us the front cover from your FileMaker or FileMaker Pro manual (any version) along with $149 plus $10 for Federal Express shipping and handling. (California residents please include 6.25% tax, Santa Clara County residents include 7.25% tax)

For more information, call (408) 253-3366. Checks, VISA, and MasterCard accepted. No purchase orders please. This offer good in the United States only. Good through March 31, 1991. The suggested retail price of FILE FORCE is $395.

FileMaker is a registered trademark of Claris Corporation. ACIUS and FILE FORCE are registered trademarks of ACIUS.
Champagne taste. Beer budget. Crisp type, sparkling graphics, and a price that's easy to swallow.

Try Freedom of Press® Light with Quark XPress, PageMaker, Freehand or any PostScript® language application and your Apple, GCC, Hewlett Packard or other non-PostScript language printer. Includes 17 fonts.

Freedom of Press® Light
PostScript language compatibility for your printer

$98
SUGGESTED RETAIL PRICE

Call us or ask your dealer for all the printers supported by Freedom of Press Light, Freedom of Press, and Freedom of Press Professional.

1-800-873-4367

Custom Applications Inc.
900 Technology Park Drive • Billerica, MA 01821
508-667-8585 • FAX: 508-667-8821

Freedom of Press is a registered trademark of Custom Applications Inc. PostScript is a registered trademark of Adobe Systems, Inc. Product names are registered trademarks of their manufacturers.

megabytes of memory, a 40-megabyte hard disk drive, a monitor, and a keyboard for $1,800.

I think someone has a screw loose over at Orange Micro and the rest. No wonder the IBM/Microsoft/clone-maker combination is kicking our behinds.

Trevor Le Gall
Bloomfield, NJ

There’s one main reason why PCs are so cheap — volume. PCs are produced by the millions, bringing the cost per unit down. Because Orange Micro doesn’t manufacture anywhere near that number, its costs are higher than those of a PC manufacturer. For users, there are two chief advantages to putting DOS into your Mac: It takes up less desk space than having both machines (admittedly not a convincing reason for a lot of people), and it’s easier to swap data between the Mac and DOS. — JR

Pirates and Attorneys

In the October ’90 issue, you blast two people for using software that you feel was copied illegally. The two people I am speaking of wrote to Bob LeVitus and his Help Folder. The first occasion is in “II£x Compatibility Woes,” on page 303, and I quote, “You are a registered user aren’t you? . . . if not, shame on you.” The assumption that the person needing help is automatically a software pirate is unfair. The second offense takes place on pages 305 and 306. LeVitus again condemns a person for using a duplicate copy of a program on the same network.

What makes me angry about this whole dialogue is that on page 372 (“Full-Court Press”), John C. Dvorak complains that the computer industry has gone “insane” owing to the large number of lawsuits over hardware- and interface-copyright infringements. Why do software developers gain your sympathy, while at the same time, hardware developers receive your scorn?

Is a copyright on hardware not the same as a copyright on software? Does it not take an equal amount of effort and creativity? Does it not deserve equal protection under the law?

John Dennis
St. Louis, MO

As our contributing anti-editor, John C. Dvorak dishes out scorn as he sees fit, but his views do not necessarily reflect those of our other contributors (or, heaven forbid, the edit staff). In other words, we’d be more worried if he and Bob LeVitus started agreeing on controversial issues.

— JB

I read with interest John C. Dvorak’s column (“Full-Court Press,” October ’90, page 372) regarding the overly litigious nature of our society as it pertains to the computer industry. As an owner of one of Apple’s previous victims’ products (the Franklin ACE 1000), I concur that Apple has unfortunately been more aggressive in protecting its position with “courthouse intimidation” than in providing better quality, lower prices, and better technology. The people running Apple seem to have forgotten that its roots were in an “open top, have it” era of computer development. Maybe they ought to go back and review the history and attitudes of their founders.

As far as I’m concerned, Apple deserves any and all hardship. Let it keep suing. It only detracts further from the proper defense against competition: better products with better values at better prices. Continuing to support these litigious bullies by purchasing Macs only encourages them!

As far as Mr. Dvorak’s comment regarding being “surrounded by idiots” is concerned, this is truly very very sad! If we’ve allowed ourselves to become surrounded by idiots, how smart does that make us?

Dennis Novotny
Ann Arbor, MI

Adios, Amiga

Here’s an “insanely great” idea for Apple: Merge with Commodore. Each company has what the other one desperately wants and needs, namely:

1. Apple needs truly visionary hardware design. Commodore has it, as evidenced by the slick and innovative designs in the Amiga line.

2. Commodore needs marketing savvy, which Apple obviously has.

3. Apple wants to be a leader in multimedia and to expand in the video, sound, and animation areas. These are precisely the areas in which the Amiga shines the brightest.

4. Commodore wants the Amiga to be a professional computer, and it needs a more diversified software base, particularly in the areas of productivity, business, desktop publishing, and music. Anyone know a platform with those applications?

With Apple’s success in the business market and Commodore’s success in the home market, these two should team up
Even before the Macintosh Classic® & its new companions came along to wow the reviewers with heroic price/performance ratios, UltraPaint was keeping them plenty busy.

"As advertised, Deneba's UltraPaint...really does set new Macintosh graphics standards", wrote Ernest Mau of CompuServe.

"...many more B&W paint features than SuperPaint, almost all of PixelPaint's color tools, a superset of MacDraw II's object-oriented features, and the gray-scale prowess of Digital Darkroom. All this comes in a single program for less than half the price...", wrote David Pogue in MacWorld.

Perhaps Chris Prior of MacUser UK summed it up best when he wrote that "UltraPaint...could prove to be the ideal software package for those looking for a powerful, all-around draw and paint program."

And it's true. UltraPaint really does offer you the same sophisticated graphics processing power of several leading programs combined — all in one inexpensive, easy-to-use package.

Open it up on one of Apple's new low-cost machines and we're talking a match made in heaven. Particularly if you've always pictured heaven as a place where you get big muscles without having to pay the price.

WE'LL PAY YOU $25 FOR BEING SMART.

Purchase UltraPaint and a Macintosh Classic, LC, or IIci between October 15, 1990 and May 31, 1991, and receive a $25.00 rebate direct from Deneba. Simply send a copy of your qualifying Mac registration card, your original UltraPaint registration card, and dated proof of purchase for both to our main address. We'll send a check for $25 US by return mail!

See below for further details.

LOW COST INTEGRATED GRAPHICS FROM
Deneba SOFTWARE

3305 NORTHWEST 74TH AVENUE, MIAMI, FLORIDA 33122. PH: (305) 594-6965. FAX: (305) 477-5794.

Rebate offer valid in the USA and Canada only, and limited to one (1) qualifying CPU/UltiPaint combination. Rebate cannot be combined with any other offer and is not available with specially priced educational or promotional versions of UltraPaint. Please allow 6-8 weeks for delivery. Offer expires May 31, 1991. ©1991 Deneba Systems, Inc. UltraPaint™ is a trademark of Deneba Systems, Inc. SuperPaint™ & Digital Darkroom™ are trademarks of Silicon Beach Software. MacDraw® is a registered trademark of Claris Corp. PixelPaint™ is a trademark of SuperMac Technology. Macintosh® is a registered trademark of Apple Computer, Inc.
...THE CADILLAC AND THE PORSCHE OF ENVELOPE PROGRAMS..” — MacWeek 8/90

---

and leave Big Blue and friends in the dust. A hybrid Mac/Amiga computer would be the personal platform for the '90s.

Bob Weaver
San Diego, CA

"Insanely great" or just plain insane? From here, it looks like the low-cost Macs may already have left the Amiga in the lurch.—JB

Beaten by the System

I'm a business user doing advertising with three networked SEs. The business sells directly through catalogs that we schedule, assemble, lay out, and typeset on the Mac. We send out more than a million catalogs a year.

With that as a background to show that this is serious business, I'm growing more impatient with the fragility of the Mac operating systems. Where in the much-ballyhooed System 7.0 is this terrible problem of Mac bombs addressed? Believe me, serious business users are going to abandon the Mac if its System is not bombproofed.

Paul White
Charlottesville, NY

The weak link in the Mac chain has always been its System software. Every version fixes bugs but also adds capabilities (which means new bugs). So what's the answer? Don't wait for Apple. Keep your Systems pristine and clean. None of those cute INITs and cdevs (this means giving up a lot of capability, but it's necessary). Periodically replace your System, using the Installer (after first trashing the System file) to guard against corruption. Use Disinfectant or Virus Detective to protect against viruses. And whatever you do, don't migrate to new System software unless you know for a fact that it will fix specific problems you are having. — RW

Receding Hairlines

During the months of delay preceding the arrival of FileMaker Pro, I practiced persuading myself that Claris would not be like some other software publishers we could name. Over and over, I said to myself: This product will be flawless. It will be worth the wait. I confidently scooped up my copy the moment it hit the shelves.

FileMaker Pro is a slick application. It performs as advertised, except for one literally tiny problem: It won't print hairlines on a Mac IIci. So I have a sigh and phone the friendly technical-support people in Santa Clara. A few bucks later, I learn, "Yes, we know about the problem — it affects all Mac IIci's or newer" but "No, we don't know when it will be fixed." C'mon, Apple, cough up a couple of IIci's for Claris. This must be embarrassing for it, being a wholly owned subsidiary and not knowing if its applications are compatible with the product line.

Mitchel R. Stone
Santa Paula, CA

We have several FileMaker users on our staff, and we were disappointed that Claris let a couple of things such as hairlines and compatibility with third-party printers such as HP's DeskWriter slip through the cracks. For more on FileMaker Pro's strengths and weaknesses, see the review in this issue. — RI

Handwriting Analyses

I disagree with Robert Wiggins' belief that a perfected handwriting-recognition technology would be no better than a keyboard ("A Tale of Two Fads," December '90, page 43). Although a writing tablet and pen might not replace all keyboards, they could provide an alternative input device with the potential to revolutionize the industry.

Today, many people use clipboards or notebooks when they work. They bring the clipboards to places where a portable computer is impractical and later go back to their computer, sit down, and type the data from their notes into the computer.

Furthermore, a keyboard slab forces you to hold an unnatural posture, which is why many people who use computers for long hours develop chronic pains. A computer writing tablet would let people use a greater variety of natural relaxing postures.

Earl Harris, Jr.
New York, NY

I'm perturbed by the attitude I've seen in MacUser in the past few issues. Mac users are supposed to be the avant garde, the forward-looking fringe of micro-computerdom. However, both Robert Wiggins and John Dvorak have stated (very strongly) that usable handwriting recognition does not seem possible with present technology. Now, I can understand Dvorak's position, because he is a paid nay-sayer, but I would expect other editors to be a bit more open-minded.

I really can't argue for or against the utility of such an interface, but I'd like to point out that from a technical standpoint, handwriting recognition is not nearly as

---

To order MacEnvelope Plus:

- Label printing
- Envelope printing
- List management
- Postal bar coding
- 100,000 entries/file
- Import/export
- 100+ pre-set layouts for Avery labels, etc.
- Graphics library
- Alpha/ZIP+4 sort
- Bulk mail package and sack reports
- Desk accessory

With these powerful features and more, MacEnvelope Plus is "the Porsche" of mail programs.

To order call: (800) 447-9639

SYNEX
692 Tenth Street
Brooklyn, NY 11215-4502

Please circle 194 on reader service card.
The new Macs started a Sound Revolution. With VoiceLink, you can afford to join it.

With the introduction of the new Macintosh®LC and IIsi, Apple has brought the power of sound manipulation to every Mac user— as long as you own one of these two new Macintoshes.

Well, your Mac has always possessed sound output capabilities, it just lacks the digital technology to input audio signals.

Now, we’ve changed that. VoiceLink combines advanced hardware and software that allows any Mac, from the Plus and Classic on up, to record sound.

Using a built-in Digital Signal Processor, Unidirectional microphone, & on-board digital compression, VoiceLink provides unsurpassed audio quality, and doesn’t tie up the Mac’s Central Processor. Others do.

VoiceLink also comes with powerful software tools to allow you to edit and process your sound recordings.

With VoiceLink, you can now experience the real power of sound— voice communication. Incorporate voice communications into your daily work.

Send voicemail messages over your E-Mail network. No more typing or proofreading your mail messages.

Annotate spoken comments to your word processing and spreadsheet documents. Add high-quality sound to your multimedia presentations.

And that’s just the beginning of voice applications and the Mac!

For additional information or the name of your nearest authorized VoiceLink reseller, please call us at:

Toll free in USA: 1-800-443-7077
in Europe: (Switzerland) + 41 22 42 96 47

Articulate Systems
the voice communication company

Please circle 90 on reader service card.
difficult as it may seem. 

Handwriting recognition is very different from optical-recognition technology. In OCR the recognition program must work from a low-resolution bitmap. Every little blob or dot on the page might be a character, or it might just be noise. Finding the characters alone can be pretty difficult. 

In handwriting analysis, the program receives not only shape information but also stroke information. For instance, it can know that the letter M is made with an upstroke, a downstroke, an upstroke, and a final downstroke. If the last two strokes are too close together, an OCR program might see the letter N. 

The time available for recognizing a character is much greater for handwriting recognition. A certain OCR company advertises a recognition rate of 500 words per minute. Do you know anybody who can write that fast? Therefore a handwriting recognizer can afford to take more time for better processing.

Mike Pagan
Paramus, NJ

Don't worry, we haven't crossed handwriting-recognition technology off our list yet. See this month's Bridges section for a preview of GO Corp.'s exciting new PenPoint operating system. — JB

Type Writer

As one keenly interested in typographic programs, I was happy to see Eric Taub's review ("Twisting, Shouting Type," December '90, page 211) of type-manipulation software.

Type-effects programs available on the Mac are giving type a wonderful graphic flexibility, and this article was an excellent outline of type-manipulation effects possible with today's software.

Just an update note: Mr. Taub's review may not have been based on the latest release of LetraStudio. LetraStudio 1.53 solves the memory problem previously caused by scanning a large volume of fonts. Version 1.53 also reduces the number of Bezier points that appear after a distortion effect, thus making it easier to edit a LetraStudio outline in a drawing program supporting the Illustrator format. LetraStudio users can call (800) 343-8973 for a free upgrade.

Alan Leverenz
Type Products Manager
Letraset
Paramus, NJ

Apple Polishing

As a computer coordinator in a small school district in Oklahoma, I find it obvious what would keep Apple ahead in the battle for computer dominance. Out of our 150 teachers, less than 10 percent own a computer or use one on a regular basis to help them in their class work. The biggest percentage of our teachers are still scared of computers. Whose fault is that?

Have we seen a concerted effort by Apple to really get computers into the
hands of educators? Oh yes, teachers have an "educator's discount." Has it worked? Of course not.

All teachers ought to have a Mac on their desk, but until the powers that be can prove to teachers that a computer is worthwhile, teachers won't plunk down nearly $1,800 for a computer, software, and a printer. But we know too that unless teachers have their own personal Mac to take home, they will never learn to use it. Even today, most of our teachers do most of their grading, noting, and preparing for the next day at home. So what is the answer?

Even if Apple has to lose big money, put a Mac onto every teacher's desk and into every teacher's home, along with Microsoft Works. If teachers learn to use a Mac, what product do you think they'll recommend to their students? What computer do you think they'll recommend to every parent?

Apple is interested only in immediate dollars for its already richly lined pockets instead of in providing a little seed money to assure future dominance in an already cluttered computer-using society.

Dale W. Hill
Washita, OK

Who Is This Guy?

Who is this Guy Kawasaki? Is he really Mike Eruzione? Is there something you're not telling us? For those of you who may not remember, Mike Eruzione was the captain of the 1980 U.S. Olympic Hockey Team, the one that won the gold medal. Mr. Eruzione has managed to make a fine living from reliving those glorious moments.

Looking back to that final moment when the young team won the gold gives me chills right now; thinking about the birth of the Macintosh does not. I will be succinct: The Mac is unarguably a fabulous machine, but that does not mean I wish to read each month what fun the early Apple managers had in those days. I read Guy's book. I hated it. I have had enough of his self-serving diatribe.

Evangelism is Guy's hot topic. We read about it constantly. It pays his bills. Advice is important to him as well. Evangelistic advice seems to be Nirvana for Guy Kawasaki. I offer some to him: Move on. You have earned the respect given you. But it is time now to develop, evangelize (although I despise the term), proselytize something. But please, and I mean this in the nicest way possible, do not write about it; your field is sales and evangelism, not writing.

Timothy Eantis
Brookline, MA

I don't suppose you'll be buying my next book. It's called To Sell a Dream, and Harper Collins is the publisher. It is 200 pages about how to do evangelism for any product, company, or idea. (It evangelizes evangelism.) Thank you for providing me with the perfect opportunity to plug it. (Evangelists never rest.) — GK
Trackball Tracking

A Kensington Turbo Mouse I had sent back for repairs got lost in the mail last summer. While the search was going on for my missing mouse, Abby Scheck, the assistant to the president of Kensington Microwave, phoned me three times to assure me that a tracer had been put on the package and that a replacement mouse was being sent for me to use until the original could be found.

Even though UPS records eventually revealed that the repaired mouse had been promptly mailed back and gotten mishandled somewhere on my college campus, the good people at Kensington Microwave continued to stay in touch and actually mailed me the loaner unit, as they had promised.

This kind of civilized response is rare indeed. In the area of customer relations, Kensington Microwave richly deserves Five Big Mice. This company is truly a class act.

Jim Felter
Los Altos Hills, CA

Perhaps the workers at Microsoft should request a new work layout.

Where's the Word?

I was most interested when I read the letter from Rae Schauer of Milligan College, Tennessee, concerning the Mac freeze (December '90, page 13). I have spent hours trying to locate the solution to the problem in one of the back issues. Shame on you for not publishing which issue.

Helen Silverbush
Brooklyn, NY

If you're lucky, you may still have it in that pile of magazines by the garage door — take a look in the April '90 issue, page 261. — JB

Emission Improbable

I can't help but comment on the full-page photograph used in Microsoft's ad on page 1 of the December '90 issue. There is growing controversy about the radiation from personal computers lately, and the worst levels are emitted from the rear of the machines. Perhaps the workers at Microsoft should request a new work layout!

Elliott Bemshaw
Salt Lake City, UT

But the workers in the photo obviously aren't at Microsoft. If they were, the desks would be arranged differently — facing the Windows. — JB

Clariﬁcations

In "Beyond the Laser Printer" (January '91, page 197), the information about compatibility problems with Type 1 fonts was incorrect. The current line of LaserMAX printers works with Type 1 fonts, and former Mac compatibility problems have been resolved.

An incorrect telephone number was listed for Peachpit Press (publisher of The Little Mac Book and The Mac Is Not a Typewriter) on page 174 of the December '90 issue. The correct number is (800) 283-9444.
CheckFree®
Electronically Pays All Your Bills
And Automates Your Recordkeeping.
No Checks, No Stamps, No Paperwork.

Specially Designed For The Macintosh.
For the first time, Macintosh users can experience the speed, convenience and simplicity of paying bills the CheckFree way. Now you'll discover that CheckFree is the superior bill-paying solution.

It Couldn't Be Easier.
All you do is enter payment information, and CheckFree software automatically records, categorizes, and sends the information to the CheckFree Processing Center via modem. Payments are then processed through the Federal Reserve System—the same system that banks use to clear your checks today. Fixed, recurring payments (such as mortgages) can be made automatically; once they're set up, you never have to bother with them again.

Pay Anyone Through Any Bank.
You can pay anyone with CheckFree because the CheckFree Processing Center utilizes electronic transfers as well as laser printed checks to make payments. If a company or individual you are paying is not set up for electronic payment, the CheckFree Processing Center will print and mail a laser printed check for you. Because of its universal payment processing technology, CheckFree can process payments to anyone in the U.S. through the checking account you already have at any bank, credit union, or savings and loan.

No Loss Of Float.
You tell the CheckFree software when you want your bills paid and the CheckFree system pays them on the dates you specify. All we need is a few days advance notice to make sure your payments get processed on time.

Saves Time, Paperwork, And Money.
Your bill paying and other routine financial activities can be reduced to just a few minutes. Paperwork becomes virtually non-existent. Plus, the CheckFree service is only $9.00* per month—not much when you consider the savings in postage, bank charges, and late fees.

Organizes Your Finances.
CheckFree gives you a completely automated checking account register that's updated automatically with each transaction. You can also record deposits or other non-CheckFree transactions. Checkbook reconciliation is virtually automatic. There's even an easy-to-use package of income, expense, and budget reports that keeps you constantly aware of what's coming in and what's going out. Plus, you can export CheckFree data to Excel® and MacWrite®.

Completely Secure.
CheckFree is more secure than conventional check writing. Payments are processed through the Federal Reserve System, so CheckFree never requires actual access to your account. Only you have access to your funds and only you authorize payments.

Backed By The Nation's Leader In Electronic Payment Services.
CheckFree has been the leader in electronic payment processing since 1981, with current payment volume exceeding $1,000,000,000 annually.

Used By Thousands All Over The U.S.
See what experts have to say:
"The CheckFree electronic bill-paying service belongs to that rare class of product that is forward-looking, universally useful, and available today."
—PC Magazine, Best of 1989 Awards
January 10, 1990 issue

CheckFree makes bill paying a quick, painless task rather than a monthly ritual to be dreaded...

CheckFree Corporation has been handling commercial electronic payments for companies such as CompuServe® for years, and its experience and professionalism showed in all aspects of my dealings with it.

PC Magazine
"...CheckFree did not fail me. When my banking statement arrived the first thing to catch my eye was a CheckFree check... this laser printed paper check was reassurance that someone else could be trusted to pay my bills..."
Robert Cullen, Home Office Computing

Now that you know all about CheckFree, why wouldn't you pay your bills and handle your finances any other way? Why would you burden yourself with checks, stamps, and paperwork while your Macintosh® sits idly by? Besides, when you order by phone or mail, CheckFree comes with a money back guarantee. If you're not completely satisfied with CheckFree software, simply return it within 30 days of purchase for a full refund. You've got nothing to lose.

So order today.
1-800-882-5280
(Monday through Friday from 9AM to 7PM EST)
or send $29.95 (plus $4 shipping and handling) to:
CheckFree Software
P.O. Box 897
Columbus, OH 43216

CheckFree is also available at leading retailers including Egghead Discount Software®, Electronics Boutique®, Babbage's®, Waldensoftware®, Software Etc., and Soft Warehouse®

CheckFree®

Copyright © 1989 by Scholastic Inc. All rights reserved. Reprinted from the May issue of Home Office Computing.
When it comes to Ethernet, only Asante has all the right connections.

If you haven't yet heard of the new 10BaseT Ethernet™ technology, you've come to the right place. Because there is no better place to learn about the latest in technological advances than from the leader in Macintosh® networking. Asante Technologies.

The Ins And Outs Of 10BaseT.

10BaseT was recently adopted by the IEEE as a new standard for running high speed Ethernet over unshielded twisted-pair telephone wire. It can often be installed right over your existing telephone lines, keeping installation costs well below both thick and thin Ethernet, yet operating at the same 10Mb per second speed.

With a 10BaseT network, you can link all your Macs, PCs and any other workstations with a 10BaseT card to a central hub in a star configuration. It's easy to add or remove nodes, and isolate problems. If one computer goes down, the others stay up and running.

The Best Of 10BaseT, From Asante.

As the leader in Macintosh technology, you can count on Asante™ to have the fullest line of 10BaseT products available. Only Asante offers interface cards for the Macintosh SE, SE/30 and Mac II family of computers to keep you well connected in a variety of ways.

The Asante 10T Hub™ is built for maximum flexibility. Shipped with interchangeable back panels, you can connect up to 12 Macs using either RJ-45 jacks or a 50-pin connector that plugs directly into your telephone system. It has ports for both thick and thin Ethernet cabling. And a series of LEDs to help you determine link status, auto-partitioning, network traffic and transmission jams, as well as achieve peace of mind.

And with the Asante 10T MAU™ transceiver, you can plug your PCs or other computers with thick Ethernet cards into your 10BaseT Macintosh network, and answer all of your needs.

We Keep Our Reputation By Keeping Ahead Of The Times.

Asante earned its reputation as the leader in Macintosh networking by creating the fastest, most reliable Ethernet cards available. As new Macs are introduced, Asante will keep that reputation with the highest performance, lowest cost networking solutions.

Asante is dedicated to offering the best in Macintosh networking technology. And committed to providing you with all the right connections. All the time.

©1990 Asante Technologies, Inc. All brand names and products are trademarks or registered trademarks of their respective holders.

Asante Technologies, 405 Tasman Dr., Sunnyvale, CA 94089, 800-662-9686.
Resellers: Asante products are available from Ingram/MicroD, Macamerica, and Tech Data.

Please circle 37 on reader service card.
Myth Communication

Miffed by how the mass media has mangled the many myths of the Mac? Here's how reality is finally helping the market mature. Plus: The not-quite-the-Eddy awards and some predictions about next year's Eddys.

The Apple Macintosh Classic is the best choice for owners of home-based businesses, students, writers, and anyone else who doesn't need IBM compatibility or a color display."


In his November '90 TechnoCulture column in Esquire, Donald R. Katz detailed his mix of angst and apathy over the fact that his character-based computer was becoming a "dinosaur": "GUI [graphical user interface] software turns a computer into a graphic environment, not unlike Pee-Wee's Playhouse. It allows your dumb computer to become a hardworking metaphor." Although Mr. Katz's phooey-to-GUI sarcasm is apparent, his anxiety is rooted in the fact that even IBM and Microsoft, following six years behind in Apple's footsteps, have now gone GUI.

The mainstream media is finally getting the message. The myths of the Macintosh — both the good ones and the bizarre ones — are finally disappearing into oblivion. Myths like: A graphical user interface is just a cosmetic touch-up, the computer equivalent of aluminum siding. The success of Microsoft's Windows 3.0 in the IBM world vindicates what Mac users have known all along: GUI is simply better. (You have to love those Microsoft ads that proclaim that now there's finally an alternative to the C-prompt. Just who do they think foisted the C-prompt on the world in the first place? Maybe someone should remind Microsoft what the MS in MS-DOS stands for.)

There's also the myth that Windows 3.0 means trouble for the Mac. The reality is that Win3 is one of the biggest successes in shelfware — software you use (or try to use) once or twice before retiring it to the software library. The plain fact is that to run Win3 reasonably well, you need a lot more hardware than most DOS users have, you need to switch to software products that probably aren't the ones you've been using, and you have to resign yourself to being an unpaid (in fact, a paying) beta tester for Microsoft.

In the same issue of Consumer Reports, a letter from a reader complained about a top-rated dedicated word processor that worked nicely except for one flaw: The error-message beep was meaningless to her hard-of-hearing son. Of course, that's no problem on a Mac — you can simply go to the Control Panel, set the volume control to zero, and the beep sound is transformed into a flashing menu bar. That kind of adaptability and unexpected robustness that's been on the Mac for years is exactly why the great Mac versus Win3 debate is nothing more than marketing bluster: A few clickable icons do not make a GUI.

Then there's the myth that the Mac is the more expensive machine. OK, that one used to have a basis in reality. But with street prices for the Mac Classic at less than $700, the Mac is easily the least-expensive business-class GUI computer on the block, with a time-tested interface and far more software available than any alternative.

Another myth is that Apple can't survive the 1990s unless it opens the market to Mac clones. Although it may be true that Apple missed an opportunity a few years ago to knock IBM off the desktops of corporate America, the reality is that Apple has flourished very nicely, thank you, by following its own closed architecture philosophy. One way to interpret the success of the Classic is that Apple has finally let someone clone the Mac— itself. The Classic, LC, and IIsi are, in fact, everything you'd expect from SE, II, and Iie clones — comparable power at a lower price. With its new lineup, Apple can compete with the best of the '286, '386, and '486 knockoffs. And by "cloning its own," Apple keeps quality control — and revenues — all in the family.

What this means for you is that you don't have to sneak your Mac in through the back door anymore. The Mac is officially on the approved lists for major businesses and government sites, endorsed by both the MIS department and the penny-watchers in accounting. And with prices well below the magic $1,000 point, many computer buyers can now pick up a Classic as an expensive purchase that doesn't require signatures and approval from their bureaucracies.

Extra Credit

Apple gets the credit for the original allure of the Mac and for successfully repositioning its price points. But the credit for making the Mac a productive tool goes to the hundreds of third-party product developers. For the sixth year, MacUser pays tribute to those developers with our annual Editors' Choice Awards. There were, however, a few awards that didn't make it into this month's cover story. To round out our coverage, here are a few extra not-quite-the-Eddy awards.
Best Pointless Product: This is a tough category. The Flying Toasters module in the After Dark screen saver comes in a close second to Eyeballs, a little INIT that pops a pair of eyeballs onto your menu bar that follows your cursor around the screen. A similar product called Reagan creates a window in which an image of our 40th president does much the same, but the image also blurs out occasional digitized notable quotes in a random Talking Moose-esque fashion.

Best Press Release: If the purpose of a press release is to make a memorable impression, the announcement of a certain grammar/style checker from a European vendor takes top honors. The product, which claims to be English-compatible, is, according to the press release, "a professionnell solution" that "guarantees every user a very fast work on correction or translation of text." Please — before you release the next release, hire a professionell.

Best New System Software: Although System 7.0 was a no-show and HyperCard 2.0 was a yo-yo (from Claris to Apple and back again), A/UX 2 brought us UNIX a-go-go.

Best T-Shirt: T-shirts, according to Guy Kawasaki, are not a marketing gimmick; they're a vital part of the product-development cycle. Natch. The popular favorite of the MacUser staff sports the face of the Radius/TV Guy, although several fine entries from Adobe and the inimitable Boston Computer Society Macintosh Jeopardy! entry receive honorable mentions.

The Milli Vaniili Sham-in-Sheep's Clothing Award: Windows 3.0 (see above).

The Traveling Wilburys Award: T/Maker's Smart Bundle — four legends of software together again for the first time.

Best Software Documentation with an Attitude: How can you ignore Maxis' plea to return your user registration card: "Go ahead — tear me in half. Rip me in two. Pull me to pieces. Split my sides. Pop my perforations. Use me. Write on me... Aw, come on, send in the stupid card... please, please, please... "

Award to the Wise
In addition to guiding you to the best of the best new products, the Eddys are also a gauge of the technological trends to keep an eye on. Last year, we cited Articulate Systems' Voice Navigator as the most significant hardware product of the year, and before 1990 was out, sound input had already become an integral part of the new Mac lineup. Last year's software product of the year honors went to Custom Applications International's Freedom of Press, foreshadowing the coming onslaught of competing PostScript and typographic standards. And the best new technology of 1989 — 32-bit QuickDraw — became an instant fact of life for graphic artists.

This year's award winners promise to be just as influential. But your thoughts have probably already turned to the future:

"Outstanding Product! Effectively disinfected my system of 19 viruses - no more print problems or bombs - Thanks!"
Costa Mesa, CA

Today's computer virus problems require strong medicine. They require Virex®. Virex is a comprehensive solution to the threat of Macintosh computer viruses. Virex both detects and repairs files infected by all known viruses, and continuously monitors your Macintosh to prevent new infection. Its powerful Record/Scan feature enables you to detect previously unknown viruses. All this in an easy-to-use product that is backed by the industry's best support and service. Call us for the name of the dealer nearest you or for information about site licensing.
He hunts heads with a single piece of software.

Mike Giddings has the power to move the football. His ratings reports are studied by 12 NFL teams several times a year. Chances are, that hot running back you see inserted into the line-up mid-season came from one of Mike's reports.

More than 5,000 players are rated using dozens of criteria. There are hundreds of thousands of pieces of information in all. How does Mike handle all this? And publish dozens of reports a year? With a staff of three?

With a single piece of database software called FileMaker® Pro.

With it, he can analyze data to a remarkable degree. FileMaker looks for certain attributes in a player's performance, weighs them, calculates performance, and displays the rankings in 200 different formats that Mike publishes for his clients. And he can do all this without computer expertise. He's a former coach, not a hacker.

Mike's reports give coaches an edge.

With FileMaker Pro, Mike has an edge, too.

Mike Giddings is just one of over a quarter-million people who benefit from FileMaker. You can, too. To see how, call 1-800-729-2292, ext. 20.
What's going to be hot when it's time to compile the best of 1991? At the end of the special Eddy coverage, you'll find a list of the products we think will be some of the leading contenders for next year's awards. Of course, in the hyperchanging Mac market, you can count on a few surprises, a few upsets, and a dark horse or two. Here are a dozen predictions about the products and trends that will shape next year's Eddys:

1. A big factor will be System 7.0: Products that fully exploit its capabilities — such as interapplication communications — are likely to be standouts.


3. Products that incorporate sound and video will provide quantum jumps in functionality and productivity.

4. Although other business-software categories may be reaching maturity, the spreadsheet category will reemerge as a real horse race, with relational-database-like capabilities, multidimensionality, natural language querying, sound, and problem-analysis features generating excitement.

5. Software publishers will rediscover the 80/20 rule: Expect a flurry of low-cost products that keep things simple by focusing on the core functions that you use 80 percent of the time, leaving the high-end 20 percent to specialized, premium-priced products.

6. Color printers will dip below the magic price point, at which time they'll become affordable and essential components of every Mac workgroup.

7. Storage capacity will continue to surge. By the end of the year, the high-capacity desktop will be able to choose among 20-or-so megabyte floppies, low-cost removable cartridges, or 100-or-so megabyte 3.5-inch optical discs. Simultaneously, hardware- and software-based compression solutions will allow you to squeeze more out of every megabyte of data storage.

8. Miniaturization technologies will transform more desktop peripherals into portable accessories.

9. Computer networks will finally begin to truly merge with the established low-tech — and even "faux-tech" — components of the information infrastructure of American business, such as the telephone networks and the U.S. mail.

10. The social and political dimensions of computing will affect the products and sales channels. Everything from copyright laws to health and safety ramifications will have an impact on what kinds of products you buy — and from whom.

11. The paradox of centralization and decentralization will continue: As higher-powered CPUs and lower-priced peripherals will bring more power to the individual desktop, the competitive edge provided by networking your Mac to other Macs and other platforms will lead to increasingly higher levels of connectivity.

12. The Mac marketplace will continue to be as unpredictable as ever.
The Perfect Portable

In the recurrent bragging wars between Mac mavens and DOS diehards, the Mac side has usually had the Force with it — with one weighty exception: portable computing.

For reasons that have never been adequately explained by anyone, whenever two heavyweight technologies do battle in the world of computing, lines are drawn in the silicon and wars of words that are almost religious in nature are fought.

The most widespread example, and one in which most of us have participated, is the debate of the merits of the IBM PC versus those of the Mac. How many times have you heard put-downs of the Mac as “just a toy” or “just a fad,” even now that it’s become established as a business computer?

Or perhaps you’ve observed (or even participated in) the flame wars on CompuServe (one of the few places where Mac and PC zealots commingle in large numbers). Each side “flames” (leaves long, almost preachy messages) at the other, accomplishing nothing except to inflame similar responses. If you’ve been a Mac expert for a while, you probably remember when such arguments were practically a way of life.

Over time, though, the hostilities have subsided. Although there have been occasional flare-ups, such as the brouhaha incited by the teacher who claimed that Macintosh users were less literate than PC users (an assertion that is far from being proven), most of us thought that the war had been declared a draw or that it had at least become a cold war.

Then came Microsoft Windows 3.0, the latest version of the GUI (graphical user interface) for DOS, which is so similar to the Mac interface that Apple sued Microsoft over its look and feel. While Apple and Microsoft met in court, the factional fighting began anew, with the DOS diehards declaring they now had all the advantages of the Mac and none of the disadvantages. This was, of course, nonsense, as many columnists (including me) were quick to point out. So even if the conflict subsides, it’s never completely finished.

Advantage, DOS

There’s one battleground in the war between Mac and DOS, though, where the PC people have always had a big advantage over the Mac folks, and that’s in the area of portable computing. The DOS devotees have had this advantage for some time too, as DOS laptops are relatively old, in computer time. Mac users have only one official model to choose from — the 16-pound Macintosh Portable (a.k.a., the DynaBrick) — and even that product is of fairly recent vintage. The Mac people have also seen some interesting hacks, such as the DynaMac, the Colby, and the Outbound. These all have their supporters, but they don’t offer the range of features that the DOS folks get to choose from (especially in that all-important area, price). By contrast, the DOS diehards have dozens of selections available to them from a variety of manufacturers. These range from equally weighty Mac Portable-sized behemoths to the new 80286 and 80386 ultralight laptops.

Apple had its reasons for making the trade-offs it did in designing the Portable, and if you’ve ever used one, you were probably impressed with everything about it other than its size, weight, and price. I carried a Mac Portable during some extensive traveling a year ago, and it was just like having a real Mac with me, because, after all, it is a real Mac.

Of course, I was traveling with the ultimate Mac Portable accessory — a car. I wasn’t dragging the Portable through airports, so the weight wasn’t a big issue (although I did strain an elbow picking it up once). The weight is a big issue if you don’t have a table handy, as a Macintosh Portable sitting on your lap can very quickly start to cut off the circulation in your legs.

Over the years, many Mac users have been forced to consort with the enemy in order to compute on the road. DOS laptops such as the Toshiba 1000 were easy to carry and relatively inexpensive. Of course, there was that ugly command-line DOS interface and a lot of arcane commands to learn. But when there aren’t a lot of alternatives, you do what you have to.

Technology marches on, however, and two major advances in the DOS world have changed the playing field. The development of a low-power version of the 80286 has made superlightweight laptops possible. Sharp and Texas Instruments put their heads together and came up with a 286 laptop with a backlit 16-gray-scale VGA display and a built-in 20-megabyte hard disk drive that is smaller and lighter than a ream of paper (only 1.5 inches thick and less than 4.4 pounds).

The 286 is important, because it means that this notebook computer can run the aforementioned Windows 3.0. Although Windows doesn’t make the Mac obsolete (as some of its adherents would have you believe), it sure makes using a DOS laptop a lot easier and opens up the laptop world to many Mac users who don’t want to learn DOS.
A 286 ultralight running Windows 3.0 is a reasonable facsimile of perfection.

A Five-Pound Portable?

CompuAdd’s MacAvenue division is even going so far as to bundle the less-than-five-pound 286 notebook computer with LapLink Mac so you can transfer files between the Mac and the laptop. To achieve a really usable system, you still need Windows, a mouse, and an add-on floppy drive for installing software and backing up (unless you’re a real ace, I wouldn’t try to get by with only LapLink and a SuperDrive in your Mac).

LapLink handles many translation chores; if you stick with the Microsoft programs designed for Windows — such as Excel and Word — and also use the Mac versions, moving back and forth between the machines is amazingly easy (although you’ll learn why Windows doesn’t quite turn a DOS machine into a Mac). LapLink also has its drawbacks, such as frequently translating files that you don’t want translated.

Apple’s still working on new portables. Rumors abound that by the time you read this (or shortly thereafter), a second portable will join Apple’s product line. Some of the sexier rumors include the possibility of an Apple joint venture with Toshiba, a company that’s well known in the laptop business and that has enjoyed a long relationship with Apple. Looking down the road, Apple’s surely taking note of such incredible machines as the Psiot (a DOS machine the size of a Sharp Wizard that runs 120 hours on AA batteries) and thinking of ways to make real Macintosh computing more portable.

So we may yet see the perfect portable from Apple. But in the here and now, a 286 ultralight running Windows 3.0 is a reasonable facsimile of perfection, with advantages in size, weight, and price that far outweigh the disadvantages. If money’s no object, you can even look at the 386 notebook computers (some with hard-disk drives holding up to 60 megabytes and still weighing less than six pounds) or perhaps buy a DOS notebook and a Mac Portable too. But if you can afford only one portable platform, try a DOS notebook running Windows. You may be pleasantly surprised.
**MachOne**

The MachOne Drive provides up to 400MB of storage with a 1ms access time and transfer rates of up to 5MB/sec. The MachOne offers all of this remarkable performance with full non-volatility and multi-platform compatibility. The MachOne increases productivity, saving time and money, by reducing access time and increasing data transfer rates, as shown below.

<table>
<thead>
<tr>
<th>ACCESS TIME</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical SCSI Drive 1989</td>
<td>40ms</td>
<td></td>
</tr>
<tr>
<td>Typical SCSI 1990</td>
<td>26ms</td>
<td></td>
</tr>
<tr>
<td>MachOne</td>
<td>less than 1ms</td>
<td>1ms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATA TRANSFER RATE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical SCSI Drive 89</td>
<td>0.8 MB sec</td>
<td></td>
</tr>
<tr>
<td>Typical SCSI Drive 90</td>
<td>1.8 MB sec</td>
<td></td>
</tr>
<tr>
<td>MachOne</td>
<td>5.0 MB sec</td>
<td></td>
</tr>
</tbody>
</table>

Don't let your computer be held hostage by a slow drive.

**Optical Drives**

Rewritable optical drives offer high-capacity, low-cost-per-megabyte and data integrity far superior to that of conventional magnetic media. They are also surprisingly fast. PLI offers three attractive optical solutions: The Infinity Optical (600MB), the Jukebox Jr. (one drive, ten cartridges, 6.5 Gigabytes) and the Infinity Optical Jukebox (two drives, 56 cartridges, 36 Gigabytes).

**PL CD-ROM**

High-speed access and fully featured software are just two benefits of the PL CD-ROM Drive. Access incredible databases and software archives, or listen to your favorite audio compact disc, without leaving your Mac!

**Infinity 40 Turbo**

Infinity 40 Turbo, the most popular Macintosh removable drive for more than two years, uses 45MB cartridges for virtually limitless storage potential. It is also extremely fast, with a 20ms access time. The "Enhanced" model includes TurboWare utility software from PLI, A.M.E. from Casady and Greene, The Best of BMUG shareware and comes with a two-year warranty.

Don't let your computer be held hostage by a slow drive.
SUITCASE II:
A Matter of Being
In the Right Face
At the Right Time

Suitcase II is the award-winning software that gives you unlimited access to all your fonts and desk accessories, all the time. Without having to use Font/DA Mover to install and deinstall them. Without cluttering up your system file.

Suitcase II lets you view an unlimited number of fonts in their own typefaces at any moment, so you can pick the right face at the right time, without breaking stride. You'll never have to reboot your Macintosh to install a new font, or search through a cluttered System File to find what you need. Font ID conflicts are a thing of the past with Suitcase II.

And you'll never have to restart your system to install a Desk Accessory, because whatever you need will be right in your face, whenever you need it!

So why spend your time juggling fonts and DAs any longer? Now is the time to put Suitcase II on your Macintosh!

For a complete list of features and specifications, or the name of your nearest dealer, call 1-800-873-4384. Please circle 157 on reader service card.
Don't Kvetch, Kick Butt

Some say developers should quit writing Mac software for us, that they should instead give up and do Windows stuff. But au contraire, developers can do great with Mac software. They just need to learn how to hawk it.

Software developers are in a tizzy these days. One half complains about how hard it is to penetrate the Mac market. The other half believes that it isn't worth penetrating, so they're going to Windows.

I don't agree with either half, but I care only about the first half. The second half can go to Hell. This column is about ways in which small software companies can penetrate the Mac market — even today. It's also my own small contribution to helping break Microsoft's stranglehold on personal computing.

The Press

Principle: Dealing with the press takes a rifle, not a shotgun, approach. There are only three publications — MacUser, Macworld, and MacWEEK — that developers have to worry about. (Maybe I should add InfoWorld, but its Mac coverage centers on proving that Windows will kill the Mac.)

The revelation that there are only three publications to cover has enormous impact. It means that developers don't need to spend $25,000 on a party to impress 200 champagne guzzlers.

Three editors — Russ Ito of MacUser, Carol Person of Macworld, and Henry Norr of MacWEEK — are the most important press contacts developers can make. The best way to get to them is to call them and show them a product. This might cost a trip to the Bay Area and three lunches. (Henry Norr's favorite place to eat is the Rinconada Center.)

Although these three people are the most important, they focus on new-product announcements and reviews. There are other editors and writers who do lab-based comparison articles, feature stories, tips-and-tricks columns, and end-user profiles. The best strategy is to find a product champion from among the editors and writers by sending a copy of the product to every person on a magazine's masthead.

A personalized cover letter, press release, and the name of the company contact should accompany the product. After developers send their products, they should follow up by calling each recipient. Many developers think that the box of software the postman dumped off will blow editors away so much that they will be compelled to write a story or column about it. Dream on. I haven't opened most of the software I've received this way.

Distributors

Principle: A product gets the level of distribution it deserves. Large, successful software companies that want to gobble up developers ("acquire your product") and high-priced marketing consultants would have developers believe that "distribution is impossible to get these days." Hogwash. It's not impossible if a developer has a hot product. Let me explain.

Products such as PageMaker, Word, and Excel are commodity items. Every distributor (a distributor buys products from developers and resells them to dealers) has to carry them, which means that everyone competes on price. Hot new products are not commodity items, so for a while, distributors and dealers can make a lot of money on them. Thus a product can be desirable even if it's not from a big vendor.

Just as there are only a handful of magazines, there are a handful of distributors that matter. Really, there are only two: MacAmerica and Ingram/Micro D. So developers have to impress only two people: MacAmerica's Jack Kolk and Ingram/Micro D's Sue Harvey.

The same rifle approach works on distributors: Call them up, tell them about the product, and go show it to them. If a product is hot, they will fall over themselves trying to acquire it.

Dealers

Principle: Concentrate on end-user pull, not on dealer push. Should developers try to go crazy and find, recruit, and train 3,000 dealers around the world? No way. Dealers sell the products that people ask for at their particular store. A developer's job is to generate crowds of people who ask for its products.

Frankly, most developers don't get dealer shelf space, because dealers have very little

---

1 Speaking of Hell, have you heard about the Microsoft Windows programmer who died? He found himself in front of a committee that decides whether you go to Heaven or Hell. The committee told the programmer he had some say in the matter and asked him if he wanted to see Heaven and Hell before stating his preference. "Sure," he said, so an angel took him to a place with a sunny beach, volleyball, and rock and roll, where everyone was having a great time. "Wow!" he exclaimed. "Heaven is great!"

"Wrong," said the angel. "That was Hell. Want to see Heaven?"

"Sure!" So the angel took him to another place. Here a bunch of people were sitting in a park playing bingo and feeding dead pigeons. "This is Heaven?" asked the Windows programmer.

"Yup," said the angel.

Then I'll take Hell," instantly he found himself plunged up to his neck in red-hot lava, with the hosts of the damned in torment around him. "Where's the beach? The music? The volleyball?" he screamed irrationally to the angel. "That was the demo," she replied as she vanished.

MacUser March 1991 33
A great word processor is more than just a stockpile of features—it's the usability of those features when doing real work! WriteNow actually delivers usability—and our awards and ratings prove it.

WriteNow is the undisputed performance champion. Editing, searching, spell checking, saving, and printing happen lightning fast. For big and small documents. On any Macintosh. With or without a hard drive.

WriteNow now includes the new Grammatik 2.0 grammar checker, making WriteNow the smartest choice in Macintosh word processing!

![WriteNow Ad](image)

**Smart Word Processing**

<table>
<thead>
<tr>
<th>Quick Comparison of Leading Word Processors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WriteNow 2.2</strong></td>
</tr>
<tr>
<td>Disk space needed</td>
</tr>
<tr>
<td>Thesaurus (size in megabytes)</td>
</tr>
<tr>
<td>Spell Checker (size in words)</td>
</tr>
<tr>
<td>Grammar Checker (included)</td>
</tr>
<tr>
<td>Real Price</td>
</tr>
</tbody>
</table>

**User Groups**

Principle: Help friends first. If you've been reading my column for a while, you know I love user groups. There's something touching about people who band together to improve people's Mac computing experience for no compensation.

These groups are developers' friends. One of their primary purposes is to disseminate information, and developers have information — about their new products. This is a perfect match, yet most developers do not work user groups. Many developers think that user groups are a bunch of crabby people who sit around complaining. In fact user groups are a medium more powerful than most Mac magazines.

Therefore, developers need to get off their derriere and work with user groups. Every developer should send every Mac user group a review copy of the product; 50 brochures and fliers; and a free perpetual subscription to any company newsletter about the product. One more thing: Every developer should visit every major user group to do a demo at least once a year.

I'll put my money where my mouth is. If you want a database of the kinds of Mac contacts I've mentioned, contact me and I'll send you a copy. It's for the common good. Get out there; kick some butt. The Mac community will love you for it.

[Editor's note: Guy's database is also available on Zmac. In Library 7 (Reference) of the Download & Support Forum, download GUYDB.SIT.]

Please circle 87 on reader service card.
Now you can travel from here to there with twice the horsepower.

Getting from your Macintosh to virtually any fax machine in the world is now a lot faster.

Because the new 9600-bps Abaton InterFax 24/96 gets your message across twice as fast as before. And since the InterFax software compresses the file before sending it out, you spend even less time faxing than with any other 9600-bps fax/modem.

But we didn't just double the raw output speed, we made it easier to use. We included direct scan support, so you can fax art and photos straight from the scanner with excellent resolution. We also made the software easier to use—it's as simple as printing to any printer. And we made the InterFax work in background (with or without Multifinder), so you can get back to work while your Mac faxes. You can even schedule when faxes are sent to take advantage of lower phone rates.

As an added plus, the new InterFax also works as a 2400-bps Hayes-compatible data modem with MNP5 error correction. All these features together made MacUser name the InterFax 24/96 the best communication product of 1989.

If you want to get from here to wherever with twice the horsepower, call Abaton at 1-800-444-5321 (In Canada, 1-800-663-5161) or fax a note and your business card to (415) 683-2956. The new InterFax 24/96 will make your ideas easier to publish. Anywhere.

Introducing the Interfax 24/96

Please circle 61 on reader service card.
Examine The Evidence, In Graphic Detail.

You've seen the evidence. Here are the facts. First, because it gives you the flexibility to create or import graphics, new MORE 3.0 can create more colorful, creative, and persuasive presentations than any other Macintosh® presentation program.

Second, MORE 3.0 has a library of over 100 templates, and a unique Library Browser feature to help you choose the look you need in seconds. And apply it to your entire presentation instantly.

Finally, MORE now includes Chart Tutor, which guides you step-by-step through the process of creating any kind of presentation.
Trial:
Other Presentation Software

MORE 3.0 includes a complete library of over 100 templates designed by graphic artists. Use our Library Browser feature to find the look you need in seconds, then just click on it to apply it to one, ten or a hundred slides or overheads instantly.

(Exhibit B)

The verdict? The presentations you create with MORE 3.0 will be faster, more colorful, more impressive, and more persuasive than with any other software.

But don’t take our word for it. Witness it for yourself. Call now for a FREE MORE 3.0 Trial Size. The winning presentations you create will prove one thing beyond a shadow of a doubt. MORE presents you best.

FREE DEMO, CALL NOW!
(800) 228-4122 Ext. 530F

Judge For Yourself, Free.
This is not your average mouse...

Meet MVP Mouse™ from Curtis.

One look tells you, MVP Mouse is not just another trackball. Its ergonomic 3-button design responds to your every impulse as if it were an extension of your hand. Its 200 DPI resolution and automatic acceleration give you pinpoint cursor control plus the ability to "jump" across the screen with just a short, quick movement of your fingers. And its powerful control panel lets you select preset tracking and double-click speeds... or create your own! And it gives you dozens of button functions to choose from, including a Custom Command that simulates any 36-letter keyboard command.

You can assign any command to any button, quickly and easily on-screen. Optional Foot Switch acts as 1st command button.

Take MVP Mouse for a spin. Visit your nearest Curtis dealer for a hands-on demonstration.

#MVP-1 Retail $149.95

For the Curtis dealer nearest you call (603) 552-4123, Ext. 43

© Curtis Manufacturing Company, Inc.
MVP Mouse is a Trademark of Curtis Manufacturing Company, Inc. Macintosh is a registered trademark of Apple Computer, Inc.

Please circle 376 on reader service card.
Computers do a fine job of creating charts, but they’re pretty useless once the data has been plotted and printed. What’s needed is the equivalent of OCR for charts. FlexiTrace is precisely that: it lets you extract the data from a scanned chart. FlexiTrace promises to do for charts what OCR has done for text — let your Mac read.

Tree Star, 1802 Hillside Road, Santa Barbara, CA 93101; (800) 366-6045. $249.

By Russell Ito

About face: Computer interfaces are like touchdowns in football — change their value, and you change the entire nature of the game. Every change to an interface changes the way users work with data, and the more control users have over their data, the more sophisticated their needs become. The Mac has achieved its success largely because of its consistent user interface, but now that the Mac has reached maturity, things are changing. Even the Mac’s interface isn’t inviolable anymore. Three-dimensional graphics push the limits of the Mac interface more than any other type of data. Because the screen and the mouse are 2-D devices, applications that require a third dimension have to invent an interface to handle it.

GraphMaster, from Visual Business Systems ([404] 956-0325) is a new charting and graphing package that lets users control 3-D plots live instead of through a dialog box. Although most applications use a wire-frame model in a dialog box to show rotation, perspective, and projection, GraphMaster superimposes an actual-sized wire frame on top of the chart, so users can see their changes. It’s a simpler, more direct way of working. If you take a 3-D model and give users the ability to move randomly through it, you have virtual reality. Virtus (919) 467-9700) is the first publisher to bring virtual reality to the desktop. Imagine being able to move left, right, forward, backward, up, and down or yaw or roll through a model at will. Now imagine doing so by using a mouse on a flat surface. Virtus WalkThrough manages to finesse its way around the problem by using modified clicks, but what’s really needed is a true 3-D pointing device. The more we expect of our Macs, the more pressure we put on interface designers to make it happen. So the next time you’re confronted with a “non-standard” interface, don’t curse. You may be getting exactly what you asked for.

Up to Date . . .

Digital Darkroom, Silicon Beach’s gray-scale photo-retouching package, has finally reached version 2.0. New features include colorization, image, scanner, and printer calibration; and real-time transformations. $395. (619) 695-6956.

DiskFit, SuperMac Technology’s backup program, is now in version 2.0. Enhancements include unattended backup and more selection filters for backing up files. $99.95. (408) 245-2202.

Correct Grammar version 2.0 adds style checking to the top grammar checker. $99. (415) 541-7864.
A Pivot Without a Card

As we noted in our review (August '90, page 55), the Radius Pivot is a good monitor choice if you need flexibility, but for Mac Ilsi owners, losing the machine's only slot for a video card practically cancels out the versatility factor. Recognizing this, Radius has turned the video card into software. The Pivot for Built-in Video lets users connect the monitor directly to the Mac's internal video, which keeps the machine's only slot open for other uses. The pivoting function works just as it does on the original Pivot, and the monitor's redraw speed is nearly identical.

Radius, 1710 Fortune Drive, San Jose, CA 95131; (408) 434-1010. $1,295.

Excel Strikes Back

Compared with Full Impact and WingZ, Microsoft Excel — even version 2.2 — was starting to look pretty long in the tooth. But it appears that Microsoft may have been listening after all. Excel 3.0 brings the market leader — make that "market owner" — at least even with, and perhaps slightly ahead of, its competition. Excel 3.0's biggest improvements are in its charting functions. Charts can reside on a spreadsheet, and chart types can include 3-D charts and USA Today-like picture charts.

Microsoft has added a tool bar that's similar to the one in Full Impact. You can set data formatting and alignment by clicking on icons instead of by using dialog boxes and menus. Style sheets have been added for faster and more consistent text and number formatting. Cell notes are now indicated by a marker in the cell, and word wrapping within a cell is now available as a formatting option. You can also view Excel spreadsheets as outlines, with the detail between summary rows collapsed.

But Excel's biggest improvements are in its charting and presentation functions. Charts can now reside on spreadsheets themselves, and the number of chart types has been increased to 68, including a range of 3-D charts. Up to 16 customizable colors are available, and a full drawing layer has been added, so you can embellish your charts as necessary. Excel 3.0 can also use pasted graphics as its chart units, either stacking or stretching the graphic to match the data. And as if that weren't enough, the new Excel can even help you fudge your data: You can specify a desired result and then tell Excel which cells to doctor, or you can simply drag a chart value and the spreadsheet will update appropriately. Excel 3.0 should start shipping in the first quarter of 1991.

Microsoft, One Microsoft Way, Redmond, WA 98052; (206) 882-8080, $495.

Keeping Your Versions Intact

Computers make changing documents easy, but usually at the expense of previous versions. Sitka Versionary is a back­ground utility that automatically saves a specified number of previous document iterations so you can quickly go back to an earlier version. An INIT/DA combo, Versionary lets you specify which applications or folders it should "version," where it should store its files, and whether or not it should compress them (it uses the DiskDoubler technology). Once you've set it up, you never have to see it again.

Although Versionary keeps its versions on a single level, you can color-code your versions to stay organized. To help keep its activity to a minimum, Versionary kicks in only once per "edit session," which means either when you close a document or quit from an application (the distinction depends on the application). Because Versionary's versions are saved in their native formats, you don't need Sitka's product to open them, just the creating application. Versionary should be available in the first quarter of 1991.

Sitka, 950 Marina Village Parkway, Alameda, CA 94501; (415) 769-9669, $139.

Microsoft Mail 3.0 Delivers

Having been beaten to the punch by CE Software's QuickMail the last time out, Microsoft has landed the first blow this time around. Microsoft Mail 3.0 is a major upgrade that on first look seems to put Microsoft in the lead among E-mail vendors. Mail 3.0 boasts several user and work-group enhancements.

It now supports multiple file enclosures; the only restriction on the number of files is a limit that the network manager can set. Double-clicking on a folder adds all the files in that folder — even if there are folders within the folder — and shows the number of files being attached to the message. Actual folders can't be transmitted, which prevents someone from accidentally sending a folder containing a huge number of files. Users can set up personal address books and groups, and
Canvas Charges Ahead

Following close on the heels of Illustrator 3.0 as well as of the announcements of FreeHand 3.0 and MacDraw Pro, Canvas 3.0 now joins the ranks of significantly upgraded drawing programs. The new Canvas boasts more than 50 new features, but its biggest improvements are in its text handling; the addition of Pantone colors, enhanced Bezier curves, several new CAD features, and support for Deneba’s plug-in tools first seen in UltraPaint. Canvas’ text functions now include true tabs; superscripting and subscripting; fractional leading and kerning; text on a curve or shape or around an irregular object; slant margins; and character-by-character font scaling. CAD features include user-definable parallel lines or curves, dashed curves and objects, rotation around any point, and an intelligent drafting assistant. Canvas 3.0 should be available in the second quarter of 1991.

Canvas 3.0 keeps pace with its competition. This version includes better text handling, some CAD features, and an open architecture.
Okay, get ready. This is it.
Imagine if you could interview a customer on your own camcorder. Then cut to, say, a product shot. Overlay some animated text. Add a voice-over or maybe some background music.
And then, as if that weren't enough, print it all to videotape so you could show it on any VCR.
Sound good so far? It should.

It's what we call Desktop Video Publishing. And it's now possible with MediaMaker.
The first software that lets you produce a video as easily as you publish a page.
For starters, MediaMaker pulls together all the different media you've chosen. Like graphics, Mac sounds, CD audio, animation and video clips. Then lays out all these elements over time.

©1992 MavisMind®, Inc. MavisMind and MediaMaker are trademarks or registered trademarks of MavisMind, Inc. Video clip courtesy of O'Neill® Inc.
so you can be sure everything is in sync.

And last, but definitely not least, prints your whole creation to videotape.

Note again the word videotape.

Never before has it been possible to print to video. To actually create a walking and talking sales brochure. Or educational guide. Or training manual.

All humility aside, we think it's the next revolution in desktop communication.

Call 415-442-0200 for a MediaMaker videotape, demo disk, or dealer nearest you. Plan to be amazed. After all, revolutions like this don't come along every day.

**COMES AFTER PUBLISHING.**

All humility aside, we think it's the next revolution in desktop communication.

Call 415-442-0200 for a MediaMaker videotape, demo disk, or dealer nearest you. Plan to be amazed. After all, revolutions like this don't come along every day.

**INTRODUCING MEDIAMAKER FROM MACROMIND.**

the multimedia company

Please circle 25 on reader service card.
FileMaker Pro

It's no speed demon, but FileMaker Pro is still an excellent choice.

FileMaker Pro is the first upgrade of the best-selling FileMaker II database program in two years, and it's just in time. This flat-file manager was beginning to show its age. FileMaker Pro now keeps pace with its more powerful cousins, like 4th Dimension and Omni 5, by offering a host of new features and an easier learning curve at half the cost (or less) in time and money.

The Big Easy

FileMaker's ease of use raised database management out of the black art of programming and brought it into the hands of average users. Creating a database in FileMaker Pro is just as simple. You define fields; give characteristics (text, number, date, calculation, and the like) to your data; and create layouts for entry, viewing, and printing. You can be up and running with a simple contacts database in ten minutes — less if you choose to use one of the six templates included in the package.

The most striking difference between FileMaker II and Pro is in the layout area. It won't wow desktop publishers, but there's a lot more than there was before. Defining a new layout is effortless. FileMaker Pro guides you along the way by automatically generating certain types of layouts — lists, labels, and envelopes, for example.

You can also use Pro's new graphics tools to create layouts that are more visually appealing. Among the new features is greater support for objects. You can group and layer objects with the sorts of commands you would expect from the publisher of MacDraw. Better alignment guides give more accurate positioning. Color is supported for fills, rules, and type. Only 81 colors are provided, and Apple's Color Picker, which would give you more, is not supported. One workarround is to experiment with combining colors and patterns to get different shades from the primary colors. You can also choose to import or paste graphic images.

FileMaker's networking scheme does not require a server. You just open a FileMaker file on any station in a LocalTalk network, and every other Mac on the network can access it — a good solution for small offices, since no dedicated host machine is necessary. FileMaker Pro adds a new feature that permits networking a database across LocalTalk zones, which makes the program an asset for large offices too.

Another important new feature is workgroup capability. You can set levels for user access and assign passwords to govern those levels. Fields can be defined as view only or made inaccessible to certain users. If you want a group of users to enter data but not modify existing records, that's also possible.

The original FileMaker eased the way for data entry through formats and lists. Pro has added better default formatting for numbers, dates, times, pictures, and text. For example, you can set a number format so that when you type 1850, the number is converted to $1,850.00.

If the values for a certain field can be narrowed to a defined list, FileMaker Pro lets you display that list as check boxes or radio buttons as well as on a pop-up menu — the latter was available in FileMaker II. FileMaker Pro can also automatically enter data — such as a sequential list of numbers, the current date, and the name of the last user who modified a record.

Scripts help ease user interaction by automating a group of commands. For instance, you might switch to a layout, find a subset of records, sort them alphabetically, print them out, and then return to the original layout — all with one command. Scripts can be activated by a menu choice or by a custom button you've added to your layout.

Buttons, a new feature, give FileMaker Pro a HyperCard-like feel — not surprising, as the two products come from the same company. Buttons can also issue a specific command, such as Go to Next Record, or switch to a different layout. FileMaker ships with a variety of useful predefined buttons.

Relational-Lite

FileMaker is "relational-lite." It doesn't have the full functionality of a relational-database program, but it goes halfway. The power of a relational-database program is in its ability to connect two or more sets of data. For instance, in a product database, you might have several products from one company. Instead of retyping the company address and phone number every time you create a new product record, you want the product "related" to a pre-existing companies file, so that information is entered automatically. FileMaker Pro uses lookup tables to simulate a relational function. When you change information in the companies file, it isn't automatically reflected in the products database, as it would be in a relational-database program.

Lookup tables work the same way in Pro as they did in FileMaker II, and Claris would do well to enhance this feature in future releases.

FileMaker Pro takes on an expert's edge when it comes to functions. These routines range from the simple (sum, average, date) to the complex (cosine, logarithms, radians) and also include some text-based functions that specify such things as length and lowercase letters. Building an equation is a point-and-click operation involving lists of the available values, operators, and functions. As many small- to medium-sized businesses have already discovered, these calculations are
more than enough for running a decent inventory and invoicing system.

Claris has tweaked FileMaker across the board, including better script handling, field definition, importing, and exporting. Just about every major function has a slightly different look and feel — for the better in all cases. For instance, when you import data, you can actually view records to see that their fields will be filled properly before you begin what can be a lengthy process.

Another nicey is the addition of a spelling checker. The spelling checker corrects errors in batch mode or as you type. If you use MacWrite or other Claris applications that have a spelling checker, you can share dictionaries.

Not Exactly a Speeding Bullet

With more than a hundred new features, FileMaker Pro is double the size of FileMaker II. That power comes at a price, however. Pro is slower on SEs and Pluses than FileMaker II is. This is unfortunate, because the installed base for upgrades probably includes a lot of these CPUs.

Not surprisingly, on any machine with a 16-megahertz 68030 processor, Pro performs much better. Tests that used a 1kHz to import and export data indicated that Pro ran at about the same speed as FileMaker II. It wasn’t lightning fast, but for those functions, it needn’t be. Sorting data with Pro was nearly twice as fast as with FileMaker II, but Pro is still significantly slower than 4th Dimension at both searching and sorting. Using the Find command yields nearly instantaneous responses in both FileMaker programs.

Whenever Claris has taken over a good product, as it did two years ago with FileMaker, it’s somehow missed the mark in updating the program — witness the initial upgrades of MacPaint, MacWrite, and MacDraw. FileMaker, unfortunately, is no exception. It’s the victim of poor beta testing. Numerous bugs plagued the initial release, although Claris said that all would be fixed by the time you read this.

The biggest pitfall is in converting FileMaker II databases for use in FileMaker Pro — a process that has led some users to dub the program FileBrecker. The problem, however, isn’t with Pro but with FileMaker II. It turns out that a minor bug in FileMaker II becomes a major-league problem when a II database turns Pro. It has to do with the way records are indexed. Invalid addresses are created for some records, which can lead to crashes and data corruption. The solution is simple. Just compress the database (using the Save As command) in FileMaker II before converting it. Astonishingly, the initial release of Pro lacked instructions on how to convert a database.

Several other bugs hit the initial release of FileMaker Pro. Again, Claris said these would be fixed. Among the most notable were the inability to print on DeskWriters or GC Personal Laser Printers and hairline rules printing as 1-point rules. The bug-fix version (scheduled for January 1991) is free to registered users, but you must request it.

The manual and HyperCard on-line help are adequate. There are some errors, but Claris has been quick to admit to the problems and include an addendum in its packages. Its on-line support — on CompuServe (in the MAC A VENDOR Forum) and America Online — is very responsive. Claris tech support has collected the answers to frequently asked questions, plus undocumented tips and hints, and posted them on-line in a FileMaker Pro database, which is available on Zmac, the on-line service for MacUser and MacWEEK.

FileMaker Pro has a unique import scheme that lets you preview the data and make sure the right information will be imported into the correct fields before you begin the import. This can save you a lot of time by preventing errors in what is usually a lengthy process.

FileMaker Pro comes with a template of predefined buttons that can give your layouts a HyperCard-like look that can simplify and speed up your data handling.

The Bottom Line

FileMaker Pro is ideal for first-time users and has enough power to run sophisticated applications. It does about 90 percent of what relational-database programs do, without a heavy investment in resources — an important consideration in the budget-conscious '90s. Even with its problems, FileMaker Pro is still the best flat-file manager available for the Mac. Designing a database is a snap, and working with one requires little training. If you’re a novice at databases, go with FileMaker. You’ll turn Pro in no time.

— Ben Templin
Norton Utilities for the Macintosh

When it comes to rescuing a crashed disk, Norton Utilities is the best.

If your hard disk has ever crashed, you know the feeling of despair that overwhelms you when you realize what's happened. If your hard disk has never crashed, you can count on having this experience. Recently a spate of packages aimed at data and disk recovery has arrived on the market. MacTools Deluxe (Central Point), 911 (Microcom), SUM II (Symantec), and now Norton Utilities all take different approaches to the problem. Of the bunch, however, SUM and Norton Utilities should be your first choices. Whereas SUM is focused more on data preservation in general, including, as it does, a backup module, Norton Utilities' approach is more clearly focused on disk maintenance and improved performance.

The Doctor Is In

The NDD (Norton Disk Doctor) is the core of the Norton Utilities package. It analyzes and diagnoses a Mac volume. Once it knows what's wrong, it proceeds to fix it, if it can. This is the fundamental philosophical difference between this package and SUM: SUM recovers data from a sick disk; Norton Utilities tries to make the disk better first.

Once you've selected NDD from the main window, you select the volume and then start the scan; three clicks, and you're off. Each time the NDD finds something amiss, it displays a dialog box explaining where the problem is and offers the option of fixing it or not fixing it. Unless you know what you're doing, you should always say yes; the NDD's guesses are good. The NDD checks the integrity of the data structures on a volume and, in its final pass, checks each file on the volume for anomalies.

The speed with which the NDD scans a disk is notable. Larger disks do, of course, take more time, but spending a few minutes per day scanning your volumes to guarantee the state of your data is a small price to pay.

If the NDD is unable to repair the disk, it's time to recover your data and reinitialize it. Norton Utilities' Format Recover uses several approaches to recover as much of your data as possible. File Saver, an INIT/edev, stores a copy of a volume's file system, keeps track of deleted files, and saves Finder Get Info comments, so that they're not lost when you rebuild your Desktop file. Format Recover looks for the File Saver INIT's files when it's trying to recover your data. File Saver is unobtrusive; you'll never notice it's there.

Unlike SUM II's Shield INIT, File Saver is extremely fast. If you've mistakenly initialized (not formatted) a volume on which File Saver's protection was installed, Format Recover can restore your volume's file system within a few seconds of a File Saver backup.

The only drawback with this scheme—and SUM shares it—is that you will probably lose the work you did since the last time File Saver saved the file system (for example, the last restart or shutdown or the last time you explicitly backed up the information from the File Saver edev).

Daily Enhancements

Aside from Norton Utilities' recovery capabilities, the package contains several utilities that make daily Mac operation faster. Speed Disk is a disk optimizer; it can analyze a volume and graphically display the distribution of files throughout the volume. It is designed to be as safe as possible to use and is supposed to be able to survive a power cut while optimizing a disk. This safety has a penalty, though: Speed Disk's optimizing speed is only average. On the other hand, safe and fast are mutually exclusive features in an optimizer.

Fast Find is a DA that is a replacement for Apple's File Find DA, but Fast Find is much faster. Searching through 100 megabytes of files takes roughly five seconds. You can search for files by name, type, or creator on multiple volumes.

Directory Assistance is an INIT that extends standard file-selection dialog.
With the addition of some substantial improvements, Nisus remains a contender at the top of the word-processing heap.

One of the advantages of being small is that you can move fast. Paragon Concepts has updated its high-end word processor, Nisus, twice since the program's introduction in January 1989. In roughly the same time period, Microsoft has yet to update Word 4.0 even once. Although Nisus 2.0's improvements were fairly minor, version 3.0 is a significant step up.

Looking Good

Many of the changes in Nisus are cosmetic: Menus have been more logically arranged, commands have been renamed for clarity, and the master ruler has been redesigned. There are also small but extremely useful additions, such as a vertical ruler, noncontiguous selection of text, and antonyms in the thesaurus. A small yet handy addition is the expansion of the allowable keyboard-command assignments. Nisus not only lets you assign keys in any combination with the Shift, Option, and Control keys but also lets you assign multiple keystrokes. You may want to assign Command-G to execute the Display Graphics Palette command or Command-GI to select Get Info. Nisus determines whether multiple keystrokes are one or two commands, based on the amount of time between strokes. This feature lets you assign mnemonic combinations, such as Command-1H for Insert Header or Command-IF for Insert Footer, and still be able to use the standard Command-I for italic.

Nisus now uses mail-merge standards (in previous versions, Nisus' nonstandard mail-merging was done with macros). Its cross-referencing capability has also been

--- Stephan Samoyd ---
Our Commitment:

Fonts & Clip Art

3g Graphics - Images w/ impact
Accents & Borders ... 64.
Business ... 64.
Graphics & Symbols ... 49.
Adobe
NEW! Type on Call - All Adobe Typefaces on one CD
Purchase what you need when you need it. Call for details.
ATM Plus Pack ... each 108.
TypeSet I or II ... each 57.
TypeSet III ... each 115.
SmartArt Vol. I - IV ... each 69.
The Mac Zone stocks the entire line of Adobe PostScript fonts. Call for our low prices.

T/Make - Click Art
EPS Business Art ... 82.
EPS Illustrations ... 82.
EPS Animals & Nature ... 82.
Business Cartoons ... 31.
Business Images ... 31.
Personal Graphics ... 31.
Publications ... 31.
Holidays ... 31.
Christian Images ... 38.

Dubl-Click
Wet Paint 1.1 ... ea 39.
World Class Fonts 1-8 ... ea 39.

Tactic Software
ArtClip 1st Ed ... 49.
ArtClip 2nd Ed ... 64.
ArtFonts Pak ... 49.

MicroTouch
Systems UniMouse
The UniMouse does everything a mouse can—only faster, easier, and in less space. To move the cursor, simply slide your finger over the glass surface. To make a selection, merely press down.
UniMouse ... $175.

Word Processing

A Lasting Impression
Resume Expert ... 48.
Cover Letters ... 46.
Caere
OmniPage 2.1 ... 538.
The Typist ... 478.
Claris
MacWrite II 1.1 ... 141.

Geneva Software
BigThesaurus ... 63.
Spelling Coach Pro 3.1 ... 123.

Deneba Software
CoachThesaurus ... 33.
Comment 2.0 ... 53.
Lexiprise U.S.A. Inc.
MacProof 3.2.1 ... 115.
LifeTree
Correct Grammar 2.0 ... 55.
Microsoft
Word 4.0 ... 244.
Paragon Concepts, Inc.
Nitrus 3.0 ... 238.

Personal Bibliographic
PrintClc ... 195.
Preferred Publishers
Vantage 1.5 ... 51.
SMA
Stylus ... 45.
T/Maker
WriteNow 2.2 ... 116.
WordPerfect Corporation
WordPerfect 1.0.4 ... 228.

Adobe
Photoshop ... 498.
Streamline 2.0 ... 224.
True Form ... 224.
Type Manager 2.0 ... 54.
Type Reunion ... 37.
Type Align ... 58.

Aldus/Silicon Beach
Design Team ... 88.
(incl. Freehand, PageMaker and Aldus Pre-Print)
Digital Darkroom 2.0 ... 247.
Freeware 2.0 ... 327.
PageMaker 4.0 ... 498.
Aldus Pre-Print ... 328.
Super 30 1.1 ... 338.
SuperPaint 2.0 ... 134.

Altys
Art Importer 2.0 ... 88.
FONTastic Plus ... 50.
Fontographer 3.1 ... 248.

Bruderbrand
Print Shop ... 34.
TypeStyler 1.01 ... 114.
Banerama ... 34.

CE Software
CalendarMaker 3.0 ... 30.
Amazing Paint ... 64.

Quick
XPress 3.0 ... 508.

Salient
Partner 1.01 ... 55.

Solutions
Curator ... 75.
SmartScript & Clipper ... 55.

SuperMac Technology
PixelPaint 2.0 ... 224.
PixelPaint Pro ... 464.

LaFontaine
Enhance ... 238.

Panlone
Computer Color Book ... 48.

Adobe Illustrator 3.0 with ATM
The premier product for single-page design on the Mac. Highest quality design and illustration capabilities; now includes a powerful new text handling tool allowing direct, on screen entering and manipulation. Comes with a free copy of Adobe Type Manager. Illustrator w/ATM ... $338.

PRODUCTS TO WATCH

Hot Keys ... $39.
Capture 4.0/ClickPaste ... $73.
Business Plan Tool Kit ... $95.
Informed MiniManager ... $53.

Call us first for low prices
1-800-248-0300

CoStar
LabelWriter
The uses for LabelWriter are endless: address labels, videocassette labels, disks, file folders. The palm size LabelWriter puts anything you can create with your Mac onto a 1 1/4 x 3 1/2 label. Our exclusive print driver software lets you print directly from your database, word processor or any other applications.
LabelWriter ... $184.
This should run circles around any other way to buy type. Because nowhere else can you get a larger selection of high quality typefaces on a single CD-ROM disk.

It's called Type On Call and it's the most automatic, affordable way to select the exact Adobe typefaces you need—exactly when you need them.

Type on Call includes Adobe Type Manager® along with 13 additional ATM fonts and two Adobe font packages—a $500 value for just $65.

But that's also just the beginning. Since your Type On Call disc contains every typeface from the Adobe Type Library, all you have to do is pick up the phone and tell us which Adobe packages or single typefaces you need. Then for an additional charge we'll give you the key to unlock the one you want, instantly over the phone.

Now more than ever you need a CD ROM drive. To introduce this exclusive Adobe Technology, the Zone has specially priced, high quality CD ROM drives available with your purchase of Type On Call. So call us on our Adobe hotline today.

Introducing Adobe Type On Call the newest, fastest and easiest way to purchase fonts from MacZone

Just call our Adobe Hotline:

1-800-258-1233

and the advisors at MacZone will tell you how to order your CD-ROM disk and 13 typefaces for only $65.
To Earn Your Business

Westware Inc.

Contact Ease

Contact Ease is like have a Rolodex, automatic letter writer, and phone dialer all in one. Helps you keep in touch automatically — it never lets anything fall through the cracks. Build a word processor. Prints envelopes with Postal bar codes. The simplest interface of any contact package we've seen... a solid hit — MacWeek.

Contact Ease $245

NEWWORKING & CONNECTIVITY

Asante

MacCon+II & NET ........ 340.
MacCon+II ET 64KB .... 375.
MacCon SE & ET .... 275.
MacCon SE/30 & ET ...... 340.
MacCon SE/30 64KB .... 340.

Cayman Systems

Gator Box .......... 1,555.
Gator Share Software .... 1,350.
Gator Multi or M 10 user 675.

CE Software

In/Out (1-5 user) ..... 127.
In/Out (1-10 user) .... 186.
QuickMail 2.2 .... 207.
1-5 users .......... 207.
1-10 users .......... 307.
1-50 users .......... 1,567.

Dowiz

MacLink Translators .... 97.

DataClub

3 users ........ 198.
10 users ........ 538.

Dyna Communications

EtherPrint ........ 350.
DynaEET/ES II & 530 ..... 355.
DynaNet/4L ........ 565.
Speed guard collision filter .... 52.
DynaTalk for Macintosh Single .... 55.
5 Pack .......... 380.
10 Pack .......... 715.

DayStar Digital

Local Talk Board LT 200 MC .... 295.
LT 200 PC .......... 205.

Dove

Ethernet FastNet SE, SE/30 or FastNet III .... 340.

Farallon

Local Talk
PhoneNET DIN-8 .... 30.
PhoneNET DIN-8 (10 Pk) .... 195.
PhoneNET DB-9 .... 30.
Star Connector (single) .... 17.
Star Connector (10 Pk) .... 125.
Star Controller 300 .... 819.
Repeater .......... 309.
PhoneNet/AppliTalk Adap. .... 8.
EtherLink - PhoneNet cards include Timbulito & RJ45 cable
PhoneNet EN Mac II .... 350.
Mac II Card (10 Pk) .... 3,375.
PhoneNet EN SE/30 .... 350.
SE/30 Card (10 Pk) .... 3,375.
Star Connector EN .... 120.
Star Controller EN .... 1,958.

Star Wiring KIt
Star Controller LT/EN ..... 62.
Passive Star .... 62.

INDIVIDUAL'S

Professor MAC

Individual's Professor Mac

Now, there is a perfect way to learn how to use the Macintosh and it's as easy as using a click of the mouse. Professor Mac lets the beginner or intermediate Mac user pick up speed on Macintosh skills from manipulating text to understanding how the Macintosh system operates: its self-paced design puts you in control of how quickly you advance Professor Mac $29

ACCESSORIES

Avery Labels

Mac Label Pro .... 48.

Casio

Casio B.O.S.S. .... 219.
Casio Label/Mark/E .... 98.

CoStar

LabelWriter .... 194.
Organizer ........ 195.
Organizer Jr. .... 68.

L/D Designs

Carrying Cases - Blue or Black ImageWriter II .... 48.
ImageWriter III .... 58.
MacLuggage Classic/SE .... 64.
MacLuggage Executive .... 58.
MacLuggage Classic II .... 98.
Ultimate Classic Case .... 94.
The Ultimate SE .... 78.
Ultimate Neon Carrying Case Green - Pink - Yellow .... 88.

Kensington Microwave

Dust Cover SE XKB .... 9.

Kensington Microwave

Dust Cover SE IIB .......... 5.
ImageWriter II Cover .... 8.
Anti glare Filter .... 32.
SE Filt (Anti-Glare) .... 51.
Anti glare Filter 13' Apple .... 63.
System Saver .... 63.
System Saver SE .... 52.
Universal Printer Stand .... 15.
Mac II Stand w/o cable .... 19.
Mac IIc Monitor Stand .... 54.
Mac IIc Monitor Stand .... 54.
Mac II Mon. Cable Ext. Kit .... 32.
Masterpiece Mac II .... 105.
Extended ADB Cable .... 24.
Universal Copy Stand .... 22.
Printer Muffler 80 .... 43.
Power Tree 10 .... 19.
Power Tree 10 .... 27.
Power Tree 50 .... 71.
Apple Security Kit .... 34.
LaserWriter II Security Kit .... 32.

Kensington Microwave

A-B Box (DIN-8) .... 63.
SuperBase .... 31.
PowerBacker 380 .... 269.
PowerBacker 450 .... 337.
PowerBacker 520 .... 397.
PowerBacker 800 .... 746.
PowerBacker 1200 .... 948.
Pass Proof .... 70.

Mark Packs - Handicaper

Navy, Wine or Gray ImageWriter bag .... 45.
Mac Plus/SE Bag .... 55.
Mac SE Bag X .... 63.

Super Card 1.5

Snack-a-Mac

Snack-a-Mac Stuffed Mac .... 8.
Covers SE/Plus w/ed keyboard .... 17.
SE/Plus w/web keyboard .... 17.

Shiva Corp.

NetModem V3.2

The NetModem V3.2 is a 9600 bps modem that is designed to be shared over AppleTalk. The NetModem also includes Dial In Network access software which allows a remote Mac or PC to dial into the network and use electronic mail, printers and other network resources.

NetModem V3.3 $1,165

MULTI-MEDIA

Aangs Corporation

Digivideo B/W .... 346.
Digivideo Color .... 639.

Digital Vision

Computer Eyes-Color .... 346.
Computer Eyes-B/W .... 194.

Farallon

Media Tracks .... 188.
Multimedia Pack .... 318.
Mac Recorder 2.0 .... 158.
Voice Digitizer .... 161.

GEM - Public Domain .... 75.

Funhouse CO .... 37.

Graphsoft

Blueprint 2.0 .... 684.

Hyperware


Individual Software

Individual's Professor Mac .... 29.
MacDraft II .................. 192.

Software International INC

Icon Simulations

Hyper TMON 2.4 .... 57.

Microsoft

Office CD ROM .... 598.

Softsource International

Hyper II 111 ........ 116.
Hyper II Relational .... 286.

Si/Icon Beach Software

Super Card 1.5 .... 198.

Wayzaya Technologies

Quickart .... 174.

Zebra Corp.

Apple Security Kit .... 34.
Apple 13' monitor & ext.

Shiva Corp.

NetModem V3.2

The NetModem V3.2 is a 9600 bps modem that is designed to be shared over AppleTalk. The NetModem also includes Dial In Network access software which allows a remote Mac or PC to dial into the network and use electronic mail, printers and other network resources.

NetModem V3.3 $1,165

MULTI-MEDIA

Aangs Corporation

Digivideo B/W .... 346.
Digivideo Color .... 639.

Digital Vision

Computer Eyes-Color .... 346.
Computer Eyes-B/W .... 194.

Farallon

Media Tracks .... 188.
Multimedia Pack .... 318.
Mac Recorder 2.0 .... 158.
Voice Digitizer .... 161.

GEM - Public Domain .... 75.

Funhouse CO .... 37.

Graphsoft

Blueprint 2.0 .... 684.

Hyperware


Individual Software

Individual's Professor Mac .... 29.
MacDraft II .................. 192.

Software International INC

Icon Simulations

Hyper TMON 2.4 .... 57.

Microsoft

Office CD ROM .... 598.

Softsource International

Hyper II 111 ........ 116.
Hyper II Relational .... 286.

Si/Icon Beach Software

Super Card 1.5 .... 198.

Wayzaya Technologies

Quickart .... 174.

Zebra Corp.

Apple Security Kit .... 34.
AGIUS
File Force 1.0 ................ 248.
4th Dimension 2.1 ......... 488.
Runtime (I users) ........... 79.
Compiler ver. 2.1 ........... 894.
AEC Management Systems
FastTrack Schedule 1.3 .. 138.
AISB
How to Write a Bus. Plan ... 85.
Alfrus
Persuasion 2.0 .............. 328.
ASD
Phonsoft-single ............ 138.
Blithy Software
Omnis 5.1.03 sgl user call.
Omnis 5.1.2 Incrementer ... 58.
CE Software
Alarming Events ............ 84.
Chang Labs
Claris
FileMaker Pro ............... 217.
MacProject II 2.0 ........... 363.
Delta Point
Delta Graph 1.5 ............ 108.
Fax Pro/Mac
FoxBASE-2.0 ............... 291.
FaxBASE-Multi User ....... 383.
FaxBASE-Runtime .......... 174.
Individual Software
Power Macros for Excel ... 33.
Internex
Wing 1.1A ................... 244.
Jam Software
Smart Alarms single user ... 62.
Kiwi Software
KiwiEnvelope! .............. 33.
Mainstay
MacFlow 3.5 ................ 157.
MacSchedule 2.0 .......... 125.
Think In Time ............... 53.
Mediagenic
Focal Point II .............. 116.
Preferred Publishers
Database 1.5 ............... 66.
Direct Mail ................. 50.
Micro Planning Software
Micro Planner Plus 6.1e ... 324.
Microsoft
Excel 2.2 .................. 239.
File 2.0 ..................... 123.
office ....................... 516.
PowerPoint 2.01 ........... 244.
Works w/Quicken .......... 185.
Objective Systems, Inc.
Fast Pitch ................... 117.
Odesa
Double Helix III ........... 368.
Power Up!
Address Book ............... 51.
Fast Forms .................. 104.
Calendar Creator .......... 34.
Prescience
Expressgiant 2.03 ........ 78.
Theorist I.1 ................. 250.
Software Discoveries
Record Holder Plus ......... 82.

AGIUS File Force
Create files for customers and parts in seconds - then build a relational file manager simply by linking the files together. Create in invoice that automatically looks up customers, enter each line items into won file, and compiles extended price, tax and total for you. Print form, summary reports, mailing label, mail-merge letters, and graphs using information from any files. File Force combines the simplicity of file managers with the power of relational databases.

File Force .................. $244

DynaWare DynaPerspective
DynaPerspective is a three-dimensional modeling and design presentation program that can stand alone or enhance other CAD systems with its innovations and unique features. Highly flexible geometric primitives allow rapid creation of designs, assigning such attributes as color, transparency, line type, borders, display, etc., which can be edited at any stage of the construction. Automatic or step-by-step walk through presentations are easily created.

DynaPerspective .................. $635

Utilities
Abbott Systems
Canopener 1.1 ............... 62.
Aladdin Systems
Shortcut .................... 39.
Stuffit Deluxe .............. 62.
ALSoft
DiskExpress II ............... 53.
Master Juggler ............. 63.
ASD Software
Fileguard ................... 137.
Baseline Publishing
Talking Moose ............... 24.
Mac Cheese ................ 58.
AP Express ................. 59.
Beagle Bros Inc.
FLASH ........................... 126.
Bekeley System Design
After Dark ................ 22.
Stepping Out II 2.0 ....... 48.
Cassidy & Greene
QuickDEX ................... 33.

CE Software
MockUsage Plus ............ 36.
QuickKeys 2 ................. 93.
DeskTop 4.0 w/GOfer ...... 62.
Central Point Software
Copy II Mac 7.2 ............ 25.
Mac Tools Deluxe .......... 75.
Custom Applications Inc.
Freedom of Press 3.0 ...... 252.
Light ......................... 55.
Dariana Technology
MO Software ................ 85.
Debi-Click Software
Clickchange ................ 39.
Hyperpress Publishing
Step Ahead .................. 56.
ICOM Simulations
On Cue 1.3 ................. 34.
Insight Development
MacPrint 1.2 ............... 88.
Kiwi Software
Kiwi Finder Extended ...... 64.
Magic Software
AutoSave II .................. 33.
BackMatic ................... 47.
New Software
Now Utilities 2.0 .......... 78.

Mainstay
Marco Polo ................... 151.
MarkUp ....................... 157.
Microcom
911 Utilities ............... 83.
Virex ......................... 55.
Microseed
JIT Picker 2.0 ............... 35.
Redux ......................... 48.
Screen Gems 1.0 ............ 38.
Rival 1.0 ..................... 48.
On Technology
On Location ................ 74.
Preferred Publishers
Personality .................. 47.
Sailer
Disk Double 3.0 ............ 44.
SoftView
Mac In Use 3.0 ............. 69.
Software Innovations
Hand Off II ................. 46.
SuperMac Technology
Disk Fit 1.5 ................. 57.
Symantec
S.A.M. 2.0 ................. 63.
S.U.M. II .................... 91.
Norton Utilities ............. 83.

Microsoft Excel 2.2
Microsoft Excel 2.2 delivers a host of improvements and new features. It recalculates up to 40% faster and the new Search and Replace function makes global changes. Charting is improved - just double-click anywhere on a chart to see the dialog box for all the chart formatting commands.

Excel 2.2 .................... $238
Survivor Software
MacMoney
MacMoney – an award winning personal and small business basic accounting program. More than just check writing, it tracks multiple bank accounts, credit cards, and cash accounts, as well as assets and liabilities. Prints reports, graphs and checks and it’s easy to use. Complete double entry accounting without having to understand accounting terms. Includes simple loan and retirement planning.
MacMoney $58

M.Y.O.B. 2.0
Incredible accounting software for small and medium size businesses. “Best business deal on the Mac” – MacUser – Eddy Award, Fully integrated GL, checkbook, A/R, A/P, Inventory, and Card File. M.Y.O.B. combines a powerful fully integrated accounting program with management tools you can’t find anywhere else. With just a few clicks, you can control every facet of your business... print your financial reports, reconcile your checkbook, even call your customers. all with M.Y.O.B.
M.Y.O.B. 2.0 $144

Meca Software, Inc.
Managing Your Money
Andrew Tobias’ Managing Your Money is personal financial software that in includes powerful financial “chapters” that provide everything from basic budget and checkbook management to life insurance and tax planning, even complex portfolio management. These integrated chapters allow transactions made in one part of the program to automatically recorded in the other chapters.
Managing Your Money $230

Reality Technologies
Wealth Builder
Calculate your net worth by using templates to easily create a personal profile, balance sheet and budget summary. If you use Quicken, Andrew Tobias’ Managing Your Money or MacMoney you can import data directly. Also establish realistic financial goals, objectives and then take action!
Wealth Builder $144

Accounting & Finance

Absolute Solutions
Computerized Classic Accounting $225
Check Mark Software
Cash Ledger $114
Multledger 1.3A $234
Payroll $174
Computer Associates
Simple Accounting $224
In-House Software
In-House Accountant $135
Inman Software
Business Sense $160

Intuit
Quickbooks $35

Peachtree
At Gencel $282
Insight Expert Series... $394
MEGA Ventures Inc.
Managing Your Money $121
Nolo Press
For the Record $10 $32
Will Maker 4.0 $36

Softview
Business, DOD & GSA Expense Reports $49
Personal Tax Analyst $49

Survivor Software
Will Maker 4.0 $36

Chipsoft
TurboTax
TurboTax Personal/1040 takes the hard work out of preparing your federal taxes. When finished, it prints out your completed tax form and all supplemental schedules. TurboTax warns you of questionable deductions and tells you what the IRS regards as normal.
TurboTax $54

SoftSync
HyperTax Tutor
HyperTax Tutor navigates quickly to answer tax questions while teaching the fundamentals of tax-saving strategies. Kamensky’s clean and concise style shows you how to plan your finances through the year with over 100 examples. HyperTax Tutor will help you learn how to make the tax laws work to your advantage.
HyperTax Tutor $61

Call Us First for Low Prices
1-800-246-0800

Survivor Software
MacMoney
MacMoney – an award winning personal and small business basic accounting program. More than just check writing, it tracks multiple bank accounts, credit cards, and cash accounts, as well as assets and liabilities. Prints reports, graphs and checks and it’s easy to use. Complete double entry accounting without having to understand accounting terms. Includes simple loan and retirement planning.
MacMoney $58

TimeSlips III 2.0
TimeSlips III for the Mac is the ultimate time tracking and billing software system. With it you’ll find that your workday is being spent more productively, and that your billings are much more complete. The features and functions are so simple, they practically run themselves.
Time Slips III $167

Reality Technologies
Wealth Builder
Calculate your net worth by using templates to easily create a personal profile, balance sheet and budget summary. If you use Quicken, Andrew Tobias’ Managing Your Money or MacMoney you can import data directly. Also establish realistic financial goals, objectives and then take action!
Wealth Builder $144

SoftSync
HyperTax Tutor
HyperTax Tutor navigates quickly to answer tax questions while teaching the fundamentals of tax-saving strategies. Kamensky’s clean and concise style shows you how to plan your finances through the year with over 100 examples. HyperTax Tutor will help you learn how to make the tax laws work to your advantage.
HyperTax Tutor $61

Survivor Software
Will Maker 4.0 $36

Chipsoft
TurboTax
TurboTax Personal/1040 takes the hard work out of preparing your federal taxes. When finished, it prints out your completed tax form and all supplemental schedules. TurboTax warns you of questionable deductions and tells you what the IRS regards as normal.
TurboTax $54

SoftSync
HyperTax Tutor
HyperTax Tutor navigates quickly to answer tax questions while teaching the fundamentals of tax-saving strategies. Kamensky’s clean and concise style shows you how to plan your finances through the year with over 100 examples. HyperTax Tutor will help you learn how to make the tax laws work to your advantage.
HyperTax Tutor $61

Call Us First for Low Prices
1-800-246-0800
Cutting Edge
15" Full Page Monitor
You can now eliminate all the scrolling, scrunching and squinting of small screen Macintosh computing. Word processing, financial analysis and graphics have never looked as good as they do on this full screen viewing area. The monitor can display an entire 8.5 x 11 inches of screen with a flicker-free refresh rate of 75 Hertz and a high resolution of 640 by 800 pixels.
$15 Monitor ............... $579

Sigma L-View Multi-Mode Monitor
An ergonomic monitor design offers user-oriented details like a tilting/tilt base and paper white phosphor. L-View's Low-Emission design meets guidelines for electromagnetic field emissions established by the Swedish National Board for Measurement and Testing. L-View includes video card, 19" monitor, control panel software, and user's guide.
Multi-Mode Monitor ............... $1475

E-Machine T-16 Color Display
Spread out with almost twice the display area of the standard 15" color monitor. View your work exactly as it will be printed at actual size – 72 dpi. Save almost one half the cost of a 19" color monitor. Get the sharpest, clearest color display at any price. The T16 has excellent colors, linearity, and sharpness, and it sells for a lot less than its larger cousins. The T16 is an excellent choice for CAD/CAM or color graphics. Retail $2395.
T16 Color Monitor ............... $2275

MegaGraphics Rival B & W Monitor
The critically acclaimed MegaGraphics Rival is now available for all Macintosh models. It gives you the most crisp, most clear, and brightest image in the business, with true "What You See Is What You Get." Because the 19" screen displays two facing pages, it is ideal for use in desktop publishing, layout and word processing. The wide expanse of workspace is an enormous benefit when using CAD and spread sheet applications.
Rival 2001 ............... $1199

New Full Page Plus and Classic Monitors
Classic ............... $649
Plus ............... $679

Call us for a FREE copy of our new CATALOG
Cobra Drives set the standard. Cobra high performance internal and external hard drives are the finest drives available for Mac. With capacities of 45MB, 70MB, 100MB, and 210MB, Cobra is the answer to all your storage needs. External Cobra drives come in a new sleek low profile cabinet that fits neatly beneath your Mac Plus, Mac SE or Mac SE/30. Internal Cobra drives come with three mounting brackets. One for installation in the MacII, Mac IIX, Mac SE or Mac SE/30, one for mounting in the Mac IIx and one for a Mac SE which allows you to keep both floppy ports active.

210Mb Cobra External ................ $1475

Applied Engineering 1.44 mb Drive

Applied Engineering’s SuperDrive-compatible 1.44 Mb high density drive looks, feels and runs like Apple’s but it costs hundreds less. Access files almost instantly and copy disks without continually swapping disks. This drive incorporates the same high quality Sony Mechanism Apple uses and features auto-eject MS-DOS compatibility and exclusive two-way read/write indicator light. Also available in SOOk.

1.44 MB Drive .......................... $225
800k Drive ............................. $195

EMAC Impact Drive

The EMAC Impact hard drives pack all the power and convenience of a full-sized drive into a compact chassis. Now all your files and applications can be stores in one easily accessed location. Impact drives come in three capacities and are built with precision-engineered drive mechanisms for whisper-quiet, high-speed operation.

105 mb Drive ........................... $805

Floppy Drives

Dayna Communications

DaynaDrive 360K 5.25" .......................... $475
DaynaDrive Dual Drives: 360K/1.2MB 5.25" .......................... $725
360K/1.44MB 5.25/3.5" .......................... $748
505 Mounter ............................. $53

PLI

PLI CD ROM Drive .......................... $875
600MB Optical Drive .......................... $3794
600MB Optical Cartridge .......................... $235

CD ROM

NEC

CD-35 Pert. CD ROM .......................... $458
CD-ROM-35 Battery Pack .......................... $58

PLI

CD ROM Drive .......................... $875
600MB Optical Drive .......................... $3794
600MB Optical Cartridge .......................... $235

Call Us First for Low Prices – 1-800-248-0800
Quark XPress 3.0

Quark XPress 3.0 boasts a more intuitive user interface, many new features, plus redesigned and reorganized documentation. New measurement and page guides provide the user with interactive on-screen access. A library stores frequently used items, and a pasteboard provides a work area next to each page. Color trapping ensures precise color printing.

XPress 3.0 $508

Gold Disk

Animation Works

Animation Works is a 2 to 3 bit, easy-to-use path-based animation program. Objects are created in the CEL editor and then animated over static or scrolling backgrounds in the Movie Editor. Also available is the ability to add sounds, color cycling, multiple palettes, and looping controls.

Animation Works $64

After Hours Software

TouchBASE

TouchBASE is a database to keep track of personal and business contacts. It’s always handy because it’s a desktop accessory. TouchBASE can print envelopes, labels, address books, Fax cover sheets, and reports. It’s even a multi-user product so you can share your database on a network or use it all by yourself.

TouchBASE $85

Ventura Publisher

It’s simple to get professional results with Ventura Publisher. It’s great for brochures, newsletters, ads or routine office correspondence. Ventura automates many steps other programs force you to repeat over and over. Unlike conventional page make-up packages, Ventura Publisher manages the underlying structure of your documents. As you make changes in one part, other parts change automatically. Ventura Publisher also allows full cross-platform compatibility.

Publisher $584

Petraglyph Editorial Advisor

Editorial Advisor is a comprehensive in-line reference for writers and editors that covers grammar, punctuation, style, usage, composition, citation and other editorial conventions. Use with any program or as a standalone. No typing or memorization of keywords is required. Editorial Advisor provides the answers but leaves you in charge to make informed editorial decisions.

Editorial Advisor $92
Nisus lets you name rulers to create ruler-based styles in addition to the text-based user styles. Named rulers are indicated by a line in the ruler icon in the left margin and are listed in the pop-down menu on the master ruler.

Graphically Better

Nisus' graphics have been greatly improved. There are now two drawing layers, one above and one below the text layer. Graphics can be fixed on the page or anchored to a paragraph. New graphics commands include Rotate by 90°, Scale, and Duplication. Clicking on rotated text with the text tool rotates it back to its normal position for editing.

A major graphic enhancement is Page Graphics. This feature allows an entire document (child) to be placed as a graphic into your currently active document (parent). As a graphic, the placed page can be rotated, scaled, or cropped. The child file can be opened for editing by a double-click. (If the child file is not currently available, the placed page becomes a static graphic.) Page Graphics can be used to create documents with different numbers of columns or columns of different widths. It can also create documents with formatted, rotated text as well as pseudo-hypertext documents. Page Graphics is incredibly simple to use and provides Nisus with exceptional desktop-publishing capability.

Earlier versions of Nisus had text-based user styles; the new version adds named rulers. Ruler settings (margins, tabs, line and paragraph spacing, and the like) can be named and added to the pop-down menu on the master ruler. Rulers can be searched for, renamed, and copied from one document to another — you simply copy and paste the ruler icon in the left margin. User styles can have named rulers associated with them, which gives users the option of purely text-based, purely ruler-based, or a combination of styles. New text style types include Do Not Spell Check, Index, and Table of Contents styles. The latter two can be used to create multiple indexes and tables of contents.

Searching and Macros

What gives Nisus its unparalleled power are the searching and macro capabilities. Easy-GREP and GREP (Global Regular Expression Parser) have been renamed Power Search and Power Search +, but they still provide the same ability to search and replace text based on patterns, location, font, style, etc. In addition, there are now two parts to the macro language: the Menu Command Dialect, which is the
dependent version, and the Programming Dialect, which is the independent version.

The Menu Command and Programming Dialects have a similar relationship to each other as do Power Search and Power Search +. With Menu Command and Power Search, even fairly casual users can do complex searching and create useful macros. With Programming Dialects and Power Search +, users who are more experienced or intrepid can wield unprecedented amounts of power.

Nisus can read Microsoft Word 3.0x and 4.0 files and write Word 3.0x files. An Aldus filter is included so Nisus files can be placed in PageMaker 4.0. Files are kept in memory, which results in fast scrolling and searching, but file size is limited by the amount of RAM.

The program's documentation has been completely rewritten and is generally clear and complete, although sometimes a lot of information is packed into a brief discussion.

The Bottom Line

Although Nisus has an intuitive design and is easy to learn and use, it is aimed at high-end users such as technical writers, lawyers, and others who need extensive control over long documents. Novices may be intimidated by the number of menu options, and there is no Short Menus option as there is in Word. For those who process a lot of words, however, Nisus is an excellent choice.

— Linda Kroff

Get Info

Nisus

Published by: Paragon Concepts, 990 Highland Drive, #312, Solana Beach, CA 92075; (800) 922-2993 or (619) 481-1477.

Version: 3.01.

List Price: $395.
Typist

Typist promises one-stop OCR convenience, but it doesn’t deliver consistently.

On paper, Typist, Caere’s latest attempt to extend its hegemony over OCR, sounds great: A hand-held scanner combined with recognition software that lets you scan text directly into the application you’re using at the time. Unfortunately for Caere — and users — Typist’s performance doesn’t live up to its promise.

A Sleek Idea

The idea is imaginative yet simple: Using the sleek black hand-held scanner (it looks as much like a Stealth bomber as it does a scanner), you can have the OCR software simulate someone typing at the keyboard. Typist doesn’t care what kind of application you’re using; if the program accepts keyboard input, it can theoretically accept Typist input. You don’t have to switch to a separate application to scan and then bring the text into the target program. Typist heralds the advent of one-stop OCR.

Typist’s software installs as a startup application (an INIT) and a DA. Installation is easy, except that you must install the DA under the Finder — not MultiFinder — and it must be installed into the System file — you can’t use Suitcase.

Hardware installation can be a bit more difficult. Typist has a SCSI interface that perversely insists on being last in the chain, which means you might have to experiment with different configurations if you have several SCSI peripherals. To make it even harder, Caere doesn’t provide a cable, which means you will probably have to go back to your computer store to buy a cable and perhaps a terminator. The only convenient part of the hardware installation is that it’s easy to change the SCSI number on the interface box. The scanner is comfortable to hold and use, but it lacks an on/off switch, so it also doubles as a high-tech desk lamp. Glowing LEDs are forever annoying.

The system requirements for Typist are the same as for the stand-alone version of OmniPage: 4 megabytes of RAM, a hard disk drive, and a Mac SE or later. The big difference between Typist and OmniPage is in price. At $695 (or around $795 if you have to buy a cable and a terminator), Typist compares more than a little favorably with OmniPage installed with OmniDraft ($895) plus a scanner (around $1,000).

Typist Versus OmniPage

Scanning and recognizing a single-page document of approximately 1,500 words took Typist nearly three times as long as OmniPage 2.1, and it made almost three times as many mistakes. Part of the time difference was a result of having to make many Typist scans in order to get an optimal image. Typist, however, did do an excellent job of merging two scans into a single page. OmniPage, with a flatbed scanner, worked the first time.
NOW THE ONLY TIME YOUR PRESENTATION HAS TO LEAVE YOUR OFFICE IS WHEN YOU'RE READY TO GIVE IT.

Now, you can produce your own professional-quality 35mm color slides, overhead transparencies, and prints, right at your desk. Without the service bureau, without the long turnaround time, without the high cost, and without losing control. All it takes is your color Macintosh® and ColorFast™, the new color digital film recorder from GCC Technologies.

As Easy As "Print!"

If you know how to use a laser printer, you know how to use ColorFast. Simply select the ColorFast driver in the Chooser and you're ready to go. Design your presentation using your favorite software—Microsoft® PowerPoint®, Aldus Persuasion™, you name it. Then, select "print" and you'll be amazed.

What you see on the screen will be transformed into beautiful, 32-bit color slides, transparencies, or prints, at a fraction of what service bureaus charge. The average production cost with ColorFast is just 75¢ per 35mm slide. So, you reduce your costs up to 94%, without sacrificing any quality.

Incredible Quality, Fast.

ColorFast uses the newest technology from Polaroid®, the undisputed leader in digital film recording. This results in incredible colors, generated by our 33-bit (11 bits per color) pixel recording. To that we've added our imaging software (including outline fonts), so you get true "Professional-quality," at a full 4K resolution. There is also a faster "High-quality," 2K resolution and a quick 1K "Draft" mode. You can even use our "Enhanced Color Resolution" software option to get 4K results at 2K speed.

And because the typical business slide takes only two minutes, what you see on your Macintosh can be on the presentation screen almost instantly. Which means you can make those last minute decisions and changes without sacrificing the quality of your presentation. Or a major chunk of your budget.

Even with all it does, perhaps the most amazing thing about ColorFast is its price: just $5,999. This includes everything: film recorder, 35mm and Pack Film adapters, instant 35mm slide processor, overhead enlarger, software, sample films, slide mounts, and cables.

Two-Year Warranty.

Finally, ColorFast is the only digital film recorder with a two-year warranty.

To get ColorFast, all you have to do is call 800-422-7777. We'll give you the name of your nearest GCC Technologies dealer, or you can order direct. When you buy direct from GCC, you get a 30-day money-back guarantee and $9 overnight delivery. Call today and start creating more professional presentations, in your own office, tomorrow.

800-422-7777.
Caere's Typist is a hand-held scanner OCR package that promises seamless OCR integration into any application. Unfortunately, the system promises much more than it delivers.

At this price, it seems almost too good to be true. What's the catch? For one thing, don't expect Typist to double as a graphics scanner. It can scan graphics, but its features in that area are extremely limited and rudimentary.

When it comes to OCR, Typist boasts some nice features, but don't expect it to do everything OmniPage does. It does accept dot-matrix scanning, which is a $100 extra for OmniPage, but it lacks one of OmniPage's best features: automatic page decomposition. Page decomposition lets OmniPage scan a page and then automatically filter out non-text areas. This means you can easily scan a page, even if it contains graphics, lines, or handwriting. Typist is not nearly this smart. If a page contains graphics, you have to scan around them manually or mask them before you begin. And if you should scan an embedded graphic, Typist's software will sit and churn for a long time trying to interpret the image as an ASCII character. Unfortunately, once it's decided that it isn't looking at text, it can't always recover and continue its recognition run.

**Fussbudget**

Another major problem with Typist is that it is, shall we say, fussy about what it runs with. The terse manual is uncharacteristically detailed in its troubleshooting sections and warns that you might experience both INIT and DA conflicts with Typist. The 1.0 release notes also mention conflicts with WingZ and Microsoft Works.

But the worst incompatibility isn't mentioned in the documentation. I discovered a SCSI conflict that prevented repeated scans into any application that wasn't located on my internal hard disk.

So if you have any applications on an external hard disk, you can't scan into any of them. The many messages I left on Caere's technical-support line finally resulted in a return call that confirmed this problem — at least for my system. The technical-support person admitted that the product was too new for Caere to know for sure if this would be true for all systems.

Typist's fussiness doesn't stop at setup. Scanning with Typist is far more problematic than with a flat-bed scanner. Glossy paper often presents problems, as does light paper if any ink shows through from the back. Typist is also hyper-sensitive to irregular motions while you're scanning. When the device moves off the edge of a book, for example, the result is often a badly garbled line.

**The Bottom Line**

The ultimate proof of OCR is accuracy and speed. When scanning a one-page document, Typist 1.0 took nearly three times as long as OmniPage 2.1 to get an acceptable recognition run and it made nearly three times as many errors (see chart). Although Typist is admittedly faster than typing, its finicky scanning and only average recognition performance make it hard to recommend.

Typist is a clever and intriguing idea that unfortunately falls far short of its potential. Although it's still several times faster than even the fastest human typist (about 500 words per minute is hardly slow), Typist's many inconveniences make it difficult to recommend. Once its many software incompatibilities have been ironed out and if accuracy and graphics scanning are improved, Typist could well deliver on its promise of one-stop scanning. Until then, only those with simple hardware setups, graphics-free scanning needs, tight budgets, and a lot of patience should bother with it.

— Dave Vaildus

**Typist**

Manufactured by: Caere, 100 Cooper Court, Los Gatos, CA 95030; (800) 535-7226.

Version: 1.0

List Price: $695.
THE MOST INGENIOUS PORTABLE PRINTER SINCE THE PENCIL.

Most computer printers are sentenced by their own sheer bulk to lifelong confinement on a desktop.

But now GCC Technologies™ has created a printer for the Macintosh® with considerably more freedom than that. It's called WriteMove™ - the "biggest" printer ever to come in an incredibly small package.

WriteMove weighs a scant three lbs. It measures just 2" x 6 1/2" x 10 3/4". (Any smaller and you couldn't get the paper in.)

But it's the only ink jet printer of any size that gives you unlimited freedom to reduce and enlarge both type and documents. Because it's the only one with outline fonts - imaging software that provides functionality usually associated with laser printers.

One Year Warranty.

Finally, WriteMove carries a full one year warranty covering both parts and labor. We also offer repair service at any one of hundreds of GCC dealers.

As a result, you can use WriteMove to compose documents with word processing software like Microsoft® Word, or Excel. And then silently print them out on cut sheet or fanfold paper at 192-dpi resolution. So, you get much higher print quality than the ImageWriter® II, for not much more money.

All of this has obvious consequences for the highly mobile. Since WriteMove works off rechargeable batteries, you will have direct access to letter-quality output on airplanes, in hotel rooms or even at that popular weekend workstation called home.

Which could bring a whole new meaning to the phrase "freedom of the press."

To exercise that freedom, use the number below to order WriteMove today. Or ask for the authorized GCC Technologies dealer nearest you. Here's how.

High Quality Output, To Go.

To order just call 800-422-7777 from 9 to 8 on weekdays, or 10 to 4 on Saturdays. Our expertly trained staff will be glad to answer questions, provide technical support, and offer advice on choosing and getting the most out of any of our products. Ask for our free catalog. When your order is received by 8:00 PM (EST), it will be shipped the same day via overnight delivery for only $9.

If after trying WriteMove for up to 30 days you aren't completely satisfied, just return the printer and we'll cheerfully refund your money, no questions asked.

One Year Warranty.

Please circle 95 on reader service card.

WriteMove Portable Printer $549

For the name of the authorized GCC Technologies dealer nearest you, or To Order, Call 800-422-7777.

We are glad to accept MasterCard, Visa, American Express, or your company's corporate purchase order.

WriteMove Portable Printer $549

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.
Navigator and CIM

CompuServe's two interfaces are a decidedly mixed bag of tricks.

The CompuServe Information Service (CIS) is one of the country's oldest and biggest on-line data services. Until recently it also sported one of the oldest, most inelegant interfaces known to man. Mac owners originally had to use general-purpose telecommunications programs, such as Smartcom, Red Ryder, or Microphone, in terminal-emulation mode, to access the service. A few years ago, Michael O'Connor decided to change all that, and Navigator was born.

Navigator added a much-needed Macintosh front end onto CIS. After its second revision, CompuServe bought the program and now sells it, but O'Connor is still (thankfully) involved with Navigator's further improvements.

In 1989 CompuServe developed its HMI (Host-to-Micro Interface) and a program to take advantage of it, CIM (CompuServe Information Manager). The idea was to develop a fully graphic interface that would work with DOS/W indows as well as Macintosh machines. As a result, there are now two CompuServe access programs; the programs are anything but equal, however, and neither is perfect.

Navigator

Navigator was designed primarily as an off-line program in order to maximize users' on-line time. At CompuServe's usual rate of $12.50 per hour (at 2,400 bps), the savings can be considerable and, with the advent of CIM, Navigator's cost-effectiveness is more relevant than ever.

Navigator uses tiles as its metaphor for CIS menus and topics. Double-clicking on a root-level tile reveals subtitles underneath. Working your way through the tile levels, you eventually reach a tile where some kind of action can be defined, and an on-line session is created. Although Navigator cannot access every area on CIS, it does reach more than three-quarters of them and also has the provision for converting to "manual mode" to access the rest. The program is fully user-configurable and, when you're on-line, shows what is happening and why.

This feedback is important, because once you're on-line, you have no control over what happens — Navigator runs the show. Navigator can perform complex on-line tasks much faster than a human, thus yielding sizable cost savings for frequent CIS users. For example, I can have Navigator check my mailbox for replies: over to the Mac Systems Forum; check for new messages, new uploads, and anything else of interest; go to the Mac Applications forum and do the same; and then log off — all in the space of just two minutes! When Navigator signs on, it tells the host mainframe that it is in charge and all the human interfaces are dropped, which makes operation speed
Animas is proud to present its True-Color Hand Scanner bundled with ColorScan MacCheese as the definitive answer to your desktop publishing and multimedia problems. ColorScan MacCheese itself is a versatile paint program. You can paint in different shapes, modify objects, edit colors, even edit the palette. And inside ColorScan MacCheese we have also written specialized features such as: the "Blur" effect, which softens the focus of an image; and the "Sharpen" effect, which improves the clarity of an image. We truly are capturing the universe in 24-bit color!

ColorScan MacCheese also provides you with great flexibility and compatibility. After an image is scanned you have the capability to edit the image directly in the software or transfer the image to other programs; such as, PageMaker 4.0, Quark XPress, Adobe Photoshop, and many others. ColorScan MacCheese will also enhance your use of multimedia presentation applications like: Supercard, Hypercard 2.0, and a multitude of others. The combination of the Animas Color Hand Scanner with ColorScan MacCheese provides the total solution to all your desktop publishing and multimedia presentations. To place your order or for more information call (800) 800-5885.

All names & products mentioned are registered trademarks of their respective owners.

Please circle 418 on reader service card.
Listen to the Music!

Maximize the impact of your desktop presentations with high quality music and sound. Make music a part of your integrated media with the technology offered by MIDI and Passport's music tools for multimedia.

Find out how using MIDI for creating and delivering music and sound for multimedia can put the power of an electronic orchestra right on your desktop.

CALL TODAY FOR A FREE CATALOG!
(415) 726-0280

CIM (CompuServe Information Manager) is CompuServe's attempt at a graphical interface. Unfortunately, it doesn't work very well. Clicking on an icon or listing, instead of bringing up submenus or descriptions, logs on to the service. Note the overuse of icons.

increase by almost 400 percent.

After sign-off, I can browse the session at my leisure, marking files I want to download and replying to mail I’ve read. Navigator will get what I’ve asked for at the next sign-on, which can also be automated. The program is extremely flexible and can be configured with any combination of fonts and font sizes, colors, and even sounds. GIF files can be opened, stored, viewed, or sent either online or offline. Even “face files” — the little face icons that show forum message readers what the sender looks like — can be stored and edited. The faces can even talk to you while you’re reading the message, which is somewhat unnerving until you get used to it. Navigator also offers an automated address book, the ability to archive anything on the screen to a designated file, and much more.

The only drawback of this program is its learning curve. Because Navigator offers so much power and flexibility, it’s also more complex and harder to learn than CIM. Also, the metaphors, such as “tiles,” “child and sibling,” and “session logs,” can be somewhat daunting. However, if you take the time to read the manual, the rewards will be ample and any fears you might have about using CIS should vanish.

CIM

Any fears you might have about incurring an ever-increasing CompuServe bill would be realized if you start using the CompuServe Information Manager, because, unlike Navigator, CIM is an on-line program. CIM offers virtually no automated routines — everything is designed to occur while you’re on-line.

However, the balky CIS interface has now been replaced with a more graphics-oriented, Mac-like interface. I say Mac-like because CIM’s interface is what DOS people think a Mac interface is. Unfortunately, CIM sits on top of the Mac interface as badly as Windows 3.0 sits on top of DOS.

To start with, there are too many cute icons with dubious meanings. Dimmed icons appear almost identical to those that are not, and I often find myself clicking on icons that don’t do anything, because they are inactive. Everything has a window — whether it needs it or not.

Then there is the speed issue. Whereas Navigator is blazingly fast at text and file retrieval, CIM is exasperatingly slow, no doubt because of the heavy interface it has to work through. On certain occasions, a scrolling window of listed files comes to a standstill and scrolling downward yields only one listing at a time. Clicking on a forum name from the master forum list results in a spinning beach-ball icon that remains on-screen for close to a minute before the forum window appears! In a regular telecommunications program, selecting a forum simply by typing Go MACSYS takes just a few seconds. If you multiply these slowdowns by the hundreds of times they appear during a typical month’s usage, you’ll soon figure out how much more money it will cost to use the “easy and economical” CIM.

The worst part of CIM is its Terminal Emulation window. (If there’s anything that CompuServe should understand, it’s terminal emulation, yet CIM’s terminal emulation is beyond belief.)

Many areas of CompuServe are actually gateways to other services or are run by third-party vendors and can’t be accessed with a graphics-oriented interface. In these cases, CIM throws itself into Terminal Emulation mode. Essentially,
The Best Data/Fax Modems.
Guaranteed!

At Prometheus®, our only business is communication products. Consequently, you'll find we have the best data/fax modems you can buy.

And we're not the only ones who think we make the best products... MacUser nominated the ProModem® 9600 Plus as the Best New Communications Product for 1990 and also chose it as the ultimate modem for their ULTIMAC in the Sept. 1990 issue. Only Prometheus offers you so much.

Only Prometheus offers a complete communication solution! We include cable, fax fonts, fax and data communications software with every data/fax modem we sell.

Only Prometheus includes MACknowLEDGE™ data communications software (a $125 value!) free with every modem so you can easily access popular on-line services, bulletin boards and other computer systems.

Only Prometheus offers a complete line of data/fax modems to suit your communications needs. Prometheus has you covered from our send-only data/fax modems to our new ProModem Ultima, a high-end, 14,400 bps data/fax modem. — All with the same, great fax software!

Guaranteed! We're so sure you'll like our ProModems, we'll let you buy it and try it. If you don't agree it's the best product, return it to your dealer within 30 days for a full refund.

<table>
<thead>
<tr>
<th>ProModem®</th>
<th>DoveFax*</th>
<th>Abitron®</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/96MSR</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Price</td>
<td>$499</td>
<td>$399</td>
</tr>
<tr>
<td>Maximum Modem Speed</td>
<td>9600</td>
<td>9600</td>
</tr>
<tr>
<td>Fax Speed</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Send/Receive Fax</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Communications Software</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Includes Fax Fonts</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>V.42bis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNP-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled Transmissions</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Manual Resend</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Manual Deletion</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multiple Address Books</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Distribution Lists</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Convert Fax</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Print Fax</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>View Fax</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>View Fax</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Flip Page in View Mode</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Online Help</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Fax Status Desk Accessory</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Automatically Launch DA</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Automatic Resend</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Automatic Deletion</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Custom Cover Pages</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Nested Distribution Lists</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Save To Fax File</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Append To Fax &amp; Send</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Set Dialing Prefix</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Set Dialing Suffix</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Resend Unsent Pages Only</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Unlimited Cover Pages</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Import/Export Address Book</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Direct Grey Scale/Color Output</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Color Icons</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* These options also available as upgrades.

ProModem® Ultima .......................... $995
ProModem 9600MSR Plus .................... $895
ProModem 24/96MSR ......................... $499
ProModem 24/96Minifax ..................... $299
TravelModem™ .......................... $299

Network versions available

7225 SW Bonita Rd. • Tigard, OR 97223
(503) 624-0671 • (800) 477-3473 • Fax (503) 624-0643

Please circle 174 on reader service card.

* This offer is good at participating dealers or for products purchased directly from Prometheus Products, Inc.
this is just an ASCII-text window — complete with the legendary prompts, commands, and protocols — and is exactly what you see if you sign on to CompuServe with a regular telecommunications program. Unfortunately, this phenomenon occurs in more than half the places you can visit on CompuServe — which means that more often than not, you could be using a better program than C1M.

C1M’s Terminal Emulation window can capture only a paltry 500 lines of text, whereas most other programs have an unlimited capture buffer. Five hundred lines can scroll by in just a minute or two, and then the topmost text disappears without warning. To add insult to injury, you must tell the program to turn capture on or off, and turning capture on doesn’t suffice to capture the text. You must highlight the text and then save it with another menu command (so the process requires three steps). During a capture session, all incoming data is suspended and you must exit from Capture mode to continue your transmission. And the worst part? All the configuring needed for the Terminal Emulation window to work properly must be done — you guessed it — on-line.

C1M uses Navigator’s address book, so it’s not necessary to create a new one, but even here there’s a problem. C1M wants addresses entered by first name and then last name; it sorts automatically by last name with no need for commas. But Navigator wants entries as first name, comma, last name, so one or the other is going to be jumbled.

C1M lets you “cc”: people whereas Navigator doesn’t, but you have to click on the names one at a time — no multiple selections. If CompuServe changes its forum structures — something it’s been doing at regular intervals — you have to update Navigator by running an updater application. C1M is updated automatically — while you’re on-line, of course.

Both programs come with the same kind of gray, arid, and lifeless manuals that CompuServe is famous for. CIS recommends a Hayes-compatible modem for C1M, and it’s kidding. CIS lacks any CCLs that let you automatically initialize a shared modem.

C1M is also constantly upgrading both C1M and Navigator. But although Navigator’s upgrades are available for downloading, C1M upgrades must be ordered on-disk, because even in compressed form, the package is so huge that it takes an hour or more to download.

C1M bears some eerie resemblances to the interface of CompuServe’s heaviest competitor in the Mac market, America Online. Like AOL, C1M has a customizable Favorite Places menu item, in and out baskets, and extensive context-sensitive help, and it lets you see who’s on-line with you and communicate with that person. The most important difference, however, is that, unlike that of AOL and Prodigy, CompuServe’s software is not free — although C1M should be given away. Better yet, CompuServe should pay you to use it.

The Bottom Line
CompuServe would have you believe that Navigator and C1M are complementary and that you need them both. I believe that if you are new to CompuServe, C1M will help you explore it and get the hang of how it works. If you find your monthly bill climbing past $30 or $40, it would be wise to invest in Navigator and take the time to learn how to use it. Considering C1M costs about $40 (including a $25 usage credit), you’d be better off not buying C1M at all and instead learning how to use CompuServe the old-fashioned way.

— Ken Gruberman

[MacUser and MacWeek maintain their on-line service. Zmac, on CompuServe. CIS offers a Zmac edition of C1M for $3. — Ed.]

Get Info

CompuServe Navigator

Published by: CompuServe, 5000 Arlington Centre Blvd., Columbus, OH 43220; (800) 848-8199.

Version: 3.04.

List Price: $99.95.

CompuServe Information Manager

Published by: CompuServe, 5000 Arlington Centre Blvd., Columbus, OH 43220; (800) 848-8199.

Version: 1.0.3.

List Price: $99.95 (Mac Membership Kit includes C1M and $25 usage credit); current members can buy C1M for $24.95 with a $15 usage credit.
"I designed Managing Your Money® to do everything I need. The idea is to make Managing Your Money your financial control center — to have everything you're ever likely to need in one place, working as one."

Andrew Tobias, Financial Expert

NEW Andrew Tobias’ Managing Your Money® Version 4.0!
The ONLY financial software that does it all.

- Budgeting
- Checkwriting
- Electronic bill payment with CheckFree® system
- Tax planning
- Teams up with MACIN Tax® for tax preparation
- Insurance
- Portfolio management
- Net worth calculator
- Retirement planning
- College planning
- Loan amortization
- Full business features
- Exports to Microsoft® Excel, Works, and most spreadsheets

Why not explore Managing Your Money for yourself?
For a FREE interactive demo disk* call 1-800-237-8400 ext. 217.
You won't be disappointed.

*Offer good while supplies last.

© 1990 MECA Software, Inc.
Software Bridge for the Mac and Word for Word/Mac

Two new products challenge DataViz’s supremacy in PC-to-Mac file conversion.

Now that DOS-based machines and the Mac are coexisting peacefully, the need for file translators such as AFE (Apple File Exchange) and DataViz’s MacLinkPlus is higher than ever.

Two attractive newcomers — Software Bridge for the Macintosh and Word for Word/Mac — are the latest entrants into the field, and both beat MacLinkPlus, the market leader, in some respects.

Software Bridge for the Macintosh

Software Bridge is not an application but, rather, a $129 collection of file translators for use with AFE, the file-transfer utility that Apple ships on the system disks that accompany every Mac. Accordingly, it has no exotic hardware or RAM requirements — the translators work with AFE on any Mac from a lowly Plus on up.

Software Bridge comes with a special installer (which can interact badly with virus protection such as SAM Intercept’s floppy-scan feature) that lets you install only those translator pairs that will be of use to you — a nice touch, because the complete collection takes up nearly 2 megabytes of disk space. You then place the file that the installer creates into the same folder as AFE. Launch the Apple utility, and you’re up and running, with the additional translators displayed on the Mac to MS-DOS and MS-DOS to Mac menus.

AFE comes with few translators — essentially it enables binary transfers of files from DOS-formatted disks to the Mac desktop. Software Bridge brings added translating powers with translators for 3 Mac word-processing formats (Microsoft Word, WordPerfect, and MacWrite II) and more than 20 popular DOS formats, including WordPerfect, WordStar, and DisplayWrite. The collection — limited by AFE — permits Mac-to-Mac, Mac-to-DOS, and DOS-to-DOS conversions but balks at DOS-to-DOS transformations.

The main advantage of the Software Bridge approach, in comparison with Word for Word/Mac’s stand-alone strategy, is that it works within AFE, combining binary-file transfer and file-format translation in a one-step process — you don’t have to run a second program after you’ve made the transfer with AFE. But if you transfer your files through something such as a TOPS network, the advantage is largely diminished. Software Bridge/AFE also automatically determines what translator(s) to use in any given case.

On the minus side, it cannot perform DOS-to-DOS conversions and its manual could stand a rewrite. Most disturbing is that it cannot translate Word 4.0 documents saved with Fast Save enabled. It sacrificed half a mouse from its rating for this flaw. Finally, it lacks support for graphics and spreadsheets — something Word for Word/Mac has.

Word for Word/Mac

Word for Word/Mac takes a different approach to DOS-Mac file conversion — it operates as a stand-alone application.
In a test of accuracy with MacLinkPlus, the dominant player in file translation, Software Bridge for the Macintosh and Word for Word/Mac finished almost neck and neck, both beating MacLinkPlus handily. The test document was a complex WordPerfect 5.0 file with 30 formatting items, such as multicolumn layout, point-size changes, footers and headers, and style changes, that was translated into Word 4.0 format. Word for Word/Mac missed superscripting footnote numbers, font changes, and small caps. Software Bridge overlooked centered headings, font changes, right justification, and small caps. MacLinkPlus’ performance was dramatically inferior compared with that of its challengers.

You simply drag it and as many of the more than 20 format translators as you require to your hard disk or working floppy.

The $149 program’s origins in the PC world are evident from time to time in the manual. For example, it informs you that you’ll need at least a Mac Plus with 256K of RAM. And for a program that has been, in the manual’s own words, “designed especially for Macintosh users,” it’s interesting to note that there are absolutely no Mac screen dumps illustrating the documentation. The “screens” have been drawn in a decidedly non-Mac graphics environment and dropped into the text.

Aside from these quibbles, Word for Word/Mac is a straightforward program for translating files in and out of various formats. Unlike AFE, it does not support the transfer of files from non-Mac disks — you have to use AFE (or some other arrangement) to bring the files over to the Mac before Word for Word/Mac can spin its Mac gold from DOS straw.

The interface is clean and easy to understand. You select files from the source disk or folder, specify a destination folder, and add as many files as you like to the batch being readied for translation.

You have to select the source and destination formats yourself from pop-up menus. Unlike Software Bridge, Word for Word/Mac supports DOS-to-DOS translations as well as various graphics and spreadsheet formats. One of the program’s greatest strengths is its ability to tag formats in the translated document that it recognized but was unable to convert from the original file. It surrounds the troublesome area of text with three-letter codes. For example, <BRV> “body text” <ERV> might mark text that was in reverse video in the original document.

Word for Word/Mac also offers graphics support in some of the Mac-to-Mac conversion modules, but I found that graphics were sometimes resized or positioned differently in the translated files.

The Bottom Line

Until the appearance of these two packages, DataViz’s MacLink products held sway. DataViz still offers a far greater variety of program formats, but it also offers less — at least when it comes to word-processing documents. Both Software Bridge and Word for Word/Mac translations of word-processed files retain far more of the original formatting than do the MacLinkPlus translations.
MacLinkPlus translations. Headers, footers, footnotes, and even multiple columns are translated nearly flawlessly in both programs.

Their speed and accuracy are essentially the same, with one exception. I experienced problems with Software Bridge’s WordPerfect 5.1-to-Microsoft Word 4.0 translators on two different files. The files crashed Word when I tried to open them. Saving the files in WordPerfect 5.0 format and retranslating them solved the problem.

Both products provide better translations than do the MacLinkPlus translators—at least if you’re dealing primarily with the most popular word processors—and they do so at lower prices. I suspect many people will find it more convenient to go the Software Bridge route, because using AFE combines transfer and translation in one step. But Word for Word/Mac sports some bells and whistles such as the embedding of exception codes, the automatic renaming of translated files, and support for graphics that may make the added step involved worth it. Both products are valuable for anyone who must frequently bridge that gap between Mac and DOS machines, a situation that’s becoming more and more common. Both do the job, but they fall short of the ultimate: invisible translation, regardless of application. When that happens, the barriers between DOS and the Mac will disappear entirely.

—Gregory Wasson

### Get Info

**Software Bridge for the Macintosh**

Published by: Systems Compatibility, 401 N. Wabash, Suite 600, Chicago, IL 60611; (312) 329-0700.

Version: 1.0.

List Price: $129.

**Word for Word/Mac**

Published by: Software Toolworks, 60 Leveroni Court, Novato, CA 94949; (415) 883-3000.

Version: 1.2.

List Price: $149.
THE PRECISION
NEW PAGEMAKER
OFFERS WILL TURN IT
RIGHT SIDE UP.

Now that you've got your wild idea, you
want to execute it to perfection. The "Snap to"
rulers and guides automatically give you pinpoint
accuracy and assure you that the output you're
expecting is the output you get.

You can kern type between pairs or over
a range of text to 0.01 of an em space. Apply point-
size-dependent tracking. And size type from 4 to
650 points in increments of 0.1 of a point. Plus, with
our new built-in Story Editor, you can enter and
edit text and check spelling as quickly as with a
word processor.

For a brochure or the name of the dealer
nearest you, call 800-333-2538 Dept. 3L.A. Because if
you want both creative freedom and precision, with
new PageMaker the world is yours.

The Creative Edge
in Business.

This ad was created with Aldus PageMaker. Aldus, the Aldus logo and PageMaker are registered trademarks
and Story Editor is a trademark of Aldus Corporation. ©1990 Aldus Corporation. All rights reserved.
MacroMind's latest release takes animation beyond playback and into interactivity.

Since coming on the market, MacroMind Director has defined both the high and low ends of the Mac animation spectrum. Aside from Director's predecessor (VideoWorks II) and Electronic Arts' Studio/I, the animation world has been woefully lacking in applications offering an entry into multimedia. This deficit seems about to change, however, with the release of several new products, including Electric Image's ElectricImage Animation System and Linker Systems' Animation Stand, and the distribution of the French package FilmMaker by Paracomp. Still, Director has carved out a significant niche for itself, and it's unequalled when it comes to interactivity.

Beyond Animation
MacroMind's latest version of Director, version 2.0, lets budding animators expand into the world of complex interactive programs. By writing routines in Director's scripting language, Lingo, animators can not only develop interactive animations that until now have been possible only through scripting in HyperTalk or SuperTalk or by programming in some other language but they can also control peripheral devices such as CD-ROM drives, VCRs, and videodisc players.

MacroMind Director uses two separate environments, Studio and Overview, to create its animations. Generally speaking, Overview is the shorthand version of Studio and offers an icon-based setting for sequencing various graphics and sounds. Overview offers the same range of transitions as are available in Studio, and you can import sounds from a sound application or opt for several stock sounds that ship with Director.

You create complex animations in the Studio environment by generating images in the Paint window or by importing paint, PICT, PICS, or Scrapbook files and then sequencing them. Director's paint program compares favorably with many stand-alone paint applications and also boasts some unique features that specifically support the design and execution of animation. You can use ink effects, such as transparent, ghost, and reverse, in various combinations to produce exotic effects, including sparkles, glows, and reveals.

As you complete each graphic frame, the program automatically introduces it into the cast, an archive in which it stores all visual elements for immediate access. You then drag cast members onto the
stage and position them. What occurs on the stage, in terms of animated action, sounds, and transitions, is determined in the score.

You create Studio documents by layering graphics, text blocks, and sounds and adding timing and transitional cues to the editable score script. You can then set your document in motion by employing one of Director’s several animation methods. You can move static images in real time across the stage to create motion, and the program automatically records the position of each step and enters it into the score. You can turn sequences of frames into a “film loop” and then dynamically place them on the stage while the loop runs. You can also slant, rotate, or otherwise distort individual frames over any number of frames, with Director providing the frames in between. In addition, you can add color cycling and palette animations to the frames.

The score looks like a spreadsheet and allows for layering of up to 24 different animated elements. Where an element shows up on the stage relative to other cast members depends on where it resides within the hierarchy of the score. The more complex an animation, the slower it runs, so MacroMind offers Accelerator ($195), which lets you run even a complex animation at the speed you desire.

You can cut, copy, and paste score elements to other layers and positions on a timeline with complete ease.

Speaking Lingo

You create interactive scripts in the score environment by using the HyperTalk-like language Lingo. The script determines which section of the score will run and what will happen when you trigger an event.

One channel of the Score menu, the Lingo Scripting channel, is for embedding commands. You can either position

[Image]

MacroMind Director 2.0’s interface remains similar to that of earlier versions of this animation package. Visual elements that comprise an animated sequence are contained in the cast and are sequenced in the Score windows.

got it made in the shades.
MacroMind Director 2.0's biggest addition is a HyperTalk-like scripting language called Lingo. Lingo commands are contained in an extended pull-down menu, negating the need to memorize the command set.

Script commands in the score so that they are initiated at a given time or attach them to an object so that the desired action occurs when you click on that object.

Director 2.0 includes several simple tutorials that demonstrate Lingo's basic operating principles. All commands, function keys, and operators are available from an extended pull-down menu. However, you do not need to memorize the rigid structure that your scripts must have to if they're going to do what you want them to. Because Lingo is very much like HyperTalk scripting, the quicker you'll be able to start creating your own Director scenarios. The manual has full descriptions of all Lingo commands and functions, and if all else fails, the package includes a sampler, The Apartment, that contains models of different kinds of Lingo-driven animations.

One of Director's most satisfying aspects is that it lets you increase a script's complexity without abandoning the original. For example, you can present, discuss, and modify simple animated sequences; refine them into a finished linear presentation; and then develop them further into a complex interactive presentation simply by building on the original score.

**The Bottom Line**

There are a few things wrong with Director. Its Paint layer creates bit-mapped images only (except for text blocks) — an additional Draw layer would be a big improvement. Also, because the Score and Cast windows can obscure the stage work space, the screen can get cluttered in a hurry — you would probably be better off if you were to use a multiple-monitor setup.

With those few complaints and until some upset proves otherwise, MacroMind Director is still the only serious game in town.

— Bill Camenga

---

**Get Info**

MacroMind Director

Published by: MacroMind, 410 Townsend Street, Suite 408, San Francisco, CA 94107; (415) 442-0200.

Version: 2.0.

List Price: $695.

---

With the HP DeskWriter, you can...
Claris CAD

A major upgrade makes Claris CAD a smart choice.

The difference between drawing and drafting is largely a matter of precision. An engineering or architectural drawing has to convey the designer's intention so exactly that a construction foreman or a machinist years later, halfway around the world, can build it. The challenge for programmers of computer-aided-drafting software is to analyze drafting skills that require manual dexterity and years of practice to develop and capture them in a few keystrokes and mouse clicks. Claris CAD 2.0 is a highly refined expression of one way to do this on a Mac.

The original version of Claris CAD introduced methods and modifiers, which controlled the operation of drawing tools. The circle tool, for example, can be used in the default corner-to-corner method or the alternative center-to-circumference method. Modifiers are geometric constraints that can snap your circle's center to the endpoint of a line or make the circle tangent to one side of a rectangle.

Claris CAD 1.0 was a solid, efficient 2-D drawing program, instantly familiar to MacDraw users, but it suffered in comparison with cheaper, more feature-rich packages such as Canvas (Deneba) and Dreams (IDD). The release of Ashlar Vellum, with its radical, intelligent Drafting Assistant, made Claris CAD seem positively lame in comparison.

Guidelines

Competition breeds innovation, and along with dozens of other new features, Claris CAD 2.0 now includes its own version of Vellum's Drafting Assistant, called Graphic Guide, an aid to the precise location and construction of geometric features. The Graphic Guide has three components: the Guideliner, the Dynamic Modifier, and the Preview Cursor.

The Guideliner is a pair of full-screen cross hairs — dotted horizontal and vertical construction lines — that automatically snap to object endpoints, midpoints, corners, and centers as you move the cursor around a drawing. This is helpful when you need to align new geometry with previously drawn features that do not lie on regular grid points. A Preferences dialog box adjusts the sensitivity of the Guideliner, and you can toggle it on and off with the G key.

The Dynamic Modifier evaluates objects near the cursor in relation to your currently selected tool, automatically choosing an appropriate modifier. If you're using the line tool, for example, and the cursor is near the center of a circle, the program automatically selects the Center modifier. In effect, the program "sees" what you are pointing at and anticipates what you want. This is a great improvement over manual selection of modifiers..

The HP DeskWriter printer puts laser-quality printing right at your fingertips.

With a small size and a $995 price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and has both serial and AppleTalk interfaces. It even includes scalable and outline fonts. Combine that with the DeskWriter's whisper-quiet operation, and keeping it to yourself will be that much easier. So call 1-800-752-0900, Ext.1004 for your authorized HP dealer.

There is a better way.
Claris CAD 2.0 is a major upgrade. The most important new feature is the Graphic Guide (the diamond cross hairs), which gives the program some intelligence about the objects on screen. Here, for example, the Graphic Guide has found the midpoint of a line.

which tends to interrupt the natural flow of drafting.

The Preview Cursor is a tiny icon attached to the cursor to indicate which modifier is currently active. Point near the circumference of a circle, and the cursor displays the tangency symbol; point near the center of the circle, and you see the object-center symbol; and so on.

Claris CAD 2.0 requires 2 megabytes of RAM, which shuts out low-end users but is less demanding than Vellum's hunger for 4 megabytes. The program is usable on a 9-inch screen, but the proliferation of windows and floating palettes is such that a bigger monitor is far more productive for serious drafting. On systems without a floating-point coprocessor (MC68881 or 68882 chip), Claris CAD's performance is decidedly sluggish. The application itself takes up more than 1,700K on-disk, and the comprehensive HyperCard-based help system needs almost another 800K. The program supports plotters made by Hewlett-Packard and Houston Instruments.

Pigments for your imagination.

HP color printers let you draw splashy color from your Macintosh.

Entertain your thoughts with HP's PaintJet and PaintWriter XL color printers. Both are fully Mac-compatible and let you use all Quickdraw-based software applications. That means high-quality Macintosh II output in 16.7 million colors.

Print on paper or transparencies with 13 scalable outline fonts. And for shared use, the PaintWriter XL offers AppleTalk, faster speed, and auto sheet feed. For sample output and the name of your authorized HP dealer, call 1-800-762-0900, Ext. 1167.

There is a better way.
The package includes a 47-minute video tape, and once you’ve gotten past the introductory marketing fluff, it contains some of the clearest and best-designed instructional video I have seen for any computer software.

A stand-alone program, Graphics Translator, which converts Claris CAD drawings to or from industry-standard formats such as IGES and DXF, is available as a separate $299 package. Only a minority of users require this capability, but some competing products include it free.

**The Bottom Line**

Claris CAD is a good choice for entry-level or midrange 2-D mechanical drafting. It’s particularly useful for engineers who have little formal training in conventional drafting, but it should be well received by many professional drafters who are willing to make the transition from the pencil and drafting board to the mouse and plotter. Architects will appreciate the new wall tools for drawing double parallel lines, and mechanical engineers will be impressed by the elegant implementation of the ANSI-standard Geometric Dimensioning and Tolerancing system.

Currently, Claris CAD’s closest competition comes from Ashlar Vellum and the just-released MiniCad+ 3.0. Compared with Vellum, Claris CAD is slightly cheaper and requires significantly less memory. It also seems to be faster at updating the screen and performing many drawing functions. In addition, Claris CAD has the ability to export object attributes to a database file, but this is not nearly as comprehensive as MiniCad+’s ability to generate a bill of materials (something very important to architects and contractors).

Claris CAD is a snap to master if you have any proficiency with MacDraw II; the program can even open and convert MacDraw II documents. Unlike other Claris products, it lacks an integrated spelling checker. The very limited support for color (only the original eight QuickDraw colors plus dithered patterns) makes it less suitable for interior designers, landscape architects, and those who need precise control over nuances of tone and shade. Claris CAD is still an elegant package, and with the addition of the Graphic Guide, Claris has clearly taken a major step forward. It has strengthened the program’s drafting capabilities without cluttering the interface and making the package a burden to use. If your primary interest in a mechanical drawing package is drawing itself, Claris CAD is an excellent choice.

— Mike Markowitz

---

**Get Info**

**Claris CAD**

Published by: Claris, 5201 Patrick Henry Drive, Santa Clara, CA 95052; (408) 727-8227.

Version: 2.0.

List Price: $899.
MONEY BACK GUARANTEE

The majority of products we carry are offered under a 30 or 60 day Money Back Guarantee. The companies participating in this program are highlighted in red. If you are not satisfied with your purchase of any of these products, call us for an authorization and return it with all of the original packaging within the guarantee period for a refund check or credit on your credit card. We reserve the right to limit quantities on such returns.

LATEST VERSIONS

We only carry the very latest versions of products so, rest assured, that's what you'll receive when you order. The version numbers shown here are based on the best available information at press time. If a newer version has come out in the meantime, or if there's a Lasting Impression of the Adobe Type Library is the fastest, easiest, most economical way to buy Adobe Type. Order Type on Call and have any one of 950 high-quality Adobe typefaces from over 160 typeface families at your fingertips. Here's how it works. For only $99, you get the disc, Adobe Type Manager (which includes 13 of the most popular Adobe typefaces) as well as two typeface families from a selection of eight. Call us to get a user code to unlock the two typeface families you've chosen, plus any others you may want to purchase. Anything you want to add to your collection of Adobe type, one phone call is all it takes! Other special typeface packages and collections are available, and will be offered via special mailings to Type on Call customers. Why wait in line for the best type in town when you can have home delivery in minutes? Call today and get in on the most innovative and convenient way to buy typefaces!...$59.

ADOBE SYSTEMS

8794 Adobe Type on Call—The CD-ROM version of the Adobe Type Library is the fastest, easiest, most economical way to buy Adobe Type. Order Type on Call and have any one of 950 high-quality Adobe typefaces from over 160 typeface families at your fingertips. Here's how it works. For only $99, you get the disc, Adobe Type Manager (which includes 13 of the most popular Adobe typefaces) as well as two typeface families from a selection of eight. Call us to get a user code to unlock the two typeface families you've chosen, plus any others you may want to purchase. Anything you want to add to your collection of Adobe type, one phone call is all it takes! Other special typeface packages and collections are available, and will be offered via special mailings to Type on Call customers. Why wait in line for the best type in town when you can have home delivery in minutes? Call today and get in on the most innovative and convenient way to buy typefaces!...$59.

DAILY BUSINESS

★ Aatrix Software ... 30 day MBG
7619 Planisoft (1 user) ........... 195.
★ Avery 60 day MBG
7446 MacLabel Pro 1.0 ............ 49.
★ Chang Labs 30 day MBG
1611 C.A.T. 3.0 .................. 289.
★ Checkfree Corp. 30 day MBG
6928 Checkfree Mac 1.5 .......... 19.
★ CheckMark Software 60 day MBG
5861 CashLedger 1.3 ............ 115.
5862 Payroll 4.5 ................. 175.
5863 MultiLedger 1.3 ............ 235.
★ Chipssoft ... 30 day MBG
8059 TurboTax Personal/1040 1.0
50.
State Packages (CA, IL, MA, MD, MI, NC, NJ, NY, OH, OR and VA) ea. 28.
★ Dow Jones 30 day MBG
1786 Market Manager PLUS 2.03
189.
★ Fox Software 30 day MBG
5572 FoxBASE II/Mac 2.01 ........ 292.
★ Franklin Software 30 day MBG
7070 Language Master 2.0 ....... 45.
4955 Wingz 1.1A .................. 245.
★ Intuit 30 day MBG
2425 Quicken 1.5 ................. 38.
★ Leonard Development 30 day MBG
8039 SmartWorks 1.0 .......... 185.
8227 SmartWorks Upgrade (MS Works) ... 99.
★ LifeTree Software 30 day MBG
6984 Correct Grammar 2.0 ......... 55.
★ Mainstay 30 day MBG
7718 MacFlow 3.5 ................. 169.
8613 MacSchedule Plus 1.0 ....... 199.
★ MECA 60 day MBG
2796 Managing Your Money 3.0 ..... 135.
★ Microlytics 60 day MBG
7508 Inside information 1.0 .... 68.
7820 Random House Encyclopedia . 68.
★ Microsoft 30 day MBG
2884 Works 2.0B .................. 179.
4969 Word 4.0B .................. 245.
2865 Excel 2.2B .................. 245.
5454 The Microsoft Office ....... 525.
★ Microsoft Press
6500 Excel Money Mgr. Book (incl. disk) . 25.
★ Niles & Associates 30 day MBG
5048 EndLink 1.1.3 ............... 58.
4602 EndNote 1.3 ............... 85.
8010 EndNote Plus 1.0 ........... 145.
★ Nolo Press 60 day MBG
4228 For the Record 2.0 ....... 31.
2981 WillieMaker 4.0 (not valid in LA) ... 37.
★ Odesta 30 day MBG
5621 Double Helix Ill 3.0R6 ....... 399.
8468 DataDesk 3.0 ................ 459.
★ Paragon Concepts
5683 Ditus 3.01 ................. 245.
★ Portfolio Systems 30 day MBG
7448 DynaPage 1.0 or DynaNex 2.0 ea. 72.
★ PowerUp 30 day MBG
7696 Calendar Creator 1.0 ....... 35.
7694 Address Book Plus 2.0 .... 57.
8028 Address Book/Letter Writer Bundle ... 87.
7698 Fast Forms 2.0 ............. 105.
real graphic fling

T/Maker ... 30 day MBG
8206 SmartBundle—A total solution for first-time Macintosh buyers: A collection of four easy-to-use applications in one bundle at an incredible price—the best value in Macintosh software today! $215.

★Preferred Publishers ... 30 day MBG
4781 Vantage 1.5 ... 50.
★Que Corp./RightSoft ... 30 day MBG
7482 RightWriter for the Mac ... 54.
★Reality Technologies ... 30 day MBG
6929 WealthBuilder 1.0 ... 159.
★Reference Software ... 30 day MBG
6268 Grammatik Mac 2.0 ... 50.
★Softstream Int'l ... 30 day MBG
3320 BuiltMallr 3.25 ... 75.
★Sensible Software ... 30 day MBG
3375 Sensible Grammar 1.6 ... 51.
★Shana ... 30 day MBG
8810 Informed Manager ... 99.
7692 Informed Designer v. 1.0.4 ... 159.
★Softstream Int'l ... 30 day MBG
8175 HyperTax Tutor 1.0 ... 62.
8279 HyperTax Tutor/MacInTax Bundle ... 99.

★Softsync/BLOC ... 30 day MBG
7129 Accountant, Inc. 2.0 ... $345.
★Softview
3470 MacInTax Personal Edition 1990 ... 59.
8612 I-X Personal Tax Analyst ... 48.
8509 I-X Payroll Tax Assistant ... 86.
7499 I-X Forms Designer 1.0 ... 169.
★Software Discoveries ... 30 day MBG
8118 RecordHolder Plus 3.1 ... 85.
★Survivor Software ... 30 day MBG
3289 MacMoney 3.5 ... 59.
★Symmetry ... 30 day MBG
3450 Acta Advantage 1.02 ... 83.
6097 KeyPlan 1.0 ... 243.
★Synergy ... 30 day MBG
6617 KaleaGraph 2.1 ... 145.
★Systat, Inc. ... 30 day MBG
7410 Systat 5 ... 599.
★Teleware ... 30 day MBG
6156 Adobe Plus Pack/ATM ... 159.
★T/Maker ... 30 day MBG
3639 WriteNow 2.2/Grammatik Mac ... 117.
8206 SmartBundle ... 215.
★WordPerfect ... 60 day MBG
3800 WordPerfect Mac 1.0.5 ... 229.

GRAPHICS & DESIGN
★Abbott Systems ... 30 day MBG
8052 Cheshire 1.0 ... 63.
★Adobe Systems
Adobe Type Library (Vol. 1-184) call
6957 Adobe Type Reunion 1.0 ... 38.
5750 Adobe Type Manager 1.0 ... 55.
8794 Adobe Type on Call ... 59.
6053 Adobe Plus Pack ... 109.
6156 Adobe Plus Pack/ATM ... 159.
6098 TypeAlign for ATM 1.04 ... 59.
6985 Adobe ATM/TypeAlign Pack ... 89.
Adobe Type Sat 1, 2 or 3 ... 109.
8042 Adobe Type Sets 1-2-3 Bundle ... 199.
8171 Adobe Illustrator 3.0 (with ATM) ... 349.
6644 Adobe Photoshop 1.07 ... 499.
5001 StreamLine 1.2 ... 225.
SmartArt 1, 2, or 3 ... ea. 59.
★Aldus/Silicon Beach ... 30 day MBG
3506 SuperPaint 2.0A ... 135.
6674 Personal Press 1.0 ... 205.
3980 Digital Darkroom 2.0 ... 259.
3507 SuperD 2.1 ... 339.
7088 PageMaker 3.0 ... 499.
8054 Design Team (PM, FH & PrePrint) ... 889.
★Altys
5426 Art Importer 2.0 ... 85.
6490 Metamorphosis 1.5 ... 85.
1195 Fontographer 3.2 ... 249.
★Baseline Publishing ... 30 day MBG
7784 Color MacCheese 1.05 ... 57.
★Broderbund Software
1427 The Print Shop 1.3.1 ... 35.
6281 TypeStyler 1.5.2 ... 115.

Creative Software ... 30 day MBG
6645 Easy Color Paint 2.0—Macworld (9/90) finds it "satisfyingly strong." MacUser (9/90) gives it 4 Mice, says "it's a pleasure." This enhanced version is perfect for the Mac Classic and Mac II ... $45.

Claris
1123 MacPaint II 2.0 ... 92.
1117 MacDraw II 1.1 ... 269.
8007 Claris CAD 2.0 ... 649.
★Creative Software ... 30 day MBG
6645 Easy Color Paint 2.0 ... 45.
★Custom Applications ... 30 day MBG
8037 Freedom of Press Light 3.0 (17 fonts) ... 56.
6517 Freedom of Press 3.0 ... 255.
★DeltaPoint ... 60 day MBG
6095 DeltaGraph 1.5 ... 109.
★Deneba Software ... 30 day MBG
6385 UltraPaint 1.0 ... 125.
1769 Canvas 2.1.1 ... 189.
★Design Science ... 30 day MBG
8205 Parafont 1.0 ... 59.
★DreamMaker ... 30 day MBG
Cliquers: Business or Sports ... ea. 69.

Deneba Software ... 30 day MBG
1769 Canvas 2.1.1—Includes full-featured Bezier 8t spline curves, 24-bit color, four different EPS export formats, 8t an advanced four-color process (CMYK) separations utility. Buy Canvas 2.1 & receive a free upgrade to Canvas 3.0 ... $189.

Shana ... 30 day MBG
7692 Informed Manager v. 1.0.4—If forms are part of your life, Informd should be too. Design with Informed Designer, then fill out and use the unique capabilities of Informed Manager $159.
8810 Informed Manager ... 99.

Deneba Software ... 30 day MBG
1769 Canvas 2.1.1—Includes full-featured Bezier 8t spline curves, 24-bit color, four different EPS export formats, 8t an advanced four-color process (CMYK) separations utility. Buy Canvas 2.1 & receive a free upgrade to Canvas 3.0 ... $189.
On a screen so big

<table>
<thead>
<tr>
<th>Software</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacroMind Accelerator 2.0</td>
<td>$125.</td>
</tr>
<tr>
<td>MacroMind Director 2.0</td>
<td>$179.</td>
</tr>
<tr>
<td>Mainstay 30 day MBG</td>
<td>$49.</td>
</tr>
<tr>
<td>Microsoft 30 day MBG</td>
<td>$145.</td>
</tr>
<tr>
<td>MacRecorder Voice Digitizer</td>
<td>$89.</td>
</tr>
<tr>
<td>MacRecorder Sound System 2.02</td>
<td>$159.</td>
</tr>
<tr>
<td>Generic CADD 1.0</td>
<td>$375.</td>
</tr>
<tr>
<td>Innovative Data Design</td>
<td>$375.</td>
</tr>
<tr>
<td>MacDratt 2.1</td>
<td>$279.</td>
</tr>
<tr>
<td>LetraStudio 1.5</td>
<td>$275.</td>
</tr>
<tr>
<td>Magic Typist-A</td>
<td>$50.</td>
</tr>
<tr>
<td>Magic Typist, Art Fonts, Sound Clips or Art Clips 1</td>
<td>$139.</td>
</tr>
<tr>
<td>Font Share</td>
<td>$129.</td>
</tr>
<tr>
<td>Certificate Maker 2.0</td>
<td>$22.</td>
</tr>
<tr>
<td>Screenshot 1.0</td>
<td>$40.</td>
</tr>
<tr>
<td>In touch 1.0</td>
<td>$139.</td>
</tr>
<tr>
<td>OutView 1.0</td>
<td>$89.</td>
</tr>
<tr>
<td>T/Maker 30 day MBG</td>
<td>$145.</td>
</tr>
<tr>
<td>Affinity Microsystems 60 day MBG</td>
<td>$89.</td>
</tr>
<tr>
<td>Tempo II Plus</td>
<td>$105.</td>
</tr>
<tr>
<td>Aladdin Systems 30 day MBG</td>
<td>$199.</td>
</tr>
<tr>
<td>StuffIt Deluxe 2.0</td>
<td>$63.</td>
</tr>
<tr>
<td>Al dua / Silicon Beach 30 day MBG</td>
<td>$35.</td>
</tr>
<tr>
<td>SuperCard 1.5</td>
<td>$199.</td>
</tr>
<tr>
<td>SPAMM 1.1</td>
<td>$48.</td>
</tr>
<tr>
<td>QuickDEX 1.4D</td>
<td>$34.</td>
</tr>
<tr>
<td>A.M.E. 1.1.2</td>
<td>$169.</td>
</tr>
<tr>
<td>CE Software 60 day MBG</td>
<td>$94.</td>
</tr>
<tr>
<td>MagicTypist 4.5</td>
<td>$57.</td>
</tr>
<tr>
<td>A.M.E. 1.1.2</td>
<td>$169.</td>
</tr>
<tr>
<td>CE Software 60 day MBG</td>
<td>$94.</td>
</tr>
<tr>
<td>MagicTypist 4.5</td>
<td>$57.</td>
</tr>
<tr>
<td>A.M.E. 1.1.2</td>
<td>$169.</td>
</tr>
<tr>
<td>CE Software 60 day MBG</td>
<td>$94.</td>
</tr>
<tr>
<td>MagicTypist 4.5</td>
<td>$57.</td>
</tr>
</tbody>
</table>
it's fit for a king?

Dantz Development ... 30 day MBG
7945 Retrospect Remote 1.2—Provides automatic,
unattended workgroup backup using any
AppleTalk network. Backs up 10 Macs; add
more with Remote 10-Packs. Supports all
tape, optical, and cartridge drives ........ $265.

*Kent Marsh Ltd. ... 30 day MBG
5457 QuickLock 2.0 ....................................... $57.
2591 The NightWatch 1:03 ............................... $85.
6134 MacSafe II ........................................... $107.

*Kiwi Software ... 60 day MBG
6267 KiwiEnvelope 3.1 ................................. $33.

*Loop Software ... 30 day MBG
5442 PictureBook 3.2 ............................... $39.

*Magic Software ... 30 day MBG
7267 AutoSave II 2.0 ................................ $28.
7270 Backmatic 2.0 ........................................ $50.

*Microcom ... 30 day MBG
8562 Complete Undelete .............................. $48.
4903 Viruscure 2.92 ........................................ $56.
8561 911 Utilities ............................................. $89.

*Microlytics ... 60 day MBG
2732 GOfiler 2.0 ............................................ $45.

*Microseeds Pub ... 60 day MBG
7068 INITPicker 2.0 ........................................ $35.
Redux 1.63 or Rival 1.1.4 .............................. ea. $49.

Dantz Development ... 30 day MBG
7974 ClickChange 1.0 ................................. $41.
7402 Norton Utilities for the Mac 1.0 ........... $84.

*Fifth Generation ... 60 day MBG
5738 THINK Pascal 3.0 ................................. $165.
5321 THINK C 4.0 ........................................ $165.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23—Lets you use any HP printer
with your Mac. For a limited time, buy
MacPrint 1.23 and get MacEnvelope 4.2, an
envelope printing utility, absolutely free! ...... $94.

Software Discoveries ... 30 day MBG
8118 Record-Holder Plus 3.1—A powerful data
Macworld (6/90): “sophisticated & powerful
enough for small & medium-sized businesses...
easy enough for anyone to learn to use.” .......... $85.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
8058 TScript 1.3 ............................................. $92.

*JAM Software ... 30 day MBG
6089 Smart Alarms 3.0 with Appointment Diary 3.1—
A Macintosh reminder and calendar system
featuring: auto backup, multiple reminders,
variable snooze, weekly and monthly views,
and zoom. Multiple users available .......................... $63.

*JAM Software ... 30 day MBG
6085 SuperGlue II 2.01 .............................. $75.
6105 HyperX 4.0 ............................................ $99.

*JAM Software ... 30 day MBG
6171 MacPrint 1.23 ...................................... $94.
8601 TScript Basic .......................................... $54.
How 'bout a program

**TGS Systems ... 60 day MBG**
6667 ProGraph 2.0 Compiler Version ... $245.
**The HandOff Corp. ... 30 day MBG**
(formerly Software Innovations)
6647 HandOff II ... 52.
**Williams & Macias ... 30 day MBG**
3781 LaserWriter Label Pack (QTY 216) ... 18.
6926 myDiskLabeler III 3.0 ... 42.
4976 StickyBusiness 1.3 ... 51.
Wolfram Research
8276 Mathematica 1.2 ... 449.
8273 Mathematica Enhanced 1.2 ... 699.
**Zedcor ... 80 day MBG**
3995 ZBasic 5.0 ... 99.

**CD-ROM**
Activision
5127 Manhole (CD-ROM) ... 34.
8125 Cosmic Osma (CD-ROM) ... 46.
Broderbund Software
5237 Whole Earth Catalog (CD-ROM) ... 89.
CD Technology
8057 CD-ROM Porta Drive ... 649.
7686 Porta Drive & MS Office CD-ROM ... 999.

**Softview**
3470 MacInTax Personal Edition 1990—Four time “World Class” and “Eddy” Award Winner! Jerry Pournelle, InfoWorld columnist says “... MacInTax makes it almost fun to do your taxes” Chock full of new features for 1990! $59.

**Somak Software ... 30 day MBG**
LaserArt CD-ROM Vol. 1 or 2 ... ea. 62.
Toshiba
6749 XM 3201 CD-ROM Drive ... 779.

**EDUCATION & RECREATION**
Acolade
8691 Stratego ... 29.
8221 Balance of the Planet ... 29.
8217 Ishido: The Way of the Stones ... 32.
8220 Jack Nicklaus Greatest 18 ... 34.
Activision
4486 Manhole ... 28.
**Aldus/Silicon Beach ... 30 day MBG**
Dark Castle or Beyond Dark Castle ... ea. 32.
**Ars Nova ... 30 day MBG**
1215 Practica Musica 2.2 ... 69.
**Baseline Publishing ... 30 day MBG**
7785 Talking Moose ... 89.
**Beacon Technology ... 30 day MBG**
Gems of The Word (KJ or NI) ... ea. 25.
HyperBible 2.0 (Kj or Nl) ... ea. 125.
**Bogas Productions ... 60 day MBG**
6135 Super Studio Session w/Music Library ... 99.

**TIMESLIPS ... 30 day MBG**
2986 Timeslip III 2.0—Fast, easy, accurate time and billing for service professionals. DA stopwatch timer can be accessed while in other applications. Many new customization features. Network Edition available ... $195.

Chinin
8813 CDA-431 CD-ROM Drive ... 639.
**Farallon Computing ... 30 day MBG**
6767 Media Tracks Multimedia CD Pack ... 319.
**Highlight Date ... 30 day MBG**
7771 Webster’s Dictionary (CD-ROM) ... 159.
**HyperGlot ... 30 day MBG**
7473 Learn to Speak French (CD-ROM) ... 159.
7629 Learn to Speak Spanish (CD-ROM) ... 159.
**MacroMind ... 30 day MBG**
7712 MacroMind CD-ROM ... 125.
**Microsoft ... 30 day MBG**
6382 The Microsoft Office (CD-ROM) ... 599.
**Multi-Ad Services**
505 ProArt Trilogy (CD-ROM series) ea. 259.
NEC
Image Gallery, Type Gallery PS, Photo Gallery or ClipArt 3D ... ea. 246.
6744 CDR35 CD-ROM Portable Drive ... 399.
6743 Mac Driver Kit ... 64.
**Papss Design ... 30 day MBG**
8255 Desktop Music Creativity (CD-ROM) ... 189.
8607 Music Production Kit (CD-ROM) ... 1259.

**EARTHQUEST ... 30 day MBG**
8050 EARTHQUEST 1.0—A newly acclaimed program that takes users on a journey of discovery through timeless material about the Earth, its people and the environment ... $48.

**Bright Star Technology**
1402 Alphabet Blocks 1.0 ... 300.
**Broderbund Software**
4314 Type! 1.0 ... 18.
6516 The Playroom 1.1 (CP) ... 29.
**Carson Sandiego Series (CP) ... 29.
8266 SimEarth 1.0 ... 40.
4966 SimCity 1.2 (CP) ... 29.
5871 SimCity Supreme 1.2C ... 47.
**Coda Music Systems**
5726 Voyager 1.2 ... 68.
**Casady & Greene ... 60 day MBG**
2268 Crystal Quest 2 ... 29.
**Cenviron Software**
8525 Casino Master (B&W version) ... 41.
8524 Casino Master (Color version) ... 45.
**Cemtrol Software**
8188 MusicProse 2.0 ... 299.
6504 Finale 2.5 ... 549.

**Chinon**
8813 CDA-431 CD-ROM Drive ... 639.
**Coda Music Systems**
8524 Casino Master (B&W version) ... 41.
8525 Casino Master ... 34.
**Computer Software**
8525 Casino Master (B&W version) ... 41.
8524 Casino Master (Color version) ... 45.
**Cemtrol Software**
8188 MusicProse 2.0 ... 299.
6504 Finale 2.5 ... 549.

**Centron Software**
**Casino Master—Turn your Mac into a casino!**
Realistic graphics, help advice windows, card counting, manual with rules/strategy. Includes Blackjack, Craps, Roulette, Baccarat and Poker...
8525 (B&W) ... 41.
8524 (Color) ... 45.

**Center Software**
Casino Master—Turn your Mac into a casino! Realistic graphics, help advice windows, card counting, manual with rules/strategy. Includes Blackjack, Craps, Roulette, Baccarat and Poker...
8525 (B&W) ... 41.
8524 (Color) ... 45.

**Chinon**
8813 CDA-431 CD-ROM Drive ... 639.
**Coda Music Systems**
8524 Casino Master (B&W version) ... 41.
8525 Casino Master (B&W version) ... 41.
**Computer Software**
8525 Casino Master (B&W version) ... 41.
8524 Casino Master (Color version) ... 45.
**Cemtrol Software**
8188 MusicProse 2.0 ... 299.
6504 Finale 2.5 ... 549.

**Davidson & Associates**
1734 Math Blaster 1.0 (CP) ... 29.
6126 Math Blaster Mystery (CP) ... 29.
8278 Alge-Blaster Plus ... 35.
**EARTHQUEST ... 30 day MBG**
8050 EARTHQUEST 1.0 ... 48.
**Electronic Arts ... 30 day MBG**
8704 3 in Three ... 17.
6716 Pipe Dreams 1.0 ... 32.
6594 Starfight ... 39.
**Great Wave ... 30 day MBG**
4334 NumberMaze (B&W) ... 26.
8043 NumberMaze Decimals & Fractions (B&W) ... 26.
2271 Concertware + MIDI 6.1 ... 99.
**HyperGlot ... 30 day MBG**
Word Torture - Beginner to Advanced (Spanish, French, German) ... ea. 29.
**Electroniic Arts ... 30 day MBG**
8704 3 in Three ... 17.
6716 Pipe Dreams 1.0 ... 32.
6594 Starfight ... 39.
**Great Wave ... 30 day MBG**
4334 NumberMaze (B&W) ... 26.
8043 NumberMaze Decimals & Fractions (B&W) ... 26.
2271 Concertware + MIDI 6.1 ... 99.
**HyperGlot ... 30 day MBG**
Word Torture - Beginner to Advanced (Spanish, French, German) ... ea. 29.
**Electronic Arts ... 30 day MBG**
8704 3 in Three ... 17.
6716 Pipe Dreams 1.0 ... 32.
6594 Starfight ... 39.
**Great Wave ... 30 day MBG**
4334 NumberMaze (B&W) ... 26.
8043 NumberMaze Decimals & Fractions (B&W) ... 26.
2271 Concertware + MIDI 6.1 ... 99.
**HyperGlot ... 30 day MBG**
Word Torture - Beginner to Advanced (Spanish, French, German) ... ea. 29.
to make your Mac sing?


to make your Mac sing?

MacConnection

1-800/334-4444

© Copyright 1991 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlboro, NH. All other trademarks remain the property of their respective companies.
Whatever you need

Freesoft ... 60 day MBG
6115 White Knight III—A 10 award winning communications program, that supports XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe Error Correcting protocols. Includes Oleyto 1.0 and a free subscription to GEnie. $85.

*Farallon Computing ... 30 day MBG
5707 Timbuktu 3.1 ... $95.
4867 Timbuktu 3.1 30-Pack ... $125.
4866 Timbuktu Remote 2.0 ... $125.
6371 Timbuktu/Remote Access Pack ... $150.
8707 Liaison 3.0 ... $259.
6275 PhoneNET StarConnector 10-PK (DIN-8) ... $198.
4869 PhoneNET StarConnector 10-PK (DIN-8) ... $198.
2206 PhoneNET StarController 300 ... $259.
6687 PhoneNET StarController EN ... $259.
6766 MediaTracks ... $259.
6768 MediaTracks Multimedia Pack ... $319.

*Freesoft ... 60 day MBG
6115 White Knight III ... $95.
2300 Smartcom II 3.2 ... $84.
2307 Smartcom II 2400 ... $349.
5991 V9000 Baud Modem ... $689.
Information Presentation Tech.
8060 Personal Server Network (PSN) ... $108.
Insignia Solutions
7557 Access PC 1.0 ... $62.
7058 SoftPC-AT/EGA Module ... $125.
4099 SoftPC 1.3 ... $245.
Intel Corporation
5119 2400EX Modem ... $179.
6420 2400EX MNP Modem ... $229.
6650 2400EX MNP with QuickLink II ... $219.
*INT'L BUS SOFTWARE ... 30 day MBG
5851 DataClub 1.1 (3 user) ... $199.
5860 DataClub 1.1 (10 user) ... $599.
*Kennect Tech. ... 30 day MBG
5631 Rapport ... $195.
7588 Drive 360 ... $249.
7590 Drive 1200 ... $249.
5632 Drive 274 (includes FastBack II) ... $325.

*Microcom ... 30 day MBG
7459 CarbonCopy Mac (Single, 2 req.) ... $115.
7465 CarbonCopy Mac (Twin Pack) ... $169.
8027 MacModern V32 ... $689.
*Nuvotech ... 60 day MBG
3000 TurboNet ST (DIN-8) ... $30.
6751 TurboNet ST 12-Packet ... $279.
6275 NuvoLink SC ... $399.
*Orchid Technology ... 30 day MBG
6949 OrchidFAX Modem ... $429.

*Practical Peripherals ... 30 day MBG
3102 2400 Baud External Modem ... $179.
5285 PM2400SA MNP Modem ... $209.
7344 PM9600SA Modem ... $489.
3098 Mac Communications Pack 1.5 ... $225.
*Prometheus ... 30 day MBG
8762 Travel Modem ... $195.
8350 2400 Mini for Mac ... $159.
8348 2496 Miniload ... $199.
8349 Maxfax ... $295.
8709 2400M Plus ... $249.
8738 9600M Plus ... $699.
*Shiva ... 30 day MBG
3444 NetSerial ... $275.
3437 NetBridge ... $339.
4342 TeleBridge ... $339.
3443 NetModem V2400 ... $429.
6917 NetModem V32 ... $1395.
6519 EtherGate ... $1629.
8189 FastPath IV ... $1899.
*Silka/TOPS ... 30 day MBG
4186 TOPS Teleconnector (DIN-8) ... $23.
4598 TOPS Flashbox ... $119.
3720 TOPS Flashbox ... $155.
6264 TOPS Networking Bundle 3.0 ... $187.
*Software Ventures ... 30 day MBG
3455 MicroPhone II 3.0 ... $215.

Farallon Computing ... 30 day MBG
5707 Timbuktu 3.1—Features a multiple window capability which allows a Mac to view and control other Macs on a network simultaneously. A great brainstorming tool. Ideal for business and teaching environments ... $95.

*Solutions, Inc. ... 60 day MBG
4308 BackFax 1.5 ... $153.
6720 FAXGATE Plus 1.1.2 ... $239.
8337 CommGate ... $379.
*Synergy ... 30 day MBG
6618 VersaTerm 4.1.1 ... $88.
6619 VersaTerm PRO 3.1.1 ... $174.
*Traveling Software ... 60 day MBG
3729 LapLink Mac III Connectivity Pac ... $83.

INPUT/OUTPUT

*Abaton ... 30 day MBG
7432 Scan 300/GS (reqs. Scan Kit) ... $999.
*American Power ... 30 day MBG
5985 UPS 1105E ... $209.
6686 UPS 370Ci ... $329.

*124 Typist ... $497.
4476 OmniPage 2.1 ... $495.
OmniSpell 1.0 or OmniDraft 1.0 ... $69.
*CH Products ... 30 day MBG
7343 Mach IV Plus Joystick (Quad or ADB) ... $51.

DeltaPoint ... 60 day MBG
6905 DeltaPoint 1.5—1989 MacUser Editors' Choice Award for Best Presentation Product. A charting package with the flexibility and power to create captivating charts and dramatic graphics, all in one program ... $109.

Chinon
8814 DS-3000 Scanner w/Dig. Darkroom ... $699.
8815 DS-3000 Scanner w/OmniPage ... $1099.
Computer Friends
8271 ColorSnap 32 ... $649.
*CoStar ... 30 day MBG
6090 LabelWriter ... $185.
7452 LabelWriter Labels (12-Pack) ... $49.
*Datadesk ... 30 day MBG
6901 Switchboard (modular keyboard) ... $159.
MAC-101 Keyboards ... $129.
*DayStar Digital ... 30 day MBG
8556 FastCache for Mac IIci ... $279.
8566 40 MHz PowerCache IIci ... $949.
8565 50 MHz PowerCache IIci ... $1699.
8563 SCSI PowerCard ... $949.
8572 25 MHz PowerCard 030 (fit or fit) ... $1095.
8566 40 MHz PowerCard 030 (fit or fit) ... $1495.
8566 40 MHz PowerCard 030 (fit or fit) ... $1995.
8563 50 MHz PowerCard 030 (fit or fit) ... $2295.
GDT Softworks
6265 PrintLink Collection 4.0 ... $59.
6151 JetLink Express 2.0 ... $89.

DeltaGraph
7432 Scan 300/GS—Flattened scanner capable of 256 shades of true gray scale. Mac, IBM, and NeXT compatible with optional interface kits. Compatible with most OCR packages ... $999.

Abaton ... 30 day MBG
7432 Scan 300/GS—Flattened scanner capable of 256 shades of true gray scale. Mac, IBM, and NeXT compatible with optional interface kits. Compatible with most OCR packages ... $999.
Dear MacConnection,

My family ordered my birthday present from MacConnection. It arrived the day after my birthday. The package was not nearly as large as it could have been. The catalog inside was not as glossy. The gift arrived intact despite the minimal, entirely-recyclable packing material. In short, the entire bundle was gorgeous. I recommend ordering from MacConnection for all these reasons. The item was priced less than the competition's, but I would have suggested MacConnection even if it had been a little more. Incidentally, I didn't get my present until the day after my birthday because it wasn't ordered until my birthday.

Bill Ware
Cleburne, TX
Just give us a ring.

Curtis Manufacturing
8046 MVP Mouse—Powerful custom control panel maximizes cursor control. Lets users custom design button functions. Ergonomic design relieves tired wrist syndrome. $89.

STORAGE MEDIA

Sony ... 60 day MBG
3297 3½" DS/DD Disks (10) 12.
6148 3½" DS/DD Disks 3 Pak (30) 29.
3298 3½" HD Disks 1.44 Meg (10) 19.
6375 3½" HD Disks 3 Pak (30) 49.
8185 QD2040 40 MB Data Cartridge 19.

Maxell ... 60 day MBG
2792 3½" DS/DD Disks (10) 13.
2793 3½" HD Disks 1.44 Meg (10) 21.

3M ... 60 day MBG
3943 DC2000 40 MB Data Cartridge 20.

ACCESSORIES

Apple Computer
7748 Personal LaserWriter Toner Cartridge 89.
1115 LaserWriter II Toner Cartridge 105.

Avery ... 60 day MBG
4807 Laser Labels 1" x 2½" (Qty. 3000) 24.
4864 Disk Labels 3½" (Qty. 250) 13.

Custom Applications ... 30 day MBG
6517 Freedom of Press 3.0—Brings PostScript printing capabilities to non-PostScript, black and white devices. New features include Adobe Type 1 support and compatibility with all Macs. $255.
8037 Freedom of Press Light 3.0 (17 fonts) 56.

POWERKEY

Kensington ... 30 day MBG
2559 Apple Security Kit 33.
2566 System Saver Mac (platinum) 63.
6763 SE Radiation/Anti-Glare Filter 52.
5064 Apple Color Monitor Polarizing Filter 63.

MacConnection ... 60 day MBG
4623 Solid Oak Disk Case (holds 90 disks) 32.
8795 2 Position Switch Box 39.
8796 4 Position Switch Box 59.

Mobius Technologies ... 60 day MBG
4470 Fanny Mac OT 55.

Moustrak ... 60 day MBG
2894 Moustrak Pad (standard 7" x 9") 8.
2592 Moustrak Pad (large 9" x 11") 9.
2930 Moustrak Pad L/F (large 9" x 11") 10.

Ribbons
3255 ImageWriter II Ribbon Black 4.
3261 ImageWriter II Ribbon Multi-4-Color 9.

Sopris Softworks ... 60 day MBG
4681 SE Protection Pack (std. keyboard) 65.
4682 SE Protection Pack (ext. keyboard) 75.

Target ... 60 day MBG
3618 ImageWriter II Carry Case 45.

Nutmeg Systems ... 30 day MBG
3617 Mac Plus/SE Carry Case 55.
4015 Mac SE & Ext. Kbd. Carry Case 69.

Trip Lite ... 30 day MBG
6199 Isobar 4 (surge suppressor, 4 outlets) 49.
6200 Isobar 6 (surge suppressor, 6 outlets) 50.

OUR POLICY

- We accept VISA and MASTER CARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- Our order lines are now open 24 hours a day Monday through Friday, and Saturday 9:00 AM to 5:30 PM EST. You can call our business offices at (603) 446-7711 Monday through Friday 9:00 AM to 5:30 PM EST.

SHIPPING

Continental US: Barring events beyond our control, all credit card orders shipped in working days by 3:15 AM EST will ship Airborne Express for delivery the next business day. Which means same day delivery for orders placed between midnight and 3:15 AM EST. (Some orders may ship by UPS Ground for next day delivery). Saturday delivery available to many areas upon request. Some areas require an additional day delivery. The total freight charge on any order placed with MacConnection is only $3.

Hawaii, Alaska, Canada, Puerto Rico and U.S. Virgin Islands: Call 603/334-4444 for information on shipping and charges.
All other areas: Call 603/446-7711 or FAX 603/446-7791 for information.
to get up to speed.

**Hewlett-Packard**

- HP DeskWriter Printer .................................. $759.
- HP LaserJet 4P ........................................ $1069.
- HP LaserJet III (with toner) .......................... 1699.
  - **Kensington** ........................................... 30 day MBG
    - Turbo Mouse 3.0 (Plus or ADB) ea. 109.

**Kodak**

- MacVision 3.1 ......................................... 259.

**Magnavox**

- 9CM080 14" Color Monitor .......................... 529.
- 14" Color Monitor with Micron Xceed for SE/30 (640 x 480) . special 849.

**MegaGraphics**

- 10" 8-bit System for SE/30 or II, ea. 2695.
- 16"- 24-bit Color System for Mac II .......................... 4995.
  - 19" Rival Sys. SE, SE/30, or II, ea. 1269.
  - 19" 8-bit System for SE/30 or II, ea. 4395.
- 19" 24-bit Color System for Mac II .......................... 6795.

**MicroSpeed**

- 30 day MBG ........................................... 87.

**Mouse Systems**

- 30 day MBG ........................................... 69.

**Meggare Systems**

- 30 day MBG ........................................... 339.
  - 15" Monitor: SE, SE/30, II or III ea. 599.
  - 19" Monitor: SE, SE/30, II or III ea. 995.
  - 19" Monitor: Gray-Scale for Mac II 1295.
  - 19" Monitor: Gray-Scale for SE/30 1295.
  - 20" Color Trinitron: SE/30, II, or III ea. 2595.

**PowerSoft**

- 200 Watt .............................................. 199.

**Pacific Data Products**

- Pacific Page PE 4.0 for the Mac .......................... 529.

**SuperMac Tech**

- 30 day MBG ........................................... 329.

**RasterOps**

- Video Expander ..................................... 529.
- ColorBoard 264 for Mac II .......................... 549.
- ColorBoard 264 for SE/30 .......................... 659.
- VideoColorBoard 364 .................................. 759.
- ClearVue/GS System for Mac II .......................... 1699.

**SAFE Power Systems**

- 250 Watt .............................................. 199.
  - **Sophisticated Circuits** .............................. 30 day MBG

**The Complete PC**

- 1014 Half-Page Scanner/400 .......................... 295.
- Full-Page Scanner ................................... 758.

**Thunderware**

- LightningScan 400 ................................... 385.

**Total Systems**

- Galileo I Video Board (for Mac SE) ..................... 449.
- 16 MHz Mercury O30 (for Mac SE) .......................... 389.
- 16 MHz Mercury O30 (for Mac Plus) ..................... 499.
- 20 MHz Gemini O30 ..................................... 739.
- 25 MHz Gemini O30 w/o copro ..................... 1199.
- 33 MHz Gemini II O30 .............................. 1339.
- 50 MHz Gemini II O30 .............................. 1599.

**Memory & Drives**

**SIMMs**

- 2 year warranty includes free instructional video tape (specify VHS or 8mm) and booklet.

**Cutting Edge**

- 30 day MBG ........................................... 99.

**Dayna Communications**

- Maraton 030 for Plus, SE, II or Classic ......................... 529.
- MacSnap 524XE ....................................... 199.
- MacSnap 524XS (w/SCSI Port) ....................... 269.
- MacSnap 596XE (4 MB) .................................. 299.
- MacSnap 596XS (4 MB w/SCSI Port) .................... 365.

**Peripheral Land, Inc. (PLI)**

- PLI TurboFloppy 1.4 .................................. 299.
- PLI SuperFloppy 1.4 .................................. 449.
- PLI Sony 40 Turbo Ext. Drive ......................... 469.
- PLI DOS Floppy ....................................... 469.
- PLI Infinity 40 Turbo .................................. 749.

**Quantum**

- 40 Meg & 80 Meg Internal Drives for Mac SE/30, IIx, IIx, IIci & IICx .......................... 1399.

**SuperMac Tech**

- Dataframe XP 200 Hard Drive ......................... 1399.
- Dataframe XP 330 Hard Drive .......................... 2249.
ClickChange and Personality are cdevs that customize your Mac's interface. Both run on the Mac Plus and later machines (the programs are more enjoyable on color-equipped models) and require System 6.0.2 or later. As ClickChange and Personality perform approximately the same functions, you'll want one or the other but not both.

ClickChange and Personality are extremely easy to use; you probably won't even look at the manuals. Both let you modify window borders, title bars, and text; change the color of the menu bar, menu text, and menu background; alter the appearance of scroll bars and dialog-box buttons; assign sounds to Mac events such as startup, shutdown, disk insert, and disk eject; and choose from a variety of cursors.

Although they are similar in their functions, ClickChange is clearly the more flexible and complete package. It lets you select static and animated cursors, comes with a library of more than 40 cursors, and includes a cursor editor. Personality provides only eight non-animated cursors. ClickChange has a wider selection of window, scroll-bar, and button choices than does Personality, and it lets you name and save your color schemes as sets. With Personality, you choose colors one attribute at a time, and you can't save them.

ClickChange comes with 30 excellent sounds, all of which are short enough to serve as your beep. Personality doesn't include any.

The one area in which Personality excels is in modifying menus — it can change the menu font and create 3-D menus; ClickChange can't.

Both programs handle conflicts with your applications, INITs, or other cdevs the same way: You can selectively disable features (such as special cursors, scroll bars, and sounds) in specific applications to solve conflicts that these features cause. Both products warn that incompatibilities may occur with some applications, but only ClickChange provides a "patcher" that lets you use custom cursors with Excel and FileMaker.

Picking the winner between ClickChange and Personality is a snap — it's definitely ClickChange. Although both programs work as promised, ClickChange is more flexible and has many features not found in Personality.

This is completely subjective, but I think ClickChange creates better-looking interfaces. And although you probably won't do more than glance at the documentation, the ClickChange manual is more thorough and better written than Personality's does.

Personality is a pretty good product, but you'll have more fun with ClickChange.

ClickChange, Dbl-Clik Software, 9316 Deering Avenue, Chatsworth, CA 91311; (818) 700-9525. Version 1.0.3. $89.95.


— Bob LeVitus

DiskLock

Since I last looked at DiskLock (see review, May '90, page 97), Fifth Generation's security program has made impressive progress. It's still easy to use and sports some significant improvements.

To set up DiskLock, you start with an installer that places an INIT in your System Folder. You must also install the DiskLock DA, the program's front end, and drag FolderLock, a bundled utility, onto your hard disk. Restart your Mac, and you'll be prompted for the password that you specified during installation. You can't bypass this password prompt by starting up from a floppy.

The DiskLock DA lets you lock the drive when you leave your desk or shut down your Mac. You can configure DiskLock to auto-lock your Mac at shutdown, after an idle of a specified period of time, or if your Mac crashes. The DA also accesses FolderLock so that you can lock and unlock programs, files, and complete folders. You can set the DA to automatically close open files when you shut down.

The main improvements in this latest version include the ability to do background processing (a spreadsheet can be recalculated while the disk is locked and you are on break), protection from the trash of locked files and folders, and DES support for people patient enough to use this encryption method (DiskLock also supports proprietary — and faster — encryption methods).

On the negative side, the program is still not as integrated as it might be. You have to run a different bundled program to change the disk password or view the DiskLock log. You should be able to perform these tasks through the DA in much the same way that you access the file-locking controls of FolderLock.

DiskLock is basic in concept but probably more than adequate for most people. It doesn't offer customizable user levels, administrative functions, or a hierarchy of privileges, but it does keep the contents of your hard drive private — and it does so with ease.


— Gregory Wasson

The String Quartet

Warner New Media's second Audio Notes program (the first was Mozart's Magic Flute) tackles Beethoven's String Quartet No. 14, Op. 131, and does a fine job.

Warner New Media learned from its first effort, and its latest endeavor shows major improvements in three areas. The art direction is better adapted to HyperCard, and navigating through the program is much easier than it was with the Magic Flute (that the music fits on one compact disc makes a big difference here; the Magic Flute required switching among three discs). The most welcome improvement, however, is in ease of installation. Drag the HyperCard stack from the CD-ROM disc to your hard-disk drive, and you're off and running. Gone is the Magic Flute's absurd requirement that you rename your own Home card and install a custom Home card each time you use the program.

The annotations of the string quartet let users approach the piece from several different levels of musical sophistication. Plenty of separately recorded examples from the quartet itself and other pieces of music are included. In all, it's difficult to imagine a more appealing way of studying this music without taking up the cello, violin, or viola.

Although this program can run under HyperCard 2.0, some bugs did pop up when I ran that HyperCard version that didn't appear when I ran the package under HyperCard 1.2.5. As the program doesn't rely on any of HyperCard 2.0's new features, you should plan on running it with the older version (which is provided on the CD-ROM disc).
Current Asset
Cash Account

Fixed Asset
Current Liability
Long Term Liability
Owner's Equity
Income
Sales
Expense
Purchases
Group

SERIOUS SMALL BUSINESS ACCOUNTING.

The Highly Acclaimed Business And Financial Manager.

Accountant, Inc. has been carefully designed to handle the books for virtually any type of business: manufacturing, retail, professional or service. Its rock-solid, double-entry system includes General Ledger, Accounts Payable and Receivable, Inventory Management and Payroll - all fully integrated so information flows seamlessly through your office. And Accountant, Inc. is ready to run right out of the box, featuring easy chart of accounts setup and plenty of sample companies. All for just $595.

It Handles The Details.

You'll breeze through the normally laborious task of writing invoices, checks, credit memos and more. And since Accountant, Inc. is a 100 percent pure Macintosh product, it fully exploits the swift, simple (yet incredibly powerful) functionality of the Apple Macintosh.

Instant Reports To Analyze Anything You Want.

But perhaps the most important feature of Accountant, Inc. is its ability to report and analyze. In fact, Accountant, Inc. will instantly create over 100 different types of reports that can tell you many things about your business, while they’re happening. Income statements and balance sheets, account agings and transaction listings, payroll reports and sales breakdowns of any kind. Sharpen the focus with Accountant, Inc.'s remarkable set of easy-to-use analysis tools.

You'll quickly find out exactly what your customers are ordering, what inventory you’re about to run out of, who owes you money, who adds finance charges, when a certain customer placed his last order and how much credit he has left.

A More Enlightened Approach.

Accountant, Inc. does not duplicate the standard modular approach to accounting. Rather, the functions are task-oriented. For example, when you want to fill in a form (like an invoice), you'll find it under the "Forms" menu; reports can be found under the "Reports" menu. Simply select the task and Accountant, Inc. knows where to go. Now, everyone can get their own reports, and the information they need.

The technicians and accounting professionals at Softsync/BLOC have assembled the premier accounting system for the Mac and small businesses.

No painful setup, no learning curve, just a brief session with the documentation and you're on your way to a more informed future.

If you'd like to learn more about this system, call us toll-free: 1-(800) 933-2537

... for more information, or see it at your local software dealer.

Accountant, Inc.

Please circle 444 on reader service card.
I told you to Stuff that file before sending it to me.

The next time you send a file over a modem, network, or bulletin board, remember to StuffIt first.

StuffIt Deluxe® is not only the best way to free up disk space, but your time as well.

Please circle 183 on reader service card.

Classical-music lovers, music educators, and anyone interested in exploring the world of classical music will find Warner New Media's latest Audio Notes program invaluable. It's an ideal introduction to a complex masterpiece.

Warner New Media, 3500 W. Olive Avenue, Burbank, CA 91505; (818) 955-9909, 566.
— Jim Bradbury

MacRAM Portable

How do you add memory to the Mac Portable's built-in megabyte? You buy some static RAM on a 3-x-5-inch card and slip it into the Portable's memory-expansion slot. A lot of users buy cards with 8 megabytes, bringing the total memory up to 9 megabytes. But the Mac Portable can use up to 9 megabytes — what if you need more RAM later? Do you throw away the 3-megabyte card and buy a new one that's bigger?

Not if you've got the MacRAM Portable from Applied Engineering. The first expandable memory card for the Portable, the MacRAM Portable card can hold anywhere from 1 to 8 megabytes. Memory is added in megabytes at a time in the form of pseudo-SIMMs — ultrathin memory modules that plug into the MacRAM. You must buy the modules from Applied Engineering, as real SIMMs don't fit in the tight space in the Portable.

Static RAM is more expensive than the dynamic RAM used in all the other Macs, but the Mac Portable requires it because static RAM uses very little power compared with DRAM. Pseudo-static RAM can be cheaper, but it gains its stability by stealing battery power. Applied Engineering uses true static RAM. With the MacRAM Portable installed, I noticed little additional drain on battery power, and I could open several applications at once without any problems.

The MacRAM Portable even comes with a grounding wrist strap to prevent electrostatic damage to the memory when you install it. For those who usually run MultiFinder, the MacRAM upgrade is a good investment. All in all, it's the most versatile way to upgrade memory in a Mac Portable.

Applied Engineering, 3210 Belt Line Road, Dallas, TX 75234; (214) 241-6060. $499 (with 1 megabyte); $350 per additional megabyte.
— John Rizzo

Screenshot is a Control Panel device that is invoked by a hot key of your choosing. Select various options from Screenshot's window, which contains four large buttons, a pop-up menu, and six check boxes below the menu. Click on the appropriate button to capture an entire screen (it works flawlessly with multiple monitors and large-screen displays), a portion of any screen, a specific window (a window, alert box, or dialog box), or a menu (either pull-down, pop-up, or hierarchical submenu).

Screenshot makes capturing a screen easy and precise. Click on the appropriate button, position the cursor over the item you want, and then click again. If it's a dialog box, for example, click anywhere inside the box and Screenshot grabs the entire box — and nothing else! There's no need to clean up the image later, as you don't capture any unwanted pixels.

Once captured, images can be pasted onto the Clipboard or placed in the Scrapbook. Alternatively, they can be saved to disk in PICT, paint, or Startup Screen format. If you want, you can even send them directly to whatever printer is currently selected in the Chooser.

Although Screenshot's ability to capture only those screen items that you want is its most impressive feature, the utility also has six options that make the whole process even more convenient. First, color images (up to 24-bit) can be converted into black-and-white on the fly. Next, Screenshot lets you specify the name and disk location of captured images. Third, the Info Stamp feature automatically inserts the name of the active program and puts the current date and time immediately below the captured image. Fourth, you can specify whether the cursor appears in the image or not. Fifth, the Stick Around option keeps the Screenshot window open, so you can capture multiple images without repeatedly pressing the Screenshot hot key. And finally, the option I find the most useful — the ability to change the size of the image at the time of capture.

Screenshot is the best little screen-capture utility I've ever used. It's simple, powerful, and worth every penny.

— Owen W. Linzmayer
The difference between our JPEG compression solution and theirs is obvious.

There's a big difference between our high performance compression/decompression solution and C-Cube's — ours is available now.

And that's not the only difference.

The Micron Xceed™ ICDP-II with Storm Technology's PicturePress™ software offers a variety of features you can't get with C-Cube's CL550™-based products. Like fully adjustable compression settings, thumbnail views, software easily upgraded to future JPEG versions, lossless compression and JPEG+™ — an exclusive feature that allows you to compress different user-selected parts of the same image at different quality levels.

Now you can compress large files down to 1/80th their original size, saving disk storage space and speeding up transmission time. And you can compress and decompress up to 50 times faster with the PicturePress Accelerator than with software-only solutions.

Like all Micron products, the Xceed ICDP-II is backed by our extended five-year warranty and toll-free, technical support hotline.

So call us at 1-800-642-7661 for more information and the name of your nearest authorized dealer. And find out how, at $995, the Xceed ICDP-II for the Mac® II family is obviously different, and obviously better.

<table>
<thead>
<tr>
<th>Features</th>
<th>Micron ICDP-II</th>
<th>C-Cube CL550-Based Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>True JPEG Implementation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Upgradable to Future JPEG</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Versions via Software Updates</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>JPEG ++ Support</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Thumbnail Views</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Lossless Support</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Application Plug-ins (Photoshop™)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Free Software-Based Decompression Module</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>60 MIPS Programmable Processor</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*Xceed is a trademark of Micron Technology, Inc. PicturePress, PicturePress Accelerator and JPEG+™ are trademarks of Storm Technology, Inc. All other registered and unregistered trademarks are the sole property of their respective companies.*
Quick Clicks

Hewlett-Packard 48SX Calculator

HP’s most powerful, flexible, and expensive scientific calculator is also its first to incorporate a serial interface that supports file transfers with personal computers. With the addition of the Serial Interface Kit for Macintosh, the 48SX is also the first high-end scientific calculator that can share files with a Mac and use the Mac as a quasi-development environment for calculator software.

The 48SX includes powerful tools, such as a spreadsheet-like matrix editor and a graphical equation editor. Powerful graphics capabilities enhance an extensive equation solver as well as matrix and statistics routines. The 48SX file system stores programs and variables by name in a familiar hierarchical directory format. Sound, a real-time clock with alarms, infrared and RS-232 serial ports, and two expansion ports for RAM and ROM cards round out the impressive list of features. The 852-page manual is crammed with excellent examples, tips, and reference material that only hint at the 48SX’s capabilities.

The 48SX uses Columbia University’s public-domain Mac Kermitt application to transfer files to and from the Mac. HP-supplied downloadable programs and libraries provide useful enhancements to the 48SX, including a stopwatch and a simple appointment manager. GROBer, a small, HP-created Mac application, opens native 48SX graphics-object- (GROB) format files and pastes them into the Clipboard as monochrome PICT images that you can then paste anywhere.

Overall, the interface kit offers new, more powerful ways of using the 48SX, but it could stand improvement. A Mac-based 48SX program editor with a smart syntexh checker and its own implementation of Mac Kermitt would be a welcome addition. The documentation should come in a single printed manual instead of in numerous TeachText files.

The Serial Interface Kit, although flawed, amplifies the 48SX’s power and flexibility and extends the capabilities of the 48SX to Mac users.

Hewlett-Packard, 1000 N.E. Circle Blvd., Corvallis, OR 97330; (503) 752-7736. 48SX, $350; Serial Interface Kit, $59.95.

— Jeff Pittelkau

Editorial Advisor

For most writers, grammar handbooks are anathema. No one likes wading through a dense reference book, looking for the proper use of an absolute phrase or nonrestrictive appositive. Editorial Advisor is a grammar handbook on a HyperCard stack that you can search on-line, and that’s where the problems start.

Editorial Advisor is not a grammar or style checker. In fact, it has absolutely no interactive functionality at all. It is strictly for searching and reading — just like a book. Which means that if you need advice on whether you should use a singular or plural verb in a particular sentence, you have to leave your document, launch HyperCard, search the stack, find the reference, understand it, and then return to your document and make the appropriate change. The process isn’t much more convenient than picking up a book.

The package runs under HyperCard 2.0 and takes up more than 2 megabytes of hard disk space once you’ve installed it. The presentation is Spartan — no sound or animation to liven things up, and the publisher’s choice of fonts doesn’t help much either. Examples are shown in an italics type that’s nearly illegible, and the examples themselves are often unclear.

Serious users can compile their own word and style lists, as well as a copy editor’s style guide, and the package can be linked to a custom stack.

Editorial Advisor’s advice is generally sound, but since the discussions are limited to single cards with no scrolling fields (a good idea in a stack), there isn’t much depth to the explanations. Also, although the information is culled from a wide variety of sources, there are no citations as to which guides recommended what, which leaves the anxious writer wondering how widely accepted the advice really is.

Editorial Advisor simply doesn’t have the substance or authority of tomes such as The Chicago Manual of Style or even Strunk and White’s The Elements of Style. If Petroglyph’s package had on-line abilities, it might be valuable, but it lists for $50 more than Correct Grammar and does much less. Editorial Advisor asks you to swap 2 inches of your desk space for 2 megabytes of storage. It isn’t a fair trade.

Petroglyph, 123 Townsend Street, Suite 345, San Francisco, CA 94107; (415) 979-0588. Version 1.0. $149.95.

— Russell Ito
When it comes to selecting the right scanner, be forewarned. It's a jungle out there. You may not get the quality you were promised.

The La Cie SilverScanner has evolved beyond all that. Just look at this comparison between the Microtek 300ZS and the La Cie SilverScanner. Each image was scanned at standard settings with no corrections. This ad was then created and separated using Adobe Photoshop, QuarkXPress and a Linotronic 330.

As you can see, SilverScanner is a more advanced species of scanner which adapts better to a changing environment. SilverScanner provides superior color, gray scale and line art over any other similar species of scanner. And as a bonus, Adobe Photoshop Limited Edition, Aldus PrePrint, SilverScan plug-in and Silverlining are included FREE with every SilverScanner purchase.


La Cie SilverScanner: 16 million beautiful colors, 256 smooth shades of gray, incredible line art, up to 600 dpi all in a single pass.

Silverscanner only $1999!

FREE $1399 value with the purchase of SilverScanner!

800-999-0143
For product information, or to order, call toll-free.

LACIE LIMITED
A PLUS DEVELOPMENT COMPANY

Please circle 414 on reader service card.
Our valued customers think so. The experts agree. Let them tell you why.

"worked flawlessly" "Just a quick note to let you know how sturdy your hard drives are. I am a Navy A-6 pilot. Just thought you'd like to know that your drive logged about 5 hours of flight time and 5 carrier landings and has worked flawlessly since. Not bad eh?" Lt. Carl Oesterle, Navy A-6 pilot

"La Cie drives are the most reliable and convenient disks I've ever had." James J Haf, Lansing, MI

"The best survival history of any drive purchased... quietest and most portable." Al Forster, Dow Chemical

"performance champ" "Of all the high-capacity drives, the price performance champ is the very affordable La Cie." ⭐⭐⭐⭐⭐ MacUser, Dec. 1990

Designer's Choice Award - Industrial Design Review Bronze Award - America's Industrial Design Excellence

"support was exceptionally good" "I now know why my friends suggested I buy La Cie, their backup and support was exceptionally good. Not only did La Cie provide intelligent articulate instruction and advice but they even called back to learn of my progress." Richard Woudenberg, Ridgewood, NJ

"Perhaps you can take satisfaction in knowing that your dedicated users are appreciative of the quality you put into your product and the service with which you back it up." Dr. David J. Hibler, Lincoln NB

"service star" "Service star La Cie has toll free support and guaranteed turnaround time for repairs. La Cie comes out on top in service and support." Macworld, June 1990
"fast, quiet, small and light" "I love your Tsunami drive! It's fast, quiet, small and light and I can't emphasize how wonderful it is to turn the termination on and off. Of course, it doesn't hurt that you bundle Silverlining with it—the universal formatter with no competition that I know."

Johnathan Braun, Palo Alto, CA

"La Cie offers the leading combination of software and performance." Macworld, March 1990

MacUser Labs show that La Cie drives best in raw speed, real-world performance, temperature and noise tests. MacUser, February 1990

"performed beautifully" "My productivity has increased at least three-fold. My La Cie drive has performed beautifully. It is really fast, quiet and the documentation is very clear. When I had a question and called, I got a friendly, helpful person who really took the time to explain what I needed to know. This sounds like a testimonial. Yep, I guess it is." Craig Turner, Chapel Hill, NC

"I love these drives. The size is perfect, the response time is great, these are the best drives money can buy. I have searched and compared price, quality and performance with other products. La Cie is the best." Edwin E. Rivera-Juan, Hato-rey, PR

"king of consumer choice" "If you are value conscious you'll be hard pressed to beat La Cie." Macworld, November 1990

"La Cie's longer warranties truly represent a good deal. The king of consumer choice." Macworld September 1990

Since 1985 La Cie has offered you more benefits, quality, service and value than any other manufacturer.

For product information, or to order, call toll-free

800-999-0143

Please circle 415 on reader service card.
We always knew our convenient desk accessories were as powerful as applications. Now we'd like to thank the Editors at MacUser for letting you know.

We're also flattered that the two nominees for "Best Graphics Program": Adobe Illustrator® 3.0 and Studio 32™, cost three times as much as DeskPaint® & DeskDraw®.

DeskPaint is a 98k DA that works as well with black & white images on a Macintosh Plus or Classic as it does with color images on a IIfi or IIfx (even in 24-bit color). It reads and writes PICT, TIFF, and MacPaint® files. It does smoothing, auto-trace, graduated fills, multiple windows, and a lot more.

DeskDraw® is a DA comparable to MacDraw®. Some of its' features include hairlines, rotated text and arrows. It reads and writes PICT files compatible with SuperPaint™, MacDraw II, and Canvas™.


Call us at 1-800-482-4567 for a free brochure.

Please circle 361 on reader service card.
THE 6TH ANNUAL EDITORS' CHOICE AWARDS

Every year, the editors of MacUser evaluate hundreds of Macintosh products. Some products are great and some of them aren't, but by the end of 12 months, we have a pretty good idea of which ones are the real standouts. We also get a feel for new trends. 1990, for example, was a year of great beginnings in areas such as 24-bit color, cross-platform connectivity, virtual reality, 3-D modeling, and video. The '90s should be an exciting decade indeed. 1990 was also a year in which high-volume low-end products finally had their day, with Apple setting the pace by releasing its new accessibly priced CPUs.

Now it's time to reward the best of the bunch. The Eddy Awards are not a popularity contest. We put in countless hours debating the relative merits of all the products released during 1990 — and after hours of discussions, arguments, and lobbying — we finally narrowed the field in each category to three nominees. A secret ballot determined the winners.

On the human side, the John J. Anderson Distinguished Achievement Award and the Derek Van Alstyne Rising Star Award recognize the excellence of the people behind Mac products. They also recognize the excellence of the two MacUser staff members who died during the California earthquake of 1989 and whose example showed that it's often the people behind a product that really make it special.

And now, the envelopes, please . . .

BY THE EDITORS OF MacUser
Editors' Choice Awards

Best Data-Management Product

ClearAccess

1990 saw few new releases or upgrades in the traditional database- and spreadsheet-program categories; consequently, we've extended this category to include data-management tools that go beyond the traditional ones. This year's Eddy goes to ClearAccess 1.21, from Fairfield Software. This DA provides access to minicomputer and mainframe databases, which is a boon for companies whose databases reside on mainframes. ClearAccess uses Apple's DAL (Data Access Language) and Oracle's SQL*Net to provide a consistent user interface, regardless of the type of database program or host. Its advanced scripting features automate connection to the host as well as the opening and querying of database files.

HONORABLE MENTIONS

Full Impact 2.0 from Ashton-Tate is a spreadsheet program well suited to creating charts, graphs, and presentations. This new version offers functions rivalling Microsoft Excel's and can directly import and export Excel files. Claris' FileMaker Pro 1.0 deserves to be called "mainstream" — not the fastest database program and not relational but easily the most powerful data manager for average users. The new version includes buttons and better workgroup operation over networks.

Best Data Resource

Accents & Borders

3G Graphics has a well-earned reputation for producing high-quality EPS artwork, and its latest offering, Accents & Borders, is no exception. The numerous borders, ornaments, labels, and symbols in this finely crafted collection are crisp black-and-white graphics; a bonus disk offers marvelous color images. Unlike most clip-art offerings, all 3G images are opaque and most are strategically subgrouped for easy separation into more images or quick color changes. Like the other packages in 3G Graphics' Images with Impact! series, Accents & Borders is simply superb.

HONORABLE MENTIONS

Packaged data comes in other flavors besides clip art. Not yet available on IBM PCs, Lotus Marketplace: Business is a database application on a CD-ROM disc containing seven million business addresses (updated quarterly). You can use this data for research or to export mailing lists for less than you'd pay a list broker. MIDI Records and MIDI Hits from Passport Designs' Music Data division let you choose from more than 500 professionally recorded songs in a variety of styles. MIDI Records lets you mix and match the tunes of your choice; MIDI Hits presents three popular songs on a disk.

Best Financial-Management Package

WealthBuilder by Money Magazine

WealthBuilder by Money Magazine 1.0, from Reality Technologies, can help you plan for the future, whether it's retirement, college education, or a big vacation. You create "what if?" scenarios based on different economic and personal assumptions, and WealthBuilder tells you how much you need to save. It can also suggest what portion of your savings should be in stocks, bonds, or pork bellies. A database of stocks and mutual funds contains information on ratings and performance for the past ten years; the information is updated quarterly.

HONORABLE MENTIONS

Accountant, Inc. 2.0, from Softsync/BLOC, is the most complete integrated accounting and financial-management package for the Mac. With its task-oriented presentation, you can make full use of this program without having to know much about accounting. Teleware's M.Y.O.B. 2.0 offers an integrated accounting system at an incredibly low price. Version 2.0 adds flexibility to everything from checks to reports.

Best Communications Product

TelePort A300

On the surface, the TelePort A300, from Global Village Communication, is just another 2,400-bps modem, but it offers easy-to-use software, an attractive price, Hayes compatibility, and some ingenious engineering. Instead of using one of your Mac's serial ports, the TelePort A300 connects to the ADB (Apple Desktop Bus) — which also links the keyboard and the mouse to the Mac. The TelePort requires no separate power supply and offers MNP data compression and error correction. Its software creates helpful blinking "status lights" in the Finder's menu bar.

HONORABLE MENTIONS

Alisa Systems' AlisaMail 1.0 fully integrates Microsoft Mail and DEC's VMS Mail on DEC VAX minicomputers. Gateways are available to DEC's All-in-1, IBM PROFS, and X.400 services. Alisa Systems plans a 1991 release that will work with CE Software's QuickMail. Prometheus Products' ProModem 9600M Plus operates as a V.32 9,600-bps data modem.
and a 9,600-bps send/receive fax modem. The ProModem also has V.42 error correction and V.42bis/MNP 5 data compression.

Best Page-Design Program
Publish It! Easy

Publish It! Easy 2.0 packs an incredible amount of power into one economical package. Its combination of word-processing, graphics, and page-layout capabilities works — speedily — on any Mac (no hard-disk drive required). Publish It! Easy offers more basic features than PageMaker 4.0 — for example, vertical justification and incremental rotation of text and graphics — plus innovative features such as an interactive command palette; a service-bureau checklist; and the Slideshow, which may eliminate your need for a separate presentation package. This Timeworks offering is an unbeatable choice for owners of low-end Macs and anyone else who doesn’t need high-end color features — or the price tags that come with them.

Honorable Mentions
QuarkXPress 3.0, from Quark, has become the program of choice for high-end color publishing — it was also nominated for best color-prepress product. Version 3.0 is a full overhaul of an already excellent program, with a much-improved interface. FrameMaker 2.1 for the Macintosh has filled a void in Mac page-layout/long-document production. Frame has successfully made a cross-platform product with a good Mac interface.

Best Typographic Program
TypeStyler

Broderbund’s TypeStyler 1.5 is an excellent type-manipulation program at a great price. It lets you quickly and easily create sophisticated display type. Several features, such as graduated blends, are unavailable in more-sophisticated, more-expensive packages. Version 1.5 adds enhancements such as the ability to convert any straight line within an object into a Bezier curve, the ability to specify object rotation by degrees, and the ability to designate the specific point size of text.

Honorable Mentions
FontStudio 1.0, from Letraset, is the first fully integrated package for creating PostScript typefaces. FontStudio includes bitmap and kerning editors, and it can create editable outlines. Fontographer, from Altsys, has long been the standard for typeface creation. Version 3.1 adds automatic hinting and — best of

John J. Anderson Distinguished Achievement Award
Bill Atkinson

The first graphics application for the Mac was a goofy black-and-white pixel thrasher called MacPaint, which was developed by a soft-spoken Apple employee named Bill Atkinson. When people raved about how easy the Mac was to use and others dismissed the mouse-driven “toy computer” as unfit for serious work, MacPaint seemed to represent everything that was brilliant, intuitive, and yet woefully inadequate about the Mac.

Now the Mac family can boast not only color 3-D animated-graphics software but also an overwhelming variety of powerful business programs — most of which derive from the elegant, friendly interface of MacPaint.

When Apple released HyperCard, Atkinson’s amazing software erector set, in 1987, Mac owners found themselves not merely reading about but also using a revolutionary advance in personal computing. Atkinson (now one of the founding forces behind an Apple spin-off called General Magic) would be the first to credit his many friends for their contributions to the Mac’s success. He deserves this year’s John J. Anderson Distinguished Achievement Award because his own gift to the Mac community is so pervasive: He has shown that a complex, incredibly powerful computer can be simple — and even fun — to use.
EDITORS' CHOICE AWARDS

DEREK VAN ALSTYNE
RISING STAR AWARD
RAND K. AND ROBYN MILLER

In astronomy, a spinning, tightly linked pair of stars is called a binary star, and long ago, their twinkling light was thought to illuminate the future. The winners of this year's Derek Van Alstyne Rising Star Award are two brothers who've used the Mac's intangible binary language to create inspiring works of art. Their technical command of HyperCard, along with a flair for captivating black-and-white graphics, has produced two immensely popular "children's books": The Manhole and Cosmic Osmo (distributed by Activision).

"Children's books" may be something of a misnomer, however; these aren't traditional books, and they certainly aren't just for kids. These HyperCard stacks show a complete understanding of HyperTalk scripting, interface design, sound effects, and animation. The central achievement of the Miller brothers, however, has been to demonstrate that even new Mac users can learn the magic of HyperCard. Starting with the same program (developed by Bill Atkinson and friends at Apple) that's available to all Mac owners, Rand and Robyn have created new worlds that fascinate adults and children alike.
photos, video captures, pixel art
work, and PostScript type. Paint-
ing and selection tools can be cus-
tomized for photo-retouching,
masking, and special effects; and the
program allows for precise calibra-
tion of its own color balance, as well as that of other ap-
plications. The Shapes Annex for
ColorStudio offers enhanced con-
trol by creating a PostScript
drawing layer that can transfer its
own or imported PostScript ob-
jects into the painting layer.

**HONORABLE MENTIONS**

Barneyscan’s CIS·4520
multiformat production scanner is
the ultimate prepress tool. It
scans transparencies in a range of
sizes at high resolution, and its
software provides complete con-
trol over color correction, mask-
ing, and tonal compression.
QuarkXPress 3.0 — nominated
too for best page-design program — is a superb page-layout and
typographic tool, but it also pro-
vides sophisticated color separa-
tion of text and PostScript graph-
ics. Although it can’t yet separate
color TIFF images by itself, it of-
fers high-resolution Scitex out-
put through its Visionary link.

**BEST CAD SOFTWARE**

**MINICAD+**

This category’s Eddy goes to
MiniCad+ 3.0, from Graphsoft, a product that integrates a spread-
sheet and a relational database
into a drawing so you can keep
track of costs as the design evolves.
Database information linked to a
particular object stays with that
object even when it is cut and
pasted into another drawing.
MiniCad+ also has a built-in pro-
gramming language and a “smart
cursor” to aid in the finer points of
drafting.

**HONORABLE MENTIONS**

The solid Claris CAD 2.0 also
offers an intelligent cursor in
addition to new and enhanced
drawing tools and a new help
system. It contains one of the best
CAD interfaces on the market.
PowerDraw 3.0, from Engi-
neered Software, features an in-
novative interface, a macro lan-
guage, and advanced features for
dimensioning and creating iso-
metric drawings.

**BEST 3-D MODELING/ RENDERING PACKAGE**

**DYNAPERSPECTIVE**

This year’s best program for
presenting 3-D models is the ver-
satile DynaPerspective 2.0, from
Dynaware. It does true 3-D mod-
eling, rendering that includes
translucent surfaces, and anima-
tion. It also imports and exports
files in a variety of formats. Some
of the new features include
drafting layers, 24-bit color, anti-
aliasing, and faster fly-through
animations. Elevations and easily
manipulated perspective views are
automatically generated from the
floor-plan model, and animations
can be created and played back
with just a few mouse clicks.

**HONORABLE MENTIONS**

Kudos also go to two products
that are famous for their high-
quality rendering capabilities.
Pixar’s MacRenderMan 1.0 is
the Mac version of the industry-
standard high-end workstation
rendering program that results in
photographic-quality images.
StrataVision 3d 1.4 from Strata,
which also does modeling, is less
high-end than MacRenderMan but
is still a standard on the Mac.
MacRenderMan files can be cre-
ated with StrataVision 3d and then
edited as text files.

**BEST ANIMATION PROGRAM**

**FILMMAKER**

Broadcast-quality video pro-
duction and editing on the Mac
has become an international en-
terprise. The French animation
package FilmMaker 1.0, created
by Paris-based Encore Develop-
ment and then acquired by Para-
comp, can import PICS, PICT,
and EPS files. Objects that are
created in Paracomp’s Swivel 3D,
Swivel 3D Professional, and
ModelShop can be also imported
and animated. The four Film-
Maker modules (Animate, Color,
Sound, and Present) render objects
in 8- or 32-bit color with anti-
aliasing, transparency, dithering,
and color remapping. Animations
are created witheditable Bezier
curves that build smooth paths
along which objects can be scaled
and rotated.

**HONORABLE MENTIONS**

The Animation Stand 1.2, from
Linker Systems, may lack
some of the flashy features of 3-D
animation/modeling programs,
but this industrial-strength pro-
gram already meets the needs of
Hollywood’s Mac-literate car-
toonists. If you need to produce
effective animated presentations
on a tight budget, check out
interFACE 1.0, from Bright Star
Technology, which uses digitized
sound and black-and-white or
color photos to create synchro-
nized “talking heads.”

**BEST MULTIMEDIA SOFTWARE**

**AUTHORWARE PROFESSIONAL FOR MACINTOSH**

Most multimedia authoring
tools require sophisticated script-
ing — especially if you want to
develop highly interactive, pro-
fessional-quality applications.
It's no exaggeration to say that any new software application from Adobe Systems is more than likely, in the words of Guy Kawasaki, to be "deep, indulgent, complete, and elegant." All these adjectives — and many more superlatives — apply to this year's software product of the year, Photoshop 1.07.

With Photoshop, Adobe has recognized and effectively built on the work of others. In this case, the older photo-editing program is Barney's popular slide scanners. Adobe used it as the basis for Photoshop and also added a variety of sophisticated image-manipulation tools, including text and support for EPS graphics. Text quality is optimized by Adobe Type Manager, and the company has provided control over image transparency as well as support for the RGB, indexed, CMYK, HSL, and HSB color models. The Photoshop program lets you import and export EPS, TIFF, PICT, Amiga, GIF, MacPaint, PIXAR, PixelPaint, Scitex CT, TGA, and ThunderScan files.

Photoshop is the kind of product that's destined to become a Macintosh staple. Even our hard-headed reviewer (see review, July '90, page 53) claimed that "although Photoshop is not a complete substitute for a high-end dedicated system, it makes powerful photo editing accessible, painless, and easy."

Authorware Professional for Macintosh 1.6, from Authorware, stands out by providing an icon-based, object-oriented authoring environment in which you can create, deliver, and maintain interactive multimedia applications without scripting. Version 1.6 adds support for 24-bit color and 32-bit QuickDraw, more efficient running of PICS Movies, support for the enhanced sound capability on newer Macs, icon-content previewing, and more.

Multimedia on the Mac wouldn't be where it is today if it weren't for MacroMind's MacroMind Director. Version 2.0 has added interactivity, the ability to control external video and audio devices, and 24-bit-color support. Farallon's MediaTracks 1.0 is the electronic equivalent of a VCR for the Mac, but unlike it, this powerful package lets you edit tapes with the ease of cutting and pasting. It features interactive buttons, HyperCard links, and synced MacRecorder tracks.

RasterOps Video ColorBoard 364. This board provides full 24-bit-color display and live video in a single affordable package. With software that does everything from controlling the display colors and flipping video images to capturing video frames, RasterOps has created the product for putting television onto your Mac.

RadiusTV, by Radius, which wins our Hardware Product of the Year award, smoothly integrates live high-resolution color TV into the Mac environment. It also offers a package of special-effects software, PC-VCR, from NEC, is a frame-accurate, Mac-controllable videocassette recorder. It allows random access of individual video frames for recording or playback, and it has a separate dubbable time-code track.

Farallon pioneered the sharing of Mac screens across networks. With Timbuktu 3.1 it adds the ability to connect to multiple Macintoshes and view each screen as a separate window that doesn't take over the local Mac's entire screen. Another welcome addition is that Timbuktu lets you transfer files over a network.
HONORABLE MENTIONS

**Status:** Mac 1.0, from Pharos Technologies, can do a complete inventory of all software, peripherals, and even plug-in boards on networked Macintoshes, but it deftly avoids the Big Brother syndrome by requiring user permission. Dantz Development's Retrospect Remote 1.2 has the functionality of its Retrospect software (including the unfortunately Byzantine user interface) but adds the ability to back up other users' hard-disk drives over a network.

**BEST CONNECTIVITY HARDWARE**

**EtherPrint**

In the realm of connectivity hardware, this year's Eddy goes to Dayna's EtherPrint, a simple and elegant solution to the problem of accessing LocalTalk-based printers from within Ethernet. EtherPrint makes a printer connected to its LocalTalk port appear on Ethernet, so you don't need to buy a router just to make printers reachable from Ethernet.

HONORABLE MENTIONS

Shiva's NetModem V.32 lets you add the current high-speed telecommunications standard to the range of modems accessible via LocalTalk. The versatile LanWay TR16/4, from Tri-Data Systems, is the first 16-megabit-per-second token-ring board for the Mac. In addition, a simple software switch makes it compatible with the more common 4-megabit token-ring LANs.

**BEST WORK-GROUP PRODUCT**

**Aspects**

Work-group products are still new to the Macintosh. As a result we have only two nominees in the category. Eddy-winner Aspects 1.0, from Group Technologies, is perhaps the first true work-group application for the Mac. It is unique in that it allows several users who are connected on an AppleTalk network to work simultaneously on the same painting, drawing, or text document. No file server is required to work this magic: Each computer maintains a complete local copy of all the open documents in RAM. If one user exits from a "conference," the other users can keep working. And Aspects is fast — even over the Macintosh's built-in LocalTalk network. Changes made by one user are reflected on other users' screens almost immediately. With Aspects, Group Technologies has developed a significant new technology that should proliferate in the near future.

**HONORABLE MENTION**

**DataClub 1.1, which International Business Software calls a "virtual server," allows users on an AppleTalk network to share their local folders or hard disks as if they were part of one large network file server. All the participating users see the same view of the server's file structure, regardless of where the files are located physically — and even if the files are moved between Macs.

**BEST EXECUTIVE-INFORMATION-SYSTEMS PRODUCT**

**Tactician**

The nominees in this category might make you think that geographic-database programs are the only type of EIS product for the Mac. That's not so, but this year's hottest EIS products all happened to be geographic-database programs, with three new products released and two existing products substantially upgraded (see "Putting Your Business on the Map," in this issue). Tactician 1.0, from Tactics International, is by far the most sophisticated of the desktop-mapping packages. Its DAL interface for mainframe data, 3-D spreadsheet program, and street-level mapping make this the package of choice for marketing and retail-sales management.

HONORABLE MENTIONS

Two other desktop mapping products deserve mention. Descartes 1.0, from Intermap, offers a built-in, easy-to-use icon-based database program and simple mapping and reporting tools. GeoQuery's GeoQuery 2.0 is a database front end that offers a lot of performance — sophisticated pin mapping and data aggregation, a mainframe interface, and the ability to run on even the least powerful Mac — for a very reasonable price.

**BEST DATA-ACQUISITION/ANALYSIS PRODUCT**

**LabVIEW**

LabVIEW 2.1, from National Instruments, exceeded our expectations in interface innovation and power. Engineers and scientists who aren't programmers can use LabVIEW for data acquisition and analysis as well as for instrument control. Users draw a block diagram to program on-screen "virtual instruments" that look and act like lab equipment. The program comes with hundreds of virtual instruments that you can use as is or in your own designs. This is the kind of program that sells Macs.

HONORABLE MENTIONS

SPSS for the Macintosh 4.0, from SPSS, and SYSTAT for the Macintosh 5.0, from SYSTAT,
Editors' Choice Awards

THINK Pascal

Developing software for the Mac is difficult enough — any tool that makes it easier is priceless. THINK Pascal 3.0, from Symantec, has the most advanced and comfortable development environment on the Mac. It supports Apple's MacApp class library and also contains its own object library. Although C is the language of choice for most developers, THINK Pascal is the benchmark for today's development environments.

HONORABLE MENTIONS

Until recently, ResEdit was the only graphical resource editor available for the Macintosh. Mathemaesthetics' Resorcerer 1.0, from Symantec, offers many new resource-editing features. Apple's MacApp 2.0 object library is a framework for Mac applications that reduces development time and effort, once you've made it over the learning curve.

BEST DEVELOPMENT TOOL

THINK PASCAL

BEST UTILITY

ONE OF THIS YEAR'S HOTTEST PRODUCTION CATEGORY IS COMPRESSION, WITH A SLEW OF NEW PRODUCTS AND UPGRADES AS WELL AS EXCITING DEVELOPMENTS IN THE TECHNOLOGY.

BEST COMPRESSION PRODUCT

COMPACTOR

One of this year's hottest product categories is compression, with a slew of new products and upgrades as well as exciting developments in the technology. Compactor 1.21 eclipsed all of the compression contenders this year on three fronts — strength, price, and compatibility. Although some products compress faster, no program compresses more than Compactor. If that isn't enough, consider the price — $25 in shareware fees. Compactor has a special mode that lets you compress files in a self-extracting archive, which means that the person you send the file to doesn't need Compactor to decompress it. That's the sort of ease of use that makes the Mac an elegant computer to work with. Kudos to programmer Bill Goodman.

HONORABLE MENTIONS

PicturePress 1.03, from Storm Technology, is the best JPEG-color-compression product on the market. It allows extremely flexible compression with and without hardware acceleration. Salient Software's DiskDoubler 3.0 has carved a niche for itself in an already crowded compression market by being the most straightforward way of saving space on your hard disk. DiskDoubler's compression and decompression are extremely fast, and this new version is even easier to use than previous releases.

BEST MUSIC PRODUCT

DECK

Deck is a completely software-generated recording system for the Mac that brings final recording, mixing, and mastering into the home studio. It's also a lot of fun to use. Created and manufactured by OSC and marketed by Digidesign, Deck lets you create numerous effects, and it has the unique ability to layer tracks onto themselves as well as onto other tracks. You can connect Deck to other MIDI applications and hardware via the PatchBay DA. Deck lets you create custom studio CDs for a fraction of the price you would otherwise pay.

HONORABLE MENTIONS

MacProteus, from Digidesign, lets you turn your Mac II into a true digital music workstation without taking up a lot of space. Based on the Proteus 16-bit digital-sound module by E-mu Systems and including control software from Opcode Systems, this
The boundaries that separate the various electronic media are disappearing — personal computers will soon be able to access everything from user-programmable cable TV to broadband fiber-optic telephone networks. With RadiusTV, from Radius, Mac users have taken a giant step toward the electronic future. RadiusTV is a NuBus-board/external-box combination that represents a complete integration of computers and television including tuning, audio, video, closed-captioning, text, and calibration.

The versatile RadiusTV board can be installed in any member of the Mac II family except the IIsi. It displays live 30-frame-per-second video images in a resizable window, and it can use multiple video input from cable or broadcast TV, VCRs, camcorders, and laserdisc players. RadiusTV includes a DA (to activate TV or other input while other applications are running) and Theatrics, a video special-effects program.

RadiusTV is the first video device that scans the entire video signal — in other words, it digitizes both the video and the audio tracks. Its ability to record closed captions holds lots of promise — you can, for example, build text files of broadcasts by stripping out the captions. This information can be used to do keyword searches that tell a VCR to start recording whenever a keyword — such as Beirut — is spoken in a broadcast.

NuBus card contains more than 192 digital-instrument recordings. It allows you to play sounds via any MIDI controller or MIDI Manager-compatible music program. Encore, from Passport Designs, is an easy-to-use music-composing and -printing program that lets you compose with standard music notation and MIDI. Encore lets you enter music in five ways, it imports and exports to most other programs, and it handles up to 64 tracks of MIDI data with four voices per staff.

**BEST EDUCATION PROGRAM**

**Discis Books**

Discis Books are a wonderful blend of high technology and tradition that make the most of the Mac. This series of interactive children's books from Discis Knowledge Research uses CD-ROM technology to help children read. Books by children's authors such as Robert Munsch and Beatrix Potter come to life as the child "turns" pages of text illustrated with original pictures and enhanced with sound effects and music. Double-clicking a word or picture gives the pronunciation and, in some of the books, a second-language translation.

**HONORABLE MENTIONS**

The String Quartet, Warner New Media's second AudioNotes program, tackles Beethoven's String Quartet No. 14, Op. 131, masterfully. This CD-ROM release that includes HyperCard annotations is an appealing way to appreciate — as well as study — the music. Scholastic — better known in educational circles for its great children's and young adults' books — has broken into educational software with Point of View. This interactive multimedia program provides an overview of U.S. history and lets students create projects by using their own research in conjunction with the impressive data that's provided. A dull interface is its only drawback.

**BEST RECREATIONAL PROGRAM**

**The Cosmic Osmo CD-ROM**

When the popular HyperCard collection Cosmic Osmo was first introduced, this enchanting interactive odyssey already consumed a hefty 4 megabytes. Now the Cosmic Osmo CD-ROM, from Activision, expands the incredible Osmaland environment to a whopping 100 megabytes — all contained on a shiny CD-ROM disc. This new version of Cosmic Osmo provides an even more elaborate and entertaining variety of sounds and music plus clever...
animations, puzzles, and delightful characters.

Honorable Mentions

Probably the ultimate in addictive pastimes is Welltris, the 3-D sequel to Tetris. Spectrum Holobyte's Soviet import. Welltris requires you to position falling objects on a grid to form lines and fill up the available space. Blurring the line between entertainment and education is The Playroom 1.1, from Brendebund Software. This program — aimed at three- to six-year-olds — teaches basic skills such as reading, counting, and spelling by taking the child through a magical playroom that's both fun and educational.

Best Input Device

Voice Navigator II

We considered Articulate Systems' Voice Navigator promising last year (and rewarded that promise with the Most Significant Hardware Product Eddy). The product has matured into Voice Navigator II, which now has a sensitive unidirectional microphone that replaces the awkward headsets of the previous version. The microphone provides far greater clarity and precision than does the omnidirectional microphone of Farallon's Voice Recorder and Apple's Mac LC and IIsi. Voice Navigator II has versatile, powerful software, including Voice Waves and Voice Waves/Plus. These modules provide a built-in, predefined macro capability that lets you instantly train Voice Navigator II to perform complex tasks in response to one spoken command.

Honorable Mentions

The MicroSpeed MacTRAC's smooth curves make for a superior trackball that looks as good as it feels. Its large ball and 200-dpi resolution support fast, accurate pointing. The drag-lock feature makes those pull-down menus stay put. DataDesk International's Switchboard is a customizable digital data, and after the image is processed, it saves 8-bit-per-color data. The hardware's Modulation Transfer Function helps sharpen an image's obscure edges. These advanced features make the JX-600 a powerful tool for high-quality desktop color work.

Honorable Mentions

The Focus Color Scanner, from Agfa Compugraphic, is a three-pass, 400-dpi color scanner that produces high-quality color output. Its MC View Color software allows precise control calibration as well as image editing. In the field of high-end production-level OCR, Calera's CDP 9000/TopScan is the one to choose. It is easy to set up and operates blazingly fast as well as highly accurate optical character recognition.

Best Scanner

JX-600

In 1990, the greatest advancement in scanning technology was the addition of color. Many scanner manufacturers added color models to their gray-scale-scanner lineup, but Sharp really added some power to its JX-600. The JX-600 is a one-pass flatbed scanner capable of scanning flat images and transparencies at a maximum resolution of 600 dpi. To ensure true 24-bit-color accuracy, the JX-600 scans in 10-bit-per-color digital data, and after the image is processed, it saves 8-bit-per-color data. The hardware's Modulation Transfer Function helps sharpen an image's obscure edges. These advanced features make the JX-600 a powerful tool for high-quality desktop color work.

Best Monochrome-Output Device

QMS PS-410

In a printer market saturated with new products and breakthrough pricing, the QMS PS-410, from QMS, leads the way in innovation and bang for the buck. This low-priced personal printer has a fast processor and provides the ideal solution for mixed-platform environments, in that it can accept data from all three ports simultaneously and automatically switch among printer languages.
BREAKTHROUGH PRODUCT OF THE YEAR

VIRTUS WALKTHROUGH

What would your house look like if you added, say, a garage — or even another floor? And how might that new addition appear as you walked around inside? This sort of visualization is already available on ultraexpensive workstations in architectural and engineering firms, but now Mac users too can build, rebuild, and explore complex imaginary structures.

Unlike photo-realistic rendering programs (which sacrifice speed to obtain fine detail), the new virtual-reality program Virtus WalkThrough 1.0, from Virtus, provides a real-time interactive tour of an imaginary space. You simply move the cursor position on-screen to navigate. WalkThrough allows simultaneous 2-D and 3-D views plus the ability to locate the user’s point of view at any desired height or angle. Also included is a comprehensive color library of architectural forms and furniture that users can arrange and edit as necessary.

WalkThrough has many potential applications aside from architectural design. The U.S. Coast Guard is already using the program to create interior views of large ships, and the FBI anticipates using it to coordinate rescues and criminal investigations. (Come to think of it, the average bank robber might also consider this program a breakthrough.)

By combining 3-D, color, virtual reality, and new ways to extend the Mac interface, WalkThrough is a tour de force that’s even more impressive in that it’s only the first product from an innovative new company.

HONORABLE MENTIONS

Quume’s CrystalPrint Express has a raw engine speed of 12 pages per minute, thanks to its RISC processor, and it can print at a horizontal resolution of 600 dpi. Texas Instruments’ inexpensive microLaser PS35 is the smallest PostScript printer with a 6-page-per-minute engine.

BEST COLOR-OUTPUT DEVICE

KODAK XL7700

The Kodak XL7700 ushers in the era of photo-realistic color printing. Using continuous-tone technology and printing 11-x-11-inch images, the XL7700 pushes color printing to its logical conclusion: producing images that look as good as the original.

HONORABLE MENTIONS

The Tektronix Phaser PX and the Seiko ColorPoint PS are simply the best values in PostScript color printers. Using thermal wax engines and their own proprietary dithering algorithms, they offer high-quality images. Both also offer simultaneously active data ports, providing an ideal color network solution.

BEST STORAGE PRODUCT

SBT-1288NP

Decipher its name, and you’ll find that the SBT-1288NP is perhaps MicroNet Technology’s most capable storage system for servers and high-end workstations. SBT stands for “shoe box tower,” and that tower houses two 644-megabyte spliced Wren-Runner-2s for an ultrafast seek time. The drives are capable of much higher throughput than the Mac’s built-in SCSI port, so MicroNet created the NuPORT, a SCSI-2 DMA NuBus host card that enables the system to run at data-transfer rates of up to 3 megabytes per second. With a price tag of $12,990 for the entire package, it’s an expensive — but powerful — storage system.

HONORABLE MENTIONS

Golden Triangle’s DiskTwin is the first Macintosh product that offers true disk duplexing in an easy-to-install system. It maintains a continuous copy of your primary hard-disk drive on a twin of equal or greater size. DiskTwin uses a NuBus SCSI card and a cdev to offer performance that’s up to par with single-drive speed. When MacUser Labs tested magneto-optical drives recently, SuperMac Technology’s LaserFrame emerged as one of the fastest drives tested. Manufactured specifically as a storage system for graphics professionals, the LaserFrame enables you to perform true hard-disk partitioning and DES encryption.
Eddy Watch: 1991 Contenders

As soon as we’ve ripped open the envelopes and announced the Eddy winners for one year, it’s already time to jump right in with the research for next year’s awards. It’s still too early to project the winners, but here’s a look at some of the early leaders we’re keeping our eyes on.

4th Dimension 2.1 (ACIUS): In 1990, the 4D family gained a performance-boosting compiler, a spreadsheet module, and more. Next year’s offspring could make it the definitive Mac database program with mainframe data access, even more speed, and more-innovative modules.

40 MHz PowerCache Ici (DayStar Digital): For not much more than the price of a cache card, you can get near-Ilfx speed for your Ici.

ADDmotion 1.0 (Motion Works): With its simple, snappy animation capabilities, ADDmotion may be the best HyperCard add-in of 1991.

Animation Works 1.0 (Gold Disk): How do you top easy 8-bit-color animation at a bargain price? By adding run-time capability on DOS and Mac platforms.

C-Cube Compression Master (C-Cube Microsystems): Compression is expanding — and C-Cube promises to be one of the biggest names in the field.

Cyclops (Proxima): If you’ve ever wanted a 10-foot touch screen, you’re in luck. The Cyclops interactive projection system may be the hit of the presentation circuit.

DiskPaper 1.0 (Farallon Computing): Voice, text, and graphics will transform into a print-to-disk image that’s readable by any Macintosh — even without the original application.

DVA-4000/Macintosh (VideoLogic): Mix live video and Mac graphics, with VideoLogic’s DVA 4000. You also get complete authoring software for interactive television on your desktop.

Enhance 2.0 (MicroFrontier): In version 2, this data-analysis tool metamorphoses into an image-retouching tool.

ElectricImage (Electric Image): This may be the ultimate high-end 3-D-animation program, with expert tools for film and video.

Excel 3.0 (Microsoft): Oh, yeah — Microsoft. It seemed to be too preoccupied with something called Windows to do much for the Macintosh in 1990. But 1991 will be another story, starting with Excel’s new features and revamped user interface.

FreeHand 3.0 (Aldus): Look for a simplified interface, better type handling and color control, enhanced screen-redraw speed, as well as awesome layering capabilities.

FoxPro/Mac (Fox Software): New superfast “Rushmore” optimization and simplified SQL syntax will automate Fox’s multi-user relational-database program.

if:X (Softview): This might be the program that finally makes forms automation easy — and smart.

Infini-D 1.0 (Specular International): In an affordable, easy-to-use package, Infini-D brings high-resolution 3-D-ray tracing to Mac animation.

Informed Manager (Shana): Look for this upgrade to a very strong database-program/business-forms combination.

Kodak Photo CD (Kodak): You shouldn’t expect to see this system (which develops 35mm snapshots directly to CD-ROM) on next year’s Eddy list — it’s not due out until 1992.

Lotus Improv (Lotus Development): This NeXT spreadsheet program could take the Mac by storm — but only if Lotus ports it.

MacDraw Pro (Claris): More than a hundred new features — including 32-bit-color support — should rejuvenate this classic.

Oasis 1.0 (Time Arts): Painterly painting tools are just the start of why Mac artists are anxious for Time Arts to unveil its new product.

Orange386 coprocessor board (Orange Micro): The best of both worlds — a powerful DOS board for the Mac with a full on-board ’386 computer.

PageBrush (Mouse Systems): With its unique “stitching” capability, this scanner combines the convenience of a hand-held device with the flexibility of free-form scanning.

Personal Press 1.0 (Silicon Beach): Easily the most
overdue product on the 1991 Eddy Watch roster (note that it’s the only holdover from the 1990 list), Personal Press may give Publish It Easy! a run for the low-end page-layout crown.

PixelPaint Professional 2.0 (SuperMac Technology): A completely new version of this popular program with 32-bit-color power.

Satori Components (Satori): If you’ve been waiting for a powerful and simple modular approach to Mac-based accounting, Satori may bring you to Nirvana in 1991.

Serious Business 1.0 (Serious): Why do you need a multidimensional spreadsheet? The benefits are serious.

Upfront 1.0 (Alias Research): Fast and easy 3-D modeling.

Video FX (Digital FIX): The Video FX box will turn your Mac into a full editing system by controlling two or three VCRs that work with its high-speed bus for laying PostScript text and graphics straight onto videotape.

Voice Navigator software (Articulate Systems): With sound-input capabilities standard on the new Mac CPUs, Articulate Systems is expected to release a software-only version of its voice-recognition system.

<table>
<thead>
<tr>
<th>Product</th>
<th>Vendor</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherPrint</td>
<td>Dayna Communications</td>
<td>50 S. Main Street, Fifth Floor</td>
<td>(801) 531-0600</td>
<td>$499</td>
</tr>
<tr>
<td>FileMaker Pro 1.0</td>
<td>Claris Corp.</td>
<td>5201 Patrick Henry Drive</td>
<td>(800) 544-8554</td>
<td>$299</td>
</tr>
<tr>
<td>FilmMaker 1.0</td>
<td>Paracomp, Inc.</td>
<td>1725 Montgomery Street</td>
<td>(415) 956-4091</td>
<td>$695</td>
</tr>
<tr>
<td>5000CX PC Viewer</td>
<td>In Focus Systems</td>
<td>7770 S.W. Mohawk Street</td>
<td>(600) 327-7231</td>
<td>$5,995</td>
</tr>
<tr>
<td>Focus Color Scanner</td>
<td>Agfa Compugraphic</td>
<td>90 Industrial Way</td>
<td>(503) 692-4968</td>
<td>$5,995</td>
</tr>
<tr>
<td>Fontographer 3.1</td>
<td>Altsys</td>
<td>269 W. Renner Road</td>
<td>(214) 680-2060</td>
<td>$495</td>
</tr>
<tr>
<td>FontStudio 1.0</td>
<td>Letraset</td>
<td>40 Eisenhower Drive</td>
<td>(600) 243-9373</td>
<td>$595</td>
</tr>
<tr>
<td>FrameMaker 2.1 for the</td>
<td>Macintosh</td>
<td>Frame Technology</td>
<td>(408) 433-3311</td>
<td>$995</td>
</tr>
<tr>
<td>Full Impact 2.0</td>
<td>Ashton-Tate Corp.</td>
<td>20101 Hamilton Avenue</td>
<td>(213) 329-8000</td>
<td>$295</td>
</tr>
<tr>
<td>GeoQuery 2.0</td>
<td>GeoQuery Corp.</td>
<td>475 Alexis R. Shuman Blvd.</td>
<td>(415) 541-0181</td>
<td>$395</td>
</tr>
<tr>
<td>HandOff II</td>
<td>HandOff Corp.</td>
<td>P.O. Box 811</td>
<td>(214) 727-2329</td>
<td>$79.95</td>
</tr>
<tr>
<td>Illustrator 3.0</td>
<td>Adobe Systems, Inc.</td>
<td>1585 Charleston Road</td>
<td>(800) 344-8335</td>
<td>$595</td>
</tr>
<tr>
<td>interFACE 1.0</td>
<td>Bright Star Technology, Inc.</td>
<td>1450 114th Avenue S.E.</td>
<td>(206) 451-3697</td>
<td>$495</td>
</tr>
<tr>
<td>JX-600</td>
<td>Sharp Electronics Corp.</td>
<td>Sharp Plaza</td>
<td>(800) 528-0264</td>
<td>$14,995</td>
</tr>
<tr>
<td>Kodak XL7700</td>
<td>Eastman Kodak Co.</td>
<td>343 State Street</td>
<td>(716) 724-4000</td>
<td>$18,895</td>
</tr>
<tr>
<td>LabVIEW 2.1</td>
<td>National Instruments</td>
<td>6504 Bridge Point Parkway</td>
<td>(800) 433-3488</td>
<td>$1,995</td>
</tr>
<tr>
<td>LanWay TR 16/4</td>
<td>Tri-Data Systems</td>
<td>3270 Scott Blvd.</td>
<td>(415) 727-3270</td>
<td>$395</td>
</tr>
<tr>
<td>LaserFrame</td>
<td>SuperMac Technology</td>
<td>485 Potrero Avenue</td>
<td>(408) 245-2202</td>
<td>$6,499</td>
</tr>
<tr>
<td>Lotus Marketplace</td>
<td>Lotus Development Corp.</td>
<td>55 Cambridge Parkway</td>
<td>(800) 343-5414</td>
<td>$695</td>
</tr>
<tr>
<td>L—*View Multi-Mode</td>
<td>Sigma Designs</td>
<td>46501 Landing Parkway</td>
<td>(415) 770-0100</td>
<td>$1,999</td>
</tr>
<tr>
<td>Company</td>
<td>Address</td>
<td>Phone Numbers</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>MacApp 2.0</td>
<td>Apple Computer</td>
<td>(800) 232-2732, (408) 966-1010</td>
<td>$275</td>
<td></td>
</tr>
<tr>
<td>MacProteus 1.0</td>
<td>Digidesign</td>
<td>(800) 232-2732, (408) 966-1010</td>
<td>$275</td>
<td></td>
</tr>
<tr>
<td>MacRenderMan 1.0</td>
<td>Opcode Systems, Inc.</td>
<td>(800) 369-8131</td>
<td>$895</td>
<td></td>
</tr>
<tr>
<td>MacTRAC</td>
<td>MicroSpeed, Inc.</td>
<td>(800) 232-7878, (415) 490-1403</td>
<td>$695</td>
<td></td>
</tr>
<tr>
<td>MediaTracks 1.0</td>
<td>Farallon Computing, Inc.</td>
<td>(800) 444-7489, (415) 596-9100</td>
<td>$295</td>
<td></td>
</tr>
<tr>
<td>NetModem V.32</td>
<td>Shiva Corp.</td>
<td>(800) 458-3550, (617) 252-6300</td>
<td>$1,999</td>
<td></td>
</tr>
<tr>
<td>MIDI Records/MIDI Hits,</td>
<td>The Music Data Co.</td>
<td>(800) 726-0280, (706) 860-9500</td>
<td>$2,100</td>
<td></td>
</tr>
<tr>
<td>MIDI Hits, Volumes 1 – 12</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MicroLaser PS35</td>
<td>Texas Instruments</td>
<td>(800) 927-3500</td>
<td>$2,349</td>
<td></td>
</tr>
<tr>
<td>MicroModem 1.0</td>
<td>S. H. Pierce &amp; Co.</td>
<td>(617) 395-8350</td>
<td>$295</td>
<td></td>
</tr>
<tr>
<td>MicroModem 2.0</td>
<td>Engineered Software</td>
<td>(919) 299-4843</td>
<td>$795</td>
<td></td>
</tr>
<tr>
<td>NetModem 9600M Plus</td>
<td>Prometheus Products</td>
<td>(800) 477-3473, (500) 924-0571</td>
<td>$995</td>
<td></td>
</tr>
<tr>
<td>NetModem 1.0</td>
<td>Shiva Corp.</td>
<td>(800) 458-3550, (617) 252-6300</td>
<td>$1,999</td>
<td></td>
</tr>
<tr>
<td>MIDI Records/MIDI Hits,</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIDI Hits, Volumes 1 – 12</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MicroLaser PS35</td>
<td>Texas Instruments</td>
<td>(800) 927-3500</td>
<td>$2,349</td>
<td></td>
</tr>
<tr>
<td>MicroModem 1.0</td>
<td>S. H. Pierce &amp; Co.</td>
<td>(617) 395-8350</td>
<td>$295</td>
<td></td>
</tr>
<tr>
<td>MicroModem 2.0</td>
<td>Engineered Software</td>
<td>(919) 299-4843</td>
<td>$795</td>
<td></td>
</tr>
<tr>
<td>NetModem 9600M Plus</td>
<td>Prometheus Products</td>
<td>(800) 477-3473, (500) 924-0571</td>
<td>$995</td>
<td></td>
</tr>
<tr>
<td>MIDI Records/MIDI Hits,</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIDI Hits, Volumes 1 – 12</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MicroLaser PS35</td>
<td>Texas Instruments</td>
<td>(800) 927-3500</td>
<td>$2,349</td>
<td></td>
</tr>
<tr>
<td>MicroModem 1.0</td>
<td>S. H. Pierce &amp; Co.</td>
<td>(617) 395-8350</td>
<td>$295</td>
<td></td>
</tr>
<tr>
<td>MicroModem 2.0</td>
<td>Engineered Software</td>
<td>(919) 299-4843</td>
<td>$795</td>
<td></td>
</tr>
<tr>
<td>NetModem 9600M Plus</td>
<td>Prometheus Products</td>
<td>(800) 477-3473, (500) 924-0571</td>
<td>$995</td>
<td></td>
</tr>
</tbody>
</table>
## DIRECTORY, CONTINUED

<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publish II! Easy 2.0</td>
<td>Timeworks</td>
<td>(800) 535-9497, (708) 948-9200</td>
<td>$249.95</td>
</tr>
<tr>
<td>QMS PS-410</td>
<td>OMS, Inc.</td>
<td>(800) 631-2692</td>
<td>$2,795</td>
</tr>
<tr>
<td>QuarkXPress 3.0</td>
<td>Quark, Inc.</td>
<td>(800) 949-9497</td>
<td>$2,795</td>
</tr>
<tr>
<td>Radius Pivot</td>
<td>Radius, Inc.</td>
<td>(800) 227-2795, (408) 434-1010</td>
<td>$795</td>
</tr>
<tr>
<td>RasterOps Video ColorBoard 364</td>
<td>RasterOps Corp.</td>
<td>(800) 562-4200</td>
<td>$1,295</td>
</tr>
<tr>
<td>Resorcerer 1.0</td>
<td>Mathemaesthetics</td>
<td>(617) 738-8803</td>
<td>$256</td>
</tr>
<tr>
<td>Retrospect Remote 1.2</td>
<td>Dantz Development Corp.</td>
<td>(415) 549-0293</td>
<td>$449</td>
</tr>
<tr>
<td>SBT-1288NP</td>
<td>MicroNet Technology, Inc.</td>
<td>(714) 837-6033</td>
<td>$12,990</td>
</tr>
<tr>
<td>SPSS for the Macintosh 4.0</td>
<td>SPSS, Inc.</td>
<td>(312) 329-2400, (800) 457-8287</td>
<td>$395</td>
</tr>
<tr>
<td>Status+Mac 1.0</td>
<td>Pharos Technologies</td>
<td>(513) 984-9273</td>
<td>$739</td>
</tr>
<tr>
<td>StrataVision 3d 1.4</td>
<td>Strata, Inc.</td>
<td>(801) 628-5218</td>
<td>$495</td>
</tr>
<tr>
<td>Studio/32 1.0</td>
<td>Electronic Arts</td>
<td>(617) 738-8803</td>
<td>$256</td>
</tr>
<tr>
<td>Switchboard</td>
<td>DataDesk International</td>
<td>(818) 998-4200</td>
<td>$239.95</td>
</tr>
<tr>
<td>SYSTAT for the Macintosh 5.0</td>
<td>SYSTAT, Inc.</td>
<td>(708) 864-5670</td>
<td>$795</td>
</tr>
<tr>
<td>Tactician 1.0</td>
<td>Tactics International</td>
<td>(508) 475-4475</td>
<td>$995</td>
</tr>
<tr>
<td>TelePort A300</td>
<td>Global Village Communication</td>
<td>(415) 596-9100</td>
<td>$149</td>
</tr>
<tr>
<td>THINK Pascal 3.0</td>
<td>Symantec Corp.</td>
<td>(415) 522-0107</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

**ENTIRE CONTENTS © 1991 ZIFF-DAVIS PUBLISHING CO., A DIVISION OF ZIFF COMMUNICATIONS CO.**
Never before has such a small laser printer offered so much speed and economy — and Adobe® PostScript®, too.

Introducing the 16 ppm microLaser™ XL printer. The perfect partner for your Macintosh®.

Now you can afford a 16 ppm laser printer at an 8 ppm price, and create all the graphics your Mac is famous for producing. The newest addition to Texas Instruments award-winning microLaser family offers you two affordable Adobe PostScript models, with either 17 or 35 fonts, starting at just $4,144.

For one or many users.

Whether you use only Macintosh computers, or a combination of Macs and PCs, microLaser XL can handle the workload for you or your whole department. You can even switch between HP LaserJet® II emulation and PostScript without turning off the printer. At only 13.8” wide and 16.6” deep, microLaser XL is the smallest laser printer in its class. So it's a natural beside your Mac — or in a central location, conveniently tucked away.

Superior paper handling.

Save time loading paper — microLaser XL's paper drawer holds 250 sheets. You'll save space too, because the drawer slides conveniently inside the printer. An optional, second 500-sheet paper feeder (750 sheets total) and automatic feeder for 70 envelopes are available for your large print jobs and mail-merge applications.

Powerful printing is a call away. See the power and performance of microLaser XL for yourself. Call for the location of a dealer near you.

1-800-527-3500

* $4,144, 17 fonts; $4,644, 35 fonts — TL suggested list prices. Includes PostScript, 1.5MB memory and AppleTalk® interface board.

Please circle 453 on reader service card.
Choose From Our Many Libraries With A Jasmine Drive Purchase

- **Library A - "Utilities"**
  - **Sum II** from Symantec: The best disk utility package with disk optimization, data encryption, backup and data recovery functions.
  - **Virex** from Microcom: The best virus detector and eradicator that works with all known viruses today and with updates available.
  - **DiskDoubler** from Salient: Now DiskDoubler expands the average capacity of your disk by quickly compressing files into a form that takes less space. DiskDoubler maintains filenames, folders, icon and creation dates.

- **Library B - "WordProcessing"**
  - **WriteNow** from T/maier: WriteNow the fastest, best pure-writing program available. Has an excellent spelling checker, mail merge, graphics inclusion, footnote and header/footer control. " Wonderful interface and support RT" - Macuser Magazine.
  - **Business Letters** from Lightning Word Corp.: More than 385 persuasive business letters with interactive personalized editing and also standard legal agreements such as leases, liens and many others.
  - **Sales Letters** from Lightning Word: More than 299 professionally written letters to help boost your sales.

- **Library C - "Business Booster"**
  - **C.A.T. III** from Chang Labs: If your success depends on the number of contacts you make and your ability to track, cultivate or service them, this powerful new software is the one you have been waiting for. Its integrated word processing, drawing and label printing will save you hours.
  - **Business Letters** from Lightning Word: See Library B.
  - **Sales Letters** from Lightning Word: See Library B.

- **Library D - "Accounting"**
  - **Rags to Riches Accounting** from Chang Labs: The perfect accounting package to start a business with General Ledger, Receivables, Payables, Inventory and PreBilling with a great user interface and a fast start setup.
  - **Business Letters** from Lightning Word: See Library B.
  - **Sales Letters** from Lightning Word: See Library B.

- **InstantResume** from Lightning Word: The interactive prompting system automatically personalizes the resume that you choose and drop it in your wordprocessor, giving you many forms of resumes and job-winning letters to choose from.

Libraries may change without notice.
• Portable
  Portable's sleek design, reliability and low cost is for the user who knows what value is.
  Portable 40MB to 120MB from $299
  BackPac 40MB to 80MB from $369

• Traditional “Direct Drive”
  Offers all the premium features such as two surge protected AC outlets, a noiseless fan, a SCSI select switch and others too numerous to mention. Select the drive other hard disk manufacturers copy.
  40MB to 200MB Direct Drive from $369

• Removable
  Add another cartridge when you need more storage. And because our DriveWare software locates and locks out all bad sectors, you don’t loose important data.
  The Jasmine 45 Removable (SyQuest) $599

• LocalLink “Network Server”
  LocalLink is a super fast, 100% Appleshare 2.0 compatible file server. LocalLink’s proprietary software enables the network manager to assign users, passwords and privileges. LocalLink is as fast of a server as an lcci.
  From $999

• Bundles
  A lot to choose from:
  ■ Two award winning utility software packages: Sum II and Virex.
  ■ Memory: one meg sim.
PERSONAL POSTSCRIPT

Printers

Affordable! Fast! Compact!
Ten new printers put the power of PostScript onto your personal desktop.

BY BRUCE FRASER AND THE MACUSER LABS STAFF

ne person, one computer” has long been Apple's philosophy. For PostScript printers, however, Apple has extolled the virtues of sharing—a laudable virtue, but when your single-page memo is stuck behind someone’s 50-page
report, the drawbacks of sharing are obvious. Steep PostScript-printer prices have postponed the doctrine of “one person, one computer, one printer” — but this once-distant ideal is now becoming an affordable reality. A new crop of printer engines, lower chip prices, and stiff competition are putting PostScript printers onto desktops everywhere. Maybe your desk should be next.

These new printers — smaller, cheaper, and in some cases faster than their ancestors — usher in a new era of personal PostScript printing for modest budgets. MacUser Labs looked at ten PostScript printers, all with list prices less than $3,500 and many with street prices hovering close to the $2,000 mark. Some, such as Apple’s Personal LaserWriter NT, are specifically intended as personal printers, whereas others fall into the category by virtue of their competitive pricing.
PostScript Printers

The QMS PS-410 can receive data on all three ports — LocalTalk, serial, and parallel — simultaneously.

1. The central 68020 processor keeps track of the three ports and buffers incoming jobs. If it senses data coming from LocalTalk while it's receiving data from the serial port, the 68020 buffers as much of the LocalTalk job as permitted by the buffer size. It then sends a busy signal to the LocalTalk printer.

2. Users can set the buffer size for each port; the default size is 16K. A Z-80 microprocessor handles the LocalTalk protocols and languages, and the 68020 handles communication over the serial and parallel ports.

3. The file is then sent to the ESP (emulation-sensing processor). The ESP code — run by the 68020 — looks at the first 256 bytes of the file and determines the file type: PostScript, PCL, or another language.

4. The ESP then sends the file to the appropriate language code to rasterize the page.

5. The 68020 processor uses the relevant language to convert the file into dots on the page.
All the printers are equipped with either Adobe PostScript or a competing clone to produce the highest-quality text, graphics, and images you can get on the desktop. The one clone-equipped printer, the Abaton LaserScript, had no incompatibilities with any of the software we tested, nor did it have any advantages. The Hewlett-Packard LaserJet IIp achieves PostScript-printer status only after the addition of a LocalTalk interface, a PostScript cartridge, and extra RAM — a stiff $1,530 manufacturer upgrade.

The other eight printers are all true plug-and-play PostScript. The Apple Personal LaserWriter NT and the QMS PS-410 are based on the same Canon engine, whereas the GCC BLP II is the Okidata OL840 both have an Okidata engine that uses LEDs (light-emitting diodes) rather than the more common laser. The GCC BLP II has a slower version of the same Okidata engine, and the NEC Silentwriter 2 Model 90 uses a new Minolta engine that is very similar to Canon engines. The Fujitsu RX-7100PS is the only dual-bin printer in the category and owes its presence here to a price cut of $1,200. Texas Instruments' microLaser PS35 was one of the winners in our last look at PostScript printers (see "The Letter-Perfect PostScript Printer," October '90, Buyer's Guide, page 5), but it now faces much fiercer competition.

We put the printers through our usual exhaustive set of speed, image-quality, and ease-of-use tests. To our surprise, we found no clear image-quality winner — almost every printer more than met our high expectations. However, there were noticeable differences in speed as well as a broad range of prices, features, and sizes (see Figure 1).

Arriving at an overall measure of print speed is difficult, because speed depends greatly on the type of document being printed. Simple text is relatively easy for a printer to handle, but complex graphics require intensive processing in the printer (one reason why each of these printers is more powerful and more expensive than a Mac Classic). No printer was faster than the others in all applications, but the QMS PS-410 was by far the fastest when printing pages that push PostScript to its limits — such as those containing complex graphics.

Our jury of printer professionals found very little difference in image quality. The type of paper you use in your printer can make a dramatic difference in the quality of your output. For everyday printing, use standard bond paper in the 18- to 22-pound range — you'll get good results at little cost. Although some vendors state that their printers accept paper as light as 16-pound, this lighter weight is more prone to misfeeds and is more sensitive to fluctuations in humidity that can cause the paper to wrinkle.

If you want the best possible image quality, pay the premium price for a coated paper especially formulated for laser printers. Most large paper companies make at least one such type of paper. Some, such as Hammermill, produce several varieties — some coated on only the printing side with the other side formulated to accept pasteup wax and others coated on both sides for duplex (two-sided) printing.

Heavily textured paper — such as laid bond — should generally be avoided. Because the laser-printing process uses pressure from heated rollers to fuse the toner to the paper, a textured paper makes it difficult to apply pressure evenly — in some cases the toner flakes and separates from the paper. Textured papers also leave more paper dust inside the printer. For the same reason, you should also avoid paper with frayed or uneven edges.

Duplex printing is often problematic on laser printers — the first side prints without problems, but when you run the paper through the printer a second time, the paper may wrinkle or jam. This is because the heat from the fusing process bakes all the moisture out of the paper, leaving it dry and brittle. If you have this problem, try waiting 24 hours before you try running the paper through a second time. This gives the moisture content a chance to stabilize.

Choosing the Right Paper

The type of paper you use in your printer can make a dramatic difference in the quality of your output. For everyday printing, use standard bond paper in the 18- to 22-pound range — you'll get good results at little cost. Although some vendors state that their printers accept paper as light as 16-pound, this lighter weight is more prone to misfeeds and is more sensitive to fluctuations in humidity that can cause the paper to wrinkle.

If you want the best possible image quality, pay the premium price for a coated paper especially formulated for laser printers. Most large paper companies make at least one such type of paper. Some, such as Hammermill, produce several varieties — some coated on only the printing side with the other side formulated to accept pasteup wax and others coated on both sides for duplex (two-sided) printing.

Heavily textured paper — such as laid bond — should generally be avoided. Because the laser-printing process uses pressure from heated rollers to fuse the toner to the paper, a textured paper makes it difficult to apply pressure evenly — in some cases the toner flakes and separates from the paper. Textured papers also leave more paper dust inside the printer. For the same reason, you should also avoid paper with frayed or uneven edges.

Duplex printing is often problematic on laser printers — the first side prints without problems, but when you run the paper through the printer a second time, the paper may wrinkle or jam. This is because the heat from the fusing process bakes all the moisture out of the paper, leaving it dry and brittle. If you have this problem, try waiting 24 hours before you try running the paper through a second time. This gives the moisture content a chance to stabilize.
quality. In fact, the differences were so slight that they could be attributed only to variations in the individual test printer we received (rather than the printer model) and to differences in the consumables — the toner cartridge and the drum. And we again proved that if you're especially concerned about image quality, you should pay particular attention to the paper you use (see the "Choosing the Right Paper" sidebar).

You can't choose a personal PostScript printer based on image output from one 300-dpi printer looks very much like that from another. In particular, we were pleasantly surprised by the performance of the LED engines used in the Okidata, Fujitsu, and GCC printers. In our previous testing of PostScript printers, those with LED rather than laser engines produced noticeably inferior images — this is no longer the case. However, we did find that correct adjustment of the image-density control on the LED engines in general and on the Fujitsu RX-7100PS in particular was more critical for obtaining good image quality than for the laser engines.

Setting Up

The first step in setting up a printer is installing the consumables, and we're happy to note that it is getting easier. The Canon engine used by the Apple, QMS, and Hewlett-Packard printers is still the easiest to replenish, because the toner and the drum come in a single sealed cartridge that simply slides into the printer. The NEC Silentwriter 2 Model 90 features a Minolta engine that also has single-cartridge consumables, with a long life of 6,000 pages. The Fujitsu RX-7100PS uses a single cartridge too and scores points for including a pair of white gloves with each new cartridge — who says elegance is passe?

The Okidata engines in the Okidata and GCC printers use separately replaceable toner and drum cartridges. Although the process is quick and clean, we were a little concerned about the printers' seemingly flimsy all-plastic internal construction — especially considering the rather short 2,500-page life of the toner cartridge, which necessitates frequent mucking about with the printers' innards. We experienced no problems when using any of the printers, however, so the construction deficiencies may be just superficial.

The Texas Instruments microLaser PS35 has three separately replaceable elements: The toner cartridge lasts 3,000 pages, the developer lasts 25,000 pages, and the drum should be replaced after 40,000 pages. Although this may seem to be a hassle, 25,000 pages is a lot of pages — especially for a personal printer. Most users won't have to deal with anything but the toner cartridge for at least a year. The

On the Horizon

Sure, the printers in this report are tempting, but don't sign on the dotted line just yet. Even more new affordable personal PostScript printers will be released by the time you read this — be sure to check them out before you buy.

The most intriguing developments come courtesy of Microsoft, the company behind TrueImage, a new PDL (page-description language) and a PostScript competitor (also a PDL). Although Microsoft claims that TrueImage will do everything that PostScript can do, we had a lot of unanswered questions the last time we looked at PostScript printers (see "PostScript Evolution or Revolution?" October '90, Buyer's Guide, page 44). Most of those questions still remain unanswered, but the announcement of TrueImage printers scheduled to ship in the first quarter of '91 puts real muscle behind Microsoft's challenge to PostScript.

The first company to announce a TrueImage printer was Microtek, with the TrueLaser. TrueLaser sports a low price ($2,695) and is the first printer to use a new speedy RISC chip, the AMD 29000. Adobe will also include the AMD 29000 in its line of PostScript controllers. TrueLaser uses the same 6-ppm TEC engine as the Abaton LaserScript does. Microtek, 880 Knox Street, Torrance, CA 90902; (213) 321-2121.

Right on the heels of Microtek is LaserMAX, known mainly for its high-resolution printers. The LaserMAX 400
Abaton LaserScript also has separate toner, developer, and drum units, which need to be replaced more often than those in the microLaser PS35. The LaserScript also comes with a separate page counter that must be replaced along with the drum. This TEC engine is proving popular (see the “On the Horizon” sidebar), but we wonder about the reason behind its rather Byzantine method of replacing consumables.

Configuring the printers to work with the Mac is straightforward. The Apple Personal LaserWriter NT is predictably the simplest — literally plug-and-play, because it has no front-panel controls to worry about. With the others, all that is required is to set switches that make PostScript the default language and LocalTalk the default interface. The microLaser PS35 deserves a special mention for an excellent set of help pages stored in and printed by the microLaser itself, including one page that graphically displays the menu structure of the front-panel controls. The Hewlett-Packard LaserJet IIIP is a little more difficult to set up than the others, because you must also install the PostScript cartridge, the LocalTalk card, and extra RAM. The manual for the PostScript cartridge does give basic instructions.

We used both a standard-sized envelope and a sheet of heavy letterhead stock to test each printer’s manual-paper-feed capability. None of the printers had any difficulty with either, although Fujitsu’s manual does state that “envelopes should not be printed on the RX-7100PS.” With our textured letterhead stock, the Canon engines did a noticeably better job of fusing the toner to the paper than did the others, with the Fujitsu RX-7100PS giving the poorest image quality. In general, textured paper doesn’t work well with laser printers.

All the printers have adequate paper trays except for the QMS PS-410 and the Hewlett-Packard LaserJet IIIP. Both of these came equipped only with a 50-sheet “multipurpose tray” that folds out from the front of the printer. The Personal LaserWriter NT, which uses the same engine, includes a 250-sheet
Figure 2a: Our jury of printer professionals looked at a broad range of image samples and decided that all the personal PostScript printers had good-to-excellent image quality — the rating differences between their top and bottom choices were minuscule.

Figure 2b: Although image quality isn’t an issue for the personal PostScript printers, the differences between laser or LED toner engines and other “personal” printer engines — dot matrix or inkjet — is substantial. A 144-dpi dot-matrix ImageWriter doesn’t come close to the sharp text of a 300-dpi laser engine. The 300-dpi inkjet Hewlett-Packard DeskWriter comes closer but is still inferior. No printer can come close to matching a Linotronic’s 1,270-dpi output.

Figure 3a: Printing speed is a combination of raw engine speed and microprocessor power. For simple text documents, engine speed is most important. Graphics-intensive documents such as Adobe Illustrator files benefit the most from a fast microprocessor.

Overall Times:
The overall winner across the five time tests is the QMS PS-410. Its 16.6-megahertz 68020 microprocessor overshadows its relatively slow 4-ppm engine. The GCC BLP IIS, with its 8-ppm engine, comes in a close second.

Text: The GCC BLP IIS and the Okidata OL840 print text fastest, thanks to their 8-ppm engines. Our 20-page Courier test document asks little of the microprocessor — proven by the last-place finish of the QMS PS-410 and its powerful microprocessor.

Spreadsheets: The Abaton LaserScript’s poor performance when printing a ten-page spreadsheet file bodes ill for upcoming Microsoft TrueType printers, because the LaserScript uses the precursor PDL clone to
A grueling document containing 17 downloadable fonts tests the ability of a printer's microprocessor to handle on-board memory and the AppleTalk protocol. The Fujitsu RX-7100PS and Texas Instruments microLaser PS35 prove the best in this area, whereas the Hewlett-Packard LaserJet IIIP finishes last.

Font Download:

A grueling document containing 17 downloadable fonts tests the ability of a printer's microprocessor to handle on-board memory and the AppleTalk protocol. The Fujitsu RX-7100PS and Texas Instruments microLaser PS35 prove the best in this area, whereas the Hewlett-Packard LaserJet IIIP finishes last.

Font Download:

Adobe Illustrator is entirely microprocessor-dependent. The clear winner in the PostScript graphics test is the OMS PS-410, owing to its fast 68020 microprocessor. The clear loser in this test is the Hewlett-Packard LaserJet IIIP.

PostScript Graphics:

Preparing complex PostScript graphics that are produced by

Page Layout:

A page-layout document tests all a printer has to offer: microprocessor, engine speed, LocalTalk interface, and memory management. The winner is the OMS PS-410, with the Abaton LaserScript and the Hewlett-Packard LaserJet IIIP far behind.
paper tray that fits inconspicuously under the printer. QMS and Hewlett-Packard both offer 250-sheet trays as options at extra cost, although we'd prefer that they were included as standard equipment.

**Personal Speed**

Our tests showed that printer speed depends very much on the kind of material being printed, but the QMS PS-410 wins out in overall speed, with the Hewlett-Packard LaserJet IIP a distant last (see Figure 3).

Performance in our text-document test, a 20-page Word document in 12-point Courier font, depends almost exclusively on engine speed, because Courier is a built-in printer font that requires very little processing. As expected, the printers ranked in order of their engine speeds, with the 8-ppm (pages per minute) Okidata OL.840 and the GCC BLP IIIS printers finishing first and the 4-ppm GCC BLP II, the HP LaserJet IIP, the Apple Personal LaserWriter NT, and the QMS PS-410 finishing last. The printers in the middle of the pack maintained their ranking by engine speed, with the 5-ppm Fujitsu printer finishing slightly behind the 6-ppm printers from Abaton, NEC, and TI.

In our Excel test, the printers maintained the same ranking except that the GCC BLP II finished somewhat faster than we expected and the Abaton LaserScript came in last, finishing fully one and a half minutes behind the next-slowest printer, the LaserJet IIP.

Our font-download test consisted of a single page in Microsoft Word containing 17 Adobe Type I downloadable fonts. This is an extreme test — if you typically use 17 fonts on a single page, you're probably in need of some kind of professional help — but one that tests PostScript compatibility along with the printer's memory handling and the efficiency of the AppleTalk connection, because large amounts of data are sent to the printer. Our lone clone, the Abaton LaserScript, exhibited no compatibility problems but proved quite sluggish on this test.

The real surprise was the speedy performance of both the Texas Instruments microLaser PS35 and the Fujitsu RX-7100PS, which attribute to efficient handling of data through the AppleTalk interface and to intelligent allocation of printer memory. This is good news from Fujitsu, because in our '89 printer report (see "Fit to Print," September '89, page 178), the RX-7100PS failed to download more than 11 of the 17 fonts. Back then, the printer also sold for over $1,000 more — a telling sign of how fierce the competition is and another reason you should be glad you're a user and not a manufacturer. Engine speed isn't a factor in this test, as evidenced by the third- and fourth-place showings of the QMS PS-410 and the Apple Personal LaserWriter NT, respectively. Both printers have 4-ppm engines.

To test PostScript-processing power, we printed a complex 600K Adobe Illustrator document. The QMS PS-410 was by far the fastest performer here, finishing more than 5 minutes before the second- and third-place entrants, the GCC BLP II and BLP IIIS. The rankings in this test went strictly by processing horsepower, from the PS-410's 16.6-megahertz Motorola 68000 to the Hewlett-Packard LaserJet IIP's woefully underpowered 10-megahertz Motorola 68000. This test also produced the largest range between the fastest and the slowest times — more than 18 minutes. If much of your work consists of complex PostScript graphics, put your money on pure processor horsepower.

Finally, we tested overall printing speed with a single PageMaker page containing a gray-scale TIFF image, two EPS images, some line art, and text in Times and Helvetica fonts. Three printers stood out — the QMS PS-410 was notably speedier than the rest, and the LaserJet IIP and LaserScript were much, much slower — taking almost three times as long as the other printers. The remaining printers fall into a quite narrow range, with surprisingly fast times from the Personal LaserWriter NT and the microLaser PS35.

**Personal Features**

In addition to image quality, speed, and ease of use, a wide variety of features may influence your choice of a personal PostScript printer. The Apple Personal LaserWriter NT, for example, uses the same PIC (Peripheral-Interface controller) chip that controls the serial ports of the superfast Mac IIx. The PIC offloads AppleTalk-management duties from
a rather large footprint, exacerbated by the paper tray, which projects a full 10 inches from the front of the printer.

Last but not least, we recommend the Texas Instruments microLaser PS35 ($2,849). Our pick in our last printer roundup (see "The Letter-Perfect PostScript Printer," October '90, Buyer's Guide, page 5), the microLaser PS35 remains a favorite. Its modular design makes upgrades simple, and it has excellent on-board help and diagnostics. It's speedy, and it packs a 250-sheet paper tray into a tiny footprint. Aggressive discounting puts it in the same price range as the slightly faster but much larger NEC Silentwriter 2 Model 90. It's a particularly good choice for situations in which space is at a premium.

the Personal LaserWriter NT's microprocessor, giving it a speed advantage in AppleTalk-intensive applications—proven by this printer's respectable showing in both the font-download and page-layout tests.

The Fujitsu RX-7100PS is a bit unusual compared with the others. For one thing, it uses an old-style DB-9 LocalTalk connector rather than the round DB-8 connectors used in all printers and Macs since the Plus — evidence of the design's age. To its credit, it's the only dual-bin printer in its price range. Its bundled Select-a-Bin software lets you choose different bins for different pages in a document, enabling you to load one bin with letterhead and the other with plain paper.

The GCC BLP II and the BLP IIS are identical save for their Okidata engines: The BLP II uses a 4-ppm engine, whereas the BLP IIS engine is rated at 8 ppm. The BLP II and BLP IIS are the only printers with a SCSI port, which enables you to attach a hard-disk drive for font storage. Both printers come bundled with GCC's QuickEnvelope DA, which provides a nice solution to printing envelopes. The QMS PS-410 offers a speedy 16.6-megahertz Motorola 68020 processor (also used in Apple's LaserWriter II NTX) at an unprecedentedly low price. It includes 45 fonts instead of the usual 35—the Adobe Garamond and Helvetica Condensed families are the extras. But what really sets the PS-410 off from the competition is its unique ESP (emulation-sensing processor) and Concurrent I/O features (see the "How It Works" sidebar). With Concurrent I/O, all three interface ports—parallel, serial, and LocalTalk—are "live" all the time, enabling you to connect a different computer to each port and to print from each computer without changing any switches on the PS-410.

ESP goes even further. It automatically detects whether the input is PostScript or Hewlett-Packard's PCL (common in the DOS world) and interprets it accordingly, without the need for user intervention. This feature makes the PS-410 a natural choice for small offices with both Macs and PCs.

It's worth noting, however, that this feature didn't prove completely hassle-free. We originally tested the printer with firmware revision 1 and experienced some AppleTalk hangs and unexpectedly slow performance on the AppleTalk-intensive tests. Firmware revision 6 gave much faster performance and seems to have fixed our earlier problems — make sure your printer is up-to-date. QMS is continuing to work on perfecting its AppleTalk implementation and firmware upgrades are free, so this shouldn't be seen as a major problem. The PS-410's only real drawback is its annoyingly small 50-sheet paper tray — plan on buying the optional 250-sheet paper tray.

Conclusion

Those who feel that their personal computer deserves a personal printer can now choose from a whole new class of PostScript printers. Each of these compact, affordable units will work well with your Mac, eliminate annoying waits at the printer, and deliver your pages where you need them — on your desk. Although all have good-to-excellent image quality, speed and features separate the winners from the also-rans (see the "Bottom Line" sidebar). As personal printers sprout on desktops everywhere and as long waits around the shared LaserWriter INT become a memory, the traditional water cooler may regain its rightful place as your office's prime goof-off spot.

Bruce Fraser is a San Francisco-based author who also has opinions on matters more personal than PostScript printers.
### Table 1: Features of Personal PostScript Printers

<table>
<thead>
<tr>
<th></th>
<th>Abaton LaserScript</th>
<th>Apple Personal LaserWriter NT</th>
<th>Fujitsu RX-7100PS</th>
<th>GCC BLP II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$2,995</td>
<td>$3,299</td>
<td>$3,190</td>
<td>$2,399</td>
</tr>
<tr>
<td><strong>Street price</strong></td>
<td>$2,300</td>
<td>$2,299</td>
<td>$1,795</td>
<td>$2,095</td>
</tr>
<tr>
<td><strong>Comments</strong></td>
<td>Complex consumables setup, Slow.</td>
<td>Easiest printer to use. Large-capacity paper tray.</td>
<td>Only personal printer with two paper trays. Nonstandard interface.</td>
<td>Low sticker price with SCSI port. Good speed for slow engine.</td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer type</td>
<td>PostScript clone (Bauer)</td>
<td>PostScript</td>
<td>PostScript</td>
<td>PostScript</td>
</tr>
<tr>
<td>Engine, type</td>
<td>TEC, laser</td>
<td>Canon, laser</td>
<td>Fujitsu, LED</td>
<td>Okidata, LED</td>
</tr>
<tr>
<td>Engine life (pages)</td>
<td>300,000</td>
<td>150,000</td>
<td>180,000</td>
<td>180,000/5 years</td>
</tr>
<tr>
<td>Engine life (pages)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly duty cycle (pages)</td>
<td>3,000</td>
<td>2,500</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Microprocessor, clock speed</td>
<td>NS32CG16, 15 MHz</td>
<td>Motorola 68000, 12 MHz</td>
<td>Motorola 68000, 12 MHz</td>
<td>Motorola 68000, 16.7 MHz</td>
</tr>
<tr>
<td>Pages per minute</td>
<td>6 ppm</td>
<td>4 ppm</td>
<td>5 ppm</td>
<td>4 ppm</td>
</tr>
<tr>
<td>RAM (standard, max, upgrades)</td>
<td>3 MB, 8 MB*</td>
<td>2 MB, 4 MB; 2 MB, $595</td>
<td>2 MB, 4 MB; 2 MB, $297</td>
<td>2 MB, 4 MB; 2 MB, $297</td>
</tr>
<tr>
<td>Interfaces</td>
<td>serial, parallel, LocalTalk</td>
<td>serial, LocalTalk</td>
<td>serial, parallel, LocalTalk</td>
<td>serial, parallel, $149, SCSI, LocalTalk</td>
</tr>
<tr>
<td>Printer emulations</td>
<td>HP LaserJet II</td>
<td>Diablo 630, HP LaserJet+</td>
<td>HP LaserJet II</td>
<td>Diablo 630, $149</td>
</tr>
<tr>
<td>Software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of fonts in ROM, type</td>
<td>35, Bitstream</td>
<td>37, Adobe Type 1</td>
<td>35, Adobe Type 1</td>
<td>35, Adobe Type 1</td>
</tr>
<tr>
<td>Support for Type 1 and 3 fonts</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Bundled software</td>
<td>none</td>
<td>none</td>
<td>QuickLetter, Select-a-Blim</td>
<td>QuickEnvelope DA</td>
</tr>
<tr>
<td>Paper handling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper output (image up, down)</td>
<td>up, down</td>
<td>up, down</td>
<td>down</td>
<td>up, down</td>
</tr>
<tr>
<td>Paper stock min/max, (pounds)</td>
<td>16/34 lb</td>
<td>16/28 lb</td>
<td>17/28 lb</td>
<td>16/34 lb</td>
</tr>
<tr>
<td>No. of trays, page capacity (each)</td>
<td>1, 150</td>
<td>1, 250</td>
<td>2, 150</td>
<td>1, 200</td>
</tr>
<tr>
<td>Paper sizes</td>
<td>letter, legal, A4, B5</td>
<td>letter, legal, A4, B5</td>
<td>letter, legal, A4, B5</td>
<td>letter, legal, A4, B5, Executive, Monarch, Com10, OS, DL</td>
</tr>
<tr>
<td>Envelope tray (capacity, optional)</td>
<td>50</td>
<td>15, optional, $89</td>
<td>30</td>
<td>25 – 50, optional, $89</td>
</tr>
<tr>
<td>Other features/options</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>silent sleep mode</td>
</tr>
<tr>
<td>Replacement supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPC (drum/copies)</td>
<td>$150/10,000</td>
<td>$99/3,500</td>
<td>$289/7,000</td>
<td>$289/15,000</td>
</tr>
<tr>
<td>Toner/copies</td>
<td>$40/1,500</td>
<td>NA</td>
<td>$33/6,000</td>
<td>$33/2,500</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x D x H, in.)</td>
<td>16 x 16 [25'] x 8</td>
<td>15 x 18 x 10</td>
<td>16 x 16 [27'] x 7 [18']</td>
<td>18 x 18 [23'] x 5</td>
</tr>
<tr>
<td>Weight</td>
<td>35 lb</td>
<td>32 lb</td>
<td>44 lb</td>
<td>24 lb</td>
</tr>
<tr>
<td>Warranty</td>
<td>1 year, 90 days on-site</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>Abaton</td>
<td></td>
<td>Apple Computer, Inc.</td>
<td>Fujitsu America, Inc.</td>
<td>GCC Technologies, Inc.</td>
</tr>
<tr>
<td></td>
<td>48431 Millmont Dr.</td>
<td>20252 Mariani Ave.</td>
<td>3055 Orchard Dr.</td>
<td>580 Winter St.</td>
</tr>
<tr>
<td></td>
<td>Fremont, CA 94538</td>
<td>Cupertino, CA 95014</td>
<td>San Jose, CA 95134</td>
<td>Waltham, MA 02154</td>
</tr>
<tr>
<td></td>
<td>(800) 444-5521</td>
<td>(408) 996-1010</td>
<td>(800) 629-4686</td>
<td>(800) 422-7777</td>
</tr>
<tr>
<td></td>
<td>(415) 683-2226</td>
<td>(408) 432-1300</td>
<td>(408) 890-0880</td>
<td>(617) 890-0880</td>
</tr>
</tbody>
</table>

*With third-party 4-megabyte SIMMs

DOS kit

HP-emulation kit

With tray
LISTEN, MAC, YA GOT THREE CHOICES...

FOR YOUR MAC II

LaserMAX 1000 Personal Typesetter

The LaserMAX 1000 utilizes the same resolutionary TurboRes™ technology to produce incredible 1000 x 1000 TurboRes™ output.

TurboRes™ resolution enhancement technology controls the position and height of the pixels on the printed page and eliminates coarse steps between pixels, otherwise known as jaggies. With output this sharp, you won’t need to send out for expensive and time-consuming typeset output.

And, both the LaserMAX 1200 and the LaserMAX 1000 come standard with the LaserMAX 135 Typeface Classics—135 premium typefaces in Type 1 format.

LaserMAX 400 Personal Printer

Who said quality doesn’t come cheap? The LaserMAX 400 provides Macintosh users with 400 x 400 TurboRes™ output, 50 premium typefaces in Type 1 format and still sells for less than $2,000. That’s a bargain any way you look at it.

The LaserMAX 400 is a powerful PostScript-language compatible laser printer that works with many of your desktop publishing and graphics applications. The 4-page-per-minute printer is based on the same LBP-LX print engine that’s used with other personal printers, including Apple’s new Personal LaserWriter SC and NT and HP’s LaserJet IIIP.

LaserMAX 1200 Personal Typesetter II

You knew it was only a matter of time before LaserMAX gave you more. With the introduction of the LaserMAX 1200, Macintosh users are given far more publishing power than ever: 1200 x 1200 TurboRes™ output in an 11 x 17-inch format.

At 1200 x 1200 TurboRes™ the LaserMAX 1200 provides you with text that’s crisp and accurate—even delicate serifs are reproduced with amazing precision.

And the large format gives you the freedom to create two-page spreads and print the entire image as camera-ready art without having to shrink or tile. You can also place crop marks and bleeds, print CAD designs, newsletters and posters in an 11 x 17-inch format.

If you’re looking for an extraordinary resolution solution, call LaserMAX today:
(612) 944-9696, Dept. 249.

7500 Shady Oak Road   Eden Prairie, Minnesota 55344
TEL: (612) 944-9696   FAX: (612) 944-9151

© 1990 LaserMAX Systems

TurbolRes™ is a trademark and patent-pending technology of LaserMAX Systems. Macintosh, TrueType and AppleTalk are registered trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc. TrueImage is a registered trademark of Microsoft Corporation. The AppleTalk™ protocols and computer programs are licensed from Apple Computer, Inc.
### Table 1: Features of Personal PostScript Printers, continued

<table>
<thead>
<tr>
<th>GPL BLP</th>
<th>Hewlett-Packard LaserJet IIP</th>
<th>NEC Silentwriter 2 Model 90</th>
<th>Okidata DL840</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td><strong>$2,899</strong></td>
<td><strong>$2,025</strong></td>
<td><strong>$2,495</strong></td>
</tr>
<tr>
<td><strong>Street price</strong></td>
<td><strong>$2,899</strong></td>
<td><strong>$1,950</strong></td>
<td><strong>$1,449</strong></td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Printer type</strong></td>
<td>PostScript</td>
<td>PostScript option, $695</td>
<td>PostScript</td>
</tr>
<tr>
<td><strong>Engine, type</strong></td>
<td>Okidata, LED</td>
<td>Canon, laser</td>
<td>Minolta, laser</td>
</tr>
<tr>
<td><strong>Engine life (pages)</strong></td>
<td>300,000/5 years</td>
<td>150,000</td>
<td>180,000</td>
</tr>
<tr>
<td><strong>Monthly duty cycle (pages)</strong></td>
<td>5,000</td>
<td>2,500</td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Microprocessor, clock speed</strong></td>
<td>Motorola 68000, 16.7 MHz</td>
<td>Motorola 68000, 10 MHz</td>
<td>Motorola 68000, 16.7 MHz</td>
</tr>
<tr>
<td><strong>Pages per minute</strong></td>
<td>8 ppm</td>
<td>4 ppm</td>
<td>6 ppm</td>
</tr>
<tr>
<td><strong>RAM (standard, max.; upgrades)</strong></td>
<td>2 MB, 4 MB; 2 MB, $299</td>
<td>512K; 2 MB, $650</td>
<td>2 MB, 4 MB; 2 MB, $995</td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td>serial, parallel, $149;†</td>
<td>serial, parallel, LocalTalk</td>
<td>serial, parallel, LocalTalk</td>
</tr>
<tr>
<td><strong>Printer emulations</strong></td>
<td>HP LaserJet II; Diablo 630, $149§</td>
<td>HP LaserJet II</td>
<td>HP LaserJet IIP</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No. of fonts in ROM, type</strong></td>
<td>35, Adobe Type 1</td>
<td>35, Adobe Type 1</td>
<td>35, Adobe Type 1</td>
</tr>
<tr>
<td><strong>Support for Type 1 and 3 fonts</strong></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Bundled software</strong></td>
<td>QuickEnvelope DA</td>
<td>special printer driver</td>
<td>support kit</td>
</tr>
<tr>
<td><strong>Paper handling</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Paper output (image up, down)</strong></td>
<td>up, down</td>
<td>up, down</td>
<td>down</td>
</tr>
<tr>
<td><strong>Paper stock min./max. (pounds)</strong></td>
<td>16/34 lb</td>
<td>16/26 lb</td>
<td>20/41 lb</td>
</tr>
<tr>
<td><strong>No. of trays, page capacity (each)</strong></td>
<td>1, 200</td>
<td>1, 50</td>
<td>1, 250</td>
</tr>
<tr>
<td><strong>Paper sizes</strong></td>
<td>letter, legal, A4, B5, Executive, Monarch, Com10, C5, DL</td>
<td>letter, legal, executive</td>
<td>letter, legal, A4, B5, Executive, Monarch, Com10, C5, DL</td>
</tr>
<tr>
<td><strong>Envelope tray (capacity; optional)</strong></td>
<td>25 – 50; optional, $89</td>
<td>20; optional, $89</td>
<td>15</td>
</tr>
<tr>
<td><strong>Other features/options</strong></td>
<td>silent sleep mode</td>
<td>250-sheet lower paper tray, $195</td>
<td>face-up paper tray, $139</td>
</tr>
<tr>
<td><strong>Replacement supplies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OCP (drum)/copies</strong></td>
<td>$289/15,000</td>
<td>$955/6,500</td>
<td>$240/8,000</td>
</tr>
<tr>
<td><strong>Toner/copies</strong></td>
<td>$33/2,500</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>24 lb</td>
<td>22 lb</td>
<td>44 lb</td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td>1 year</td>
<td>1 year</td>
<td>1 year/60,000 pages</td>
</tr>
<tr>
<td><strong>Replacement supplies</strong></td>
<td>GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880</td>
<td>Hewlett-Packard 19510 Pruneridge Ave. Cupertino, CA 95014 (800) 752-0900 (415) 857-1501</td>
<td>NEC Technologies 1414 Massachusetts Ave. Cambridge, MA 02139 (800) 264-8000</td>
</tr>
</tbody>
</table>

†DOS kit
§HP-emulation kit
*With tray
**Tested with optional 2 MB of RAM, PostScript, and LocalTalk (base non-PostScript price is $1.495)
Introducing the Kodak Diconix M150 plus printer. It travels with any portable or desktop Mac computer, so you can print anytime, anywhere.

Just think of all the things you can do if you carry a Diconix printer with your Macintosh computer. Those last-minute improvements on the presentation. The letters and reports that could be on their way right now. And, because it's so small and quiet, it works as well on the desktop as it does on the road.

It's all easy with the new Kodak Diconix M150 plus printer. It's easy to carry (3.1 lbs.), prints PostScript-quality outline fonts using Adobe Type Manager™ software, as well as presentation graphics. No printer in the world is quieter, smaller or lighter. Go ahead, give in to temptation, call for the name of your nearest dealer in the U.S. or Canada: 1-800-344-0006.

Macintosh computer and new Kodak Diconix printer

WHAT'S ONE WITHOUT THE OTHER?

Please circle 168 on reader service card.
## PostScript Printers

### Table 1: Features of Personal PostScript Printers

<table>
<thead>
<tr>
<th>Feature</th>
<th>OMS PS-410</th>
<th>Texas Instruments microLaser PS35</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price</td>
<td>$2,795</td>
<td>$2,849</td>
</tr>
<tr>
<td>Street price</td>
<td>$1,950</td>
<td>$1,790</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer type</td>
<td>PostScript</td>
<td>PostScript</td>
</tr>
<tr>
<td>Engine, type</td>
<td>Canon, laser</td>
<td>Sharp, laser</td>
</tr>
<tr>
<td>Engine life (pages)</td>
<td>360,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Monthly duty cycle (pages)</td>
<td>2,500</td>
<td>3,000</td>
</tr>
<tr>
<td>Microprocessor, clock speed</td>
<td>Motorola 68020, 16.6 MHz</td>
<td>Motorola 68000, 12.5 MHz</td>
</tr>
<tr>
<td>Pages per minute</td>
<td>4 ppm</td>
<td>6 ppm</td>
</tr>
<tr>
<td>RAM (standard, max.; upgrades)</td>
<td>2 MB, 6 MB; 1 MB, $480; 2 MB, $780; 4 MB, $1,280</td>
<td>1.5 MB, 4.5 MB; 1 MB, $345</td>
</tr>
<tr>
<td>Interfases</td>
<td>serial, parallel, LocalTalk</td>
<td>serial, parallel, LocalTalk</td>
</tr>
<tr>
<td>Printer emulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of fonts in ROM, type</td>
<td>45, Adobe Type 1</td>
<td>35, Adobe Type 1</td>
</tr>
<tr>
<td>Support for Type 1 and 3 fonts</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Bundled software</td>
<td>Executive series utilities</td>
<td>none</td>
</tr>
<tr>
<td>Paper handling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper output (image up, down)</td>
<td>up, down</td>
<td>up, down</td>
</tr>
<tr>
<td>Paper stock min./max. (pounds)</td>
<td>16/28 lb</td>
<td>16/24 lb</td>
</tr>
<tr>
<td>No. of trays, page capacity (each)</td>
<td>1, 50</td>
<td>1, 250</td>
</tr>
<tr>
<td>Paper sizes</td>
<td>letter, legal, A4, B5, Executive</td>
<td>letter, legal, A4, B5, Executive</td>
</tr>
<tr>
<td>Envelope tray (capacity, optional)</td>
<td>20, optional, $89</td>
<td>40, optional, $395</td>
</tr>
<tr>
<td>Other features/options</td>
<td>emulation switching, concurrently active ports, 250-sheet lower tray, $199</td>
<td>none</td>
</tr>
<tr>
<td>Replacement supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPC (drum)/copies</td>
<td>$85/3,500</td>
<td>$160/40,000</td>
</tr>
<tr>
<td>Toner/copies</td>
<td>NA</td>
<td>$60/3,000</td>
</tr>
<tr>
<td>Warranty</td>
<td></td>
<td>$130 (developer)/25,000</td>
</tr>
<tr>
<td>Dimensions (W x D x H, in.)</td>
<td>13.5 x 16 [26] x 7.5</td>
<td>13 x 14 x 11</td>
</tr>
<tr>
<td>Weight</td>
<td>26 lb</td>
<td>33.5 lb</td>
</tr>
<tr>
<td>Warranty</td>
<td>1 year</td>
<td>1 year</td>
</tr>
</tbody>
</table>

### Criteria

- **List price** — The manufacturer's suggested retail price.
- **Street price** — The lowest actual price our researchers could find in a survey of dealers around the U.S. in November 1990.
- **Printer type** — The type of RIP (raster-image processor) used in the printer.
- **Engine, type** — The type of engine used in the printer by maker and by type of marking technology — laser or LED.
- **Engine life (pages)** — The manufacturer's rating of the engine life in total pages.
- **Monthly duty cycle (pages)** — If you're doing high-volume printing, this number is significant, because it affects how many pages you print in a day.
- **Microprocessor, clock speed** — The faster and more powerful the processor, the faster the printer processes and prints your page.
- **Pages per minute** — How many pages the engine can print per minute after the RIP has prepared a page for printing.
- **RAM (standard, max.; upgrades)** — The amount of on-board memory the printer ships with and optional upgrades.
- **Interfaces** — Some manufacturers add interfaces besides LocalTalk to connect with PCs. Some also offer SCSI for attaching a hard-disk drive.
- **Printer emulations** — Some manufacturers provide popular PC printer languages for PC users.
- **No. of fonts in ROM, type** — The number and the type of font outlines in the printer's ROM.
- **Support for Type 1 and 3 fonts** — The ability to have prints come out of the printer with the image side up or down.
- **Paper output (image up, down)** — The ability to have prints come out of the printer with the image side up or down.
- **Paper stock min./max. (pounds)** — The lower and upper limit for the weight of paper usable in the printer.
- **No. of trays, page capacity (each)** — A large paper tray is convenient for high-volume printing.
- **Paper sizes** — Most printers can handle the popular sizes, whereas others can print close to the edge and offer other sizes.
- **Envelope tray (capacity, optional)** — Some printers can handle envelopes without the use of special optional paper trays; whereas others require a separate tray for more than a single manually fed envelope.
- **OPC (drum)/copies** — Canon and Minolta engines use a single cartridge that combines the drum with the toner. Others use a separate drum.
- **Toner/copies** — Separate toner units need to be replaced more frequently than OPC drum units.
- **Dimensions (W x D x H, in.)** — The dimensions of the printer, including paper trays.
- **Weight** — The weight of the printer in pounds.
### Most Printers are Macintosh® Compatible!

**Is Yours?**

**Model** | **Type** | **Grappler** | **Notes**
--- | --- | --- | ---
Alps | AL-2000 Series | 24 Pin | Grappler LX 6
| AL-2000 Series | 24 Pin | Grappler LX 6
| Allegro | 24 Pin | Grappler LX 6
| AS-1000 | 18 Pin | Grappler LX 1.5
| P-2000 | 16 Pin | Grappler LX 1.5
| P-2100 | 16 Pin | Grappler LX 1.5

**Notes**

- The Grapple™ Series works with all Macintoshes, including the new Classic, SI, and LC.
- Grappler printer interfaces use Apple’s® printer drivers, ensuring compatibility with virtually all applications. The Grapplers also support Adobe® ATM®, providing limitless font options for top quality documents. All required hardware, documentation, cabling and software are included.
- For more information see your dealer or call Orange Micro today.

**Olympia**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LaserStar</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>NPS</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>NP635</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>NP90</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
</tbody>
</table>

**Panasonic**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 1500 | Laser | Grappler LX | 3,11
| 1550 | Laser | Grappler LX | 4,11
| 1570 | Laser | Grappler LX | 1 |
| 1580 | Laser | Grappler LX | 13 |
| 1590 | Laser | Grappler LX | 1 |

**Printek**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>930CX</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>2000XT, 2000CX</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
</tbody>
</table>

**Ricoh**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-5000</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
</tbody>
</table>

**Sekioka**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-5400</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>MP-1300A</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SK-100</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SK-300A</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SK-3500</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SL-250</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SL-350A</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SP-180, 185A</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SP-1000, 1000A</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
<tr>
<td>SP-1000AF</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
</tbody>
</table>

**Sharp**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX-720</td>
<td>Laser</td>
<td>Grappler LX/LXS 9</td>
<td></td>
</tr>
</tbody>
</table>

**Star Micronics**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genex 100</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>9</td>
</tr>
<tr>
<td>NB-25, 25B</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NB-35, 35B</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NP-10</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>9</td>
</tr>
<tr>
<td>NX-15</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NX-100</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NX-1000</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NX-1500</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>NX-2400</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>SD10</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>6</td>
</tr>
<tr>
<td>SD10</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>9</td>
</tr>
</tbody>
</table>

**Toshiba**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P511, P512</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>13</td>
</tr>
<tr>
<td>P511, P512</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>13</td>
</tr>
</tbody>
</table>

**Toshiba**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Grappler</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P511, P512</td>
<td>Laser</td>
<td>Grappler LX</td>
<td>13</td>
</tr>
</tbody>
</table>

The Grappler™ Series works with all Macintoshes, including the new Classic, SI, and LC. Grappler printer interfaces use Apple's® printer drivers, ensuring compatibility with virtually all applications. The Grapplers also support Adobe® ATM®, providing limitless font options for top quality documents. All required hardware, documentation, cabling and software are included.

For more information see your dealer or call Orange Micro today.

### Notice:

This chart represents the best current information, based on testing and data supplied by the printer manufacturers. Printers listed as compatible may still exhibit variations in multiple page alignment, slower print speeds and other minor limitations. Laser printers require a minimum of 1MB of printer RAM. Macs with 9 Pin ONLY + adapter cable.

### Key to Notes:

- 1. Epson FX, FX series emulation
- 2. Epson LX series emulation
- 3. HP LaserJet Plus emulation
- 4. Epson MX series emulation
- 5. IBM ProPrinter emulation
- 6. Epson LJ series emulation
- 7. Plug-in cards emulate LIQ-1000
- 8. Toshiba P531 emulation
- 9. HP LaserJet Plus emulation
- 10. Parallel extension needed
- 11. No reverse line feed
- 12. Slow Printing

© Orange Micro Inc., 1990 Rev. 12/90

**Please circle 58 on reader service card.**

"11 Years of Innovation and Excellence" 1400 N. Lakeview Ave., Anaheim CA 92807 (714) 779-2772
Since we know you’re pressed for time, we’ll skip the standard introduction and get straight to the point.

- Double Helix is the fastest multiuser relational database for

<table>
<thead>
<tr>
<th>Indexed Search</th>
<th>Indexed Search</th>
<th>Add Data</th>
<th>Delete Data</th>
<th>Search Across Two Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double</td>
<td>Helix</td>
<td>FoxBASE</td>
<td>OmniiS</td>
<td>4D</td>
</tr>
<tr>
<td>Time in</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>seconds</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

When speed-testing the top Mac databases, Double Helix in multiuser mode won hands down.

the Macintosh. This, you should know, is not our personal assessment, but rather the conclusive results of MacUser magazine’s June 1990 speed-test. And of the four top databases, in five key commands, Double Helix finished first. By considerable margins.

WELCOME TO THE WORLD’S

VERY FIRST MAC-BASED

CLIENT/SERVER DATABASE.

- What makes Double Helix so fast?

Technically, it’s because of our advanced client/server format. Unlike file servers, which slow your system down by shuffling copies around the network, client/server lets all users work directly off a master. This keeps network traffic down. And productivity up.

In addition to speed, client/server provides another crucial benefit: total referential integrity. In other words, when one user makes a change to the master, the whole network gets updated—in real-time. On your screen. Right then and there.

So everyone has the same data. And everyone’s in sync. The end result: a group that’s always working in one direction—forward.

- By the way, and for the record, we were the first ever to introduce a Mac-based client/server. And while it was revolutionary at its debut in 1986, it is, remarkably enough, still revolutionary today.

IMMEDIATE GRATIFICATION, RIGHT FROM THE START.

- Here is—and we quote—what MacWorld said in May 1990: “If you need a working database by Friday morning, and it’s now Wednesday afternoon...your best bet is Double Helix.” Talk about fast. With Double Helix in hand and no prior knowledge at all, you can, in a matter of hours, mold Double Helix to conform to your individual needs. And as your needs change, so can, with minimal effort, your applications.

DOUBLE HELIX IS THE MOST

AFFORDABLE MULTIUSER SYSTEM AVAILABLE. HONEST.

- How do we figure? For one, the multiuser application is already included in every Double Helix box. And unlike other databases, it doesn’t require any special file server software or hardware, saving you additional and quite substantial start-up costs. So with Double Helix, there’s nothing more to buy. Nothing more to install. And nothing more affordable.

THE FASTER YOU GET GOING, THE FASTER YOU GET GOING.

- We’ve just spent the last 456 words talking about how fast and affordable Double Helix is. Now you can spend the next 14 numbers confirming it all for yourself. Call 1-800-323-5423, ext. 234 and we’ll send you out a test flight demo and Quick Start instruction guide of your choice right away. After all, if you stayed with us this long, you’ve got no time to waste.

© ODESTA CORPORATION

The Macintosh is known for being user-friendly. So Mac reference books should be, too. Here's a three-book library with no intimidating jargon... no complicated procedures... just straight-forward advice on:

- What to buy
- How to install it
- How to maintain and repair your Mac
- How to upgrade you Mac
- Answers to commonly asked questions

**The Big Mac Book**

by Neil J. Solkin. Complete A to Z coverage of all available Mac products, including answers to all your questions on purchasing hardware and software. Illustrated with more than 400 video displays, line drawings, and charts. You'll find:

- The latest user ratings for all Mac hardware and software
- Quick-start tutorials
- A Survival Guide with programming tips, tricks, and shortcuts

Publisher's Price: $24.95

**Inside the Apple Macintosh**

by Jim Heid and Peter Norton. Hundreds of programming techniques, tips and ideas are illustrated with photographs, video displays, line drawings, and charts in this handy guide to understanding the technology behind the Macintosh. You'll learn:

- What makes your Mac go
- How your Mac works with add-ons
- Making your Mac fit your needs
- Hands-on tips and techniques

Publisher's Price: $27.95

**Macintosh Repair and Upgrade Secrets**

by Larry Pina. Avoid costly repair bills by tuning and repairing your own Mac with nothing more than a screwdriver and some inexpensive parts. Just use the Test Pattern Generator (the diagnostic disk that comes FREE with this book) to troubleshoot a host of common problems. Illustrated with more than 300 photographs, video displays, and line drawings. Includes dealer and manufacturer addressee listings for Mac component equivalents from:

- Generic
- OEM
- Philips
- Radio Shack

Publisher's Price: $32.95

MEMBERSHIP BENEFITS:

In addition to getting the MAC USER'S SET for only $4.95 when you join, you'll also receive discounts on books you choose to purchase. Discounts generally range from 15% to 30% off the publishers' prices, and occasionally even more. Also, you will immediately become eligible to participate in our Bonus Book Plan, with savings of 60% off the publishers' prices. At 3-4 week intervals (15 times per year), you will receive the Small Computer Book Club News, describing the coming Main Selection and Alternate Selections, together with a dated reply card. In addition, up to two times a year, you may receive offers of Special Selections which will be made available to a group of select members. If you want the Main Selection, do nothing, and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the card and return it by the date specified. You will have at least 10 days to decide. If, because of late mail delivery of the News, you should receive a book you do not want, we guarantee return postage.

©Newbridge Communications, Inc.

Small Computer Book Club

A Division of Newbridge Communications, Inc.

3000 Cindel Drive

Delran, NJ 08075

Please accept my application for trial membership and send me the MAC USER'S SET (00071) billing me only $4.95, plus shipping and handling. I agree to purchase at least three additional selections. My membership is cancelable at any time after I buy these three additional books. A shipping and handling charge is added to all shipments.

Name_________________________Address_________________________

City_________________________State______Zip____________________

No-Risk Guarantee: If I am not satisfied—for any reason—I may return the MAC USER'S SET within 10 days. My membership will be canceled, and I will owe nothing.

Member Price: $24.95

Publisher's Price: $85.85

Value!

©Newbridge Communications, Inc.

MacUser 3/91
PAINTING PROGRAMS:  
THE FINE ART OF  
32-Bit Color

Fulfill your most colorful fantasies! These four power painting programs give you creative control over 16,777,216 colors.

Oil painters no longer need endure dizzying turpentine fumes. Airbrush artists can now avoid acrylic smog. The Mac has become a tool for serious artists. And as the Mac reduces air pollution, it also increases artists’ control over the creative process. Painters can now reproduce, on-screen, millions of colors with perfect precision — no more mixing blobs, dabs, dollops, drops, smidgens, tidbits, or any other arcane unit of measure borrowed from the world of haute cuisine. With a full-color-capable Mac and a 32-bit painting program, artists can control a virtually unlimited supply of colors — electronic dollops and splats that add up to nearly 16.8 million colors.

Commercial artists, illustrators, and fine artists have discovered the control and power of 32-bit painting programs. And as full-color Mac hardware becomes more popular, the power of 32-bit painting is now beginning to move out of the wholly professional field and onto desktops everywhere. The Mac’s forgiving nature is fueling this rapid advance. If you don’t like the color you’ve applied, you can simply undo it — and try millions of others. You can match a color from one area of your artwork for use in another just by clicking on it. And when it’s time to reproduce your art on a printing press, a 32-bit painting program can help you generate the necessary color separations. Or better yet, you can place your artwork in a page layout and take the film output from your service bureau directly to your printer (see “Color: Techniques & Technologies,” May ’90, page 199).

BY DARRYL LEWIS, KELLI WISETH,  
AND THE MACUSER LABS STAFF
Mathematically inclined readers may notice that 32 bits can produce 4,294,967,296 colors — not the mere 16,777,216 we’ve mentioned. Don’t worry — you’re not being shortchanged by a few billion: The 16.8 million colors of a 32-bit painting program are produced by only 24 bits of the 32-bit long word that’s the basis of Apple’s 32-bit QuickDraw screen-description scheme. The 8 extra bits are reserved for the alpha channel — as yet undefined by Apple but used by some third-party developers for a variety of purposes. (RasterOps, for example, uses the alpha channel to combine video images with Mac graphics in its SFX video mixer.) However, 16.8 million colors should be enough for even the most exacting photo-realistic images. In fact, if you start defining one color per minute right now and continue day and night, you’ll reach color number 16,777,216 in mid-March 2023.

**Colorful Contenders**

To help you decide which 32-bit painting program is best for you — or if you need to move up to 32-bit painting at all — we took a close look at four full-color painting programs: Delta Tao’s Color MacCheese 1.05, Electronic Arts’ Studio/32 1.0, SuperMac’s PixelPaint Professional 1.0, and Zedcor’s DeskPaint 3.03. Color MacCheese is also distributed by Baseline Publishing, of Memphis. (By the time you read this, SuperMac should be shipping PixelPaint...
The 256 color possibilities for any 8-bit paint document are stored in a CLUT (color-lookup table) at the beginning of the file. Each entry in a CLUT contains four components: an index number and corresponding red, green, and blue values. If a color isn't in the current palette, Color Quick-Draw returns the index number of the closest available color.

A 32-bit paint document stores color values directly in the file as three 8-bit numbers and an 8-bit alpha channel. Only 24 bits are needed to produce up to 16.8 million colors. Displaying 16.8 million colors requires three times the processing power as 8-bit, however, so you pay for the higher quality of 32-bit paint with slower speed and larger files.
Painting Programs

Professional 2.0; see the “On the Horizon” sidebar.) Low-priced Color MacCheese and DeskPaint provide fewer features than do professional-level PixelPaint Professional and Studio/32, but if you’re a beginning Mac painter (or are on a limited budget), you’ll find them to be excellent introductions to the world of 32-bit painting and they may be all the painting power you’ll ever need. All four 32-bit painting programs provide the seemingly limitless palette of 16.8 million colors, but some give you better tools for managing and applying those colors. As a desk accessory, DeskPaint has the advantage of being always available on the Apple menu — you can, for example, quickly edit an image while still working in your page-layout program.

Although all four programs can display an equal number of colors, only three provide the high-output resolutions that are important when you print to high-resolution devices such as quality color printers or professional Linotronic

### Object-Oriented Drawing Programs

Whereas painting programs treat a computer image as a collection of colored pixels, object-oriented drawing programs — such as MacDraw II, FreeHand 2.0, and Illustrator 3.0 — rely on mathematical descriptions to create images. Each object, or element, drawn in an object-oriented program is a complete unit. You don’t need a lasso or marquee tool to surround pixels — just click on the object, and it’s all yours.

You create objects by using basic shape or free-form tools (see Figure B). When you draw a line, you create a path; if you make a circle, a square, or a rectangle, you make a closed path. The tools provided in an object-oriented drawing program split and join paths or add points to an existing path. Object-oriented drawing programs also provide transformation tools for rotating, creating a mirror image of, scaling, or skewing elements — you won’t find such tools in a painting program.

Adding color to an object-oriented drawing also happens along a path or within a closed path; you must first select the object (the path) and then apply the paint to it, usually by means of a menu selection — you won’t find a paintbrush in an object-oriented program.

An exception to this rule is Deneba’s Canvas 2.0, something of a hybrid that combines basic painting tools with extensive drawing capabilities. You can use both sets of tools to create your image. Nonetheless, you can use only the appropriate tools — bit-mapped or object-oriented — to work with the parts of the image thus created.

And Canvas doesn’t provide advanced painting functions such as masking.

Because object-oriented art is managed by mathematical description, you can enlarge and reduce it without its becoming jagged. When you enlarge or reduce a bit map, you must take into consideration the printer’s resolution and make sure that you enlarge or reduce only by percentages that are evenly divisible by the bit-map resolution of 72 dpi — otherwise your artwork looks chunky. Object-oriented art maintains smoothness regardless of output size.

On the other hand, object-oriented programs provide no way to create fine detail in a picture by adding the color of individual pixels. Although you can work with special gradients and fills, fill colors and patterns are generally limited to solids and regular patterns. There’s no direct way to create irregular fills, color mixes, or complex shading effects.

Object-oriented and bit-mapped programs provide completely different ways of working with images — your choice depends on the job at hand. When typography is part of the artwork or if you’re designing a logo that combines text with irregular shapes filled with solid colors or regular patterns, you’ll want to use an object-oriented drawing program such as Illustrator or FreeHand. On the other hand, if you’re creating a complex illustration painted with subtle gradations of color, a bit-mapped painting program is the way to go.

![Figure B](image-url)

Figure B: Unlike a painting program, with its toolbox of brushes and buckets, an object-oriented drawing program, such as FreeHand, provides tools for working with paths. You can rotate, alter the size, or distort the perspective of an object simply by selecting it and using a rotation, scaling, or skewing tool.

![Figure 3](image-url)

Figure 3: A 32-bit paint program has constant access to all 16.8 million colors and so can create a smooth gradient between any two colors. (A gradient blend is the transition of shades from one color to the next.) An 8-bit program, on the other hand, has only 256 colors to draw on and so must use other techniques — such as dithering — to simulate color transitions. The 8-bit dithered version of the blend (left) is not nearly as smooth as the 32-bit version.
Can Do It!

The wait is over! With FilmMaker you can create the powerful and elegant animations that until now you have only dreamed of. FilmMaker has been designed to save you countless hours of effort while allowing you to produce the ultimate in multimedia presentations. Have you ever dreamed of full-screen anti-aliasing, real time control over the path, position, scale, and rotation of animated objects and much more? FilmMaker can do it!

With FilmMaker great animations are in the can. To find out how you can become a "FilmMaker" call Paracomp today at 415/956-4091.
Painting Programs

imagesetters. Color MacCheese has the lowest output resolution — it tops out at the Mac’s screen resolution: 72 dpi. If you want quality output — especially if you intend to produce color separations — you’ll want a higher-resolution image. DeskPaint, PixelPaint Professional, and Studio/32 images can be printed on 300-dpi printers or 2,540-dpi imagesetters such as the Linotronic 300.

Before you rush out to pick up one of these 32-bit painting programs, remember that not every color Mac can display the full 16.8 million colors — you need a 24- or 32-bit video card. (The built-in 8-bit-color video of the LC, IIsi, and IICl can display only 256 colors.) You’ll also need to install 32-bit QuickDraw, from your Apple System Tools disk, in your System Folder; this addition to the QuickDraw library is in ROM in the Mac IICl, IIsi, LC, and IIIfx. And remember that 32-bit color taxes your Mac’s power — you’ll want to use the fastest CPU available to you. You may even consider adding a QuickDraw-accelerator card to supply the extra power needed for fast 32-bit screen updates (see “QuickDraw Accelerators,” May ’90, Buyer’s Guide, page 40).

A 32-Bit Mosaic

How are painting programs different from image-manipulation programs such as photo-retouching or object-oriented applications? When using a painting program, you manipulate a mosaic of electronic dots — pixels — on an electronic canvas to create an artwork that is a bit map, or pixel-by-pixel screen description. Photo-retouching programs, such as Adobe Photoshop, also work with bit-mapped images. Painting and photo-retouching programs have other capabilities in common, such as the ability to airbrush an area with paint. But a photo-retouching program, with its control over color balance and output channels, is better suited for enhancing scanned photographs, whereas a painting program is better suited for creating original art (see the “Photo-Retouching Software” sidebar). Nonetheless, both types of programs treat an image as a collection of individual pixels.

An object-oriented drawing program, on the other hand, uses mathematical descriptions to draw objects on your screen. You can resize, reposition, and manipulate an object at will, long after you’ve placed it on your electronic canvas (see the “Object-Oriented Drawing Programs” sidebar). With a painting program, on the other hand, once you’ve released your circle or square on the computer canvas, the shape becomes part of the mosaic (see Figure 1) and you can no longer resize or move it as a separate object.

Each method — bit-mapped and object-oriented — has distinct advantages and disadvantages. A painting program, for example, is far superior for manipulating fine distinctions of color at the pixel level. The higher up the Mac’s evolutionary ladder you go, the more noticeable is this superiority. On a black-and-white Mac, subtleties are few: Because each pixel can be only on or off, your pixel-color choices are simple — black or white. The Mac II introduced Color QuickDraw, an extended version of the QuickDraw library that controlled color with a CLUT (color-lookup table); a Mac II could simultaneously display up to 256 colors from a choice of 16.8 million. The Mac IICl introduced 32-bit QuickDraw, which added direct color — no more CLUT — and when used with the appropriate hardware, it could display the complete 16.8 million colors (see Figure 2).
Choose

- ArchiCAD
- Digital Artist Series MODEL
- Dimensions Presenter Professional
- DynaPerspective
- Levco RenderMan Accelerator Card
- MacroMind Three-D Developer Version
- MicroStation Mac
- StrataVision 3d SRX
- Swivel 3D Professional
- Zoom Version II

Render with

MacRenderMan

Shrink-wrapped Magic
from Pixar!

(800) 937-4927
(303) 799-1825
International Inquiries only

Please circle 74 on reader service card.
Painting Programs

Figure 6: The Color MacCheese work space provides a Paint palette, Pattern palette, color wheel, Help window, Tool palette, and Coordinates window; each of these six windows can be put anywhere on your screen. The Paint palette is filled with 24 colors you cannot change, but the miniature Color Picker wheel is always available for accessing colors. The Help window gives information about whatever tool or window you aim at with the pointer. MacCheese lacks rulers, but the Coordinates window provides some precision.

Eight Is Enough

What’s the difference between a 32-bit and an 8-bit painting program? Graphic designers who use the Mac to create simple color logos or who add spot color to publications may not need the advanced capabilities of 32-bit color. If you create business graphics, 8-bit color is probably plenty. After all, the Mac’s 16.8 million colors are still available in 8-bit color—you’re just limited to 256 of them at a time for a given image.

Nonetheless, computer artists working in 8-bit color may find that 256 colors are not sufficient to portray the subtle color gradations needed for realistic highlights and

On the Horizon

Even as we were up to our elbows in 32-bit paint, several vendors were putting the final touches on upgrades and new packages to ship during the first quarter of 1991. Expect other well-known packages, such as Deneba’s UltraPaint, to enjoy 32-bit upgrades soon.

SuperMac’s long-awaited PixelPaint Professional 2.0 ($79) should be shipping by the time you read this. The late-beta version we saw just before press time was very impressive. This isn’t just a simple upgrade—it’s a complete rewrite of the program. SuperMac’s done away with PixelPaint’s menu-intensive, nonintuitive interface and put most of the functionality where it belongs—in floating palette windows that stay on-screen while you work. PixelPaint Professional 2.0 also has a host of new features and capabilities, such as the ability to create a masking tool from any brush, tool, or image; a Wet Paint feature that lets you reposition and edit any shape or text before merging it with the rest of the bit map; and a gradient editor that lets you create precise color ramps with multiple adjustable anchor points.

PixelPaint Professional 2.0 will also bring you PixelPaper, a feature that is best described by an explanation of how it works: When you paint on your electronic canvas, the “texture” of the paper shows through, just as it would if you were working with real canvas. In addition to canvas, PixelPaper can also simulate charcoal paper, concrete, linen, and slate. And you can scan your own surface textures to work with.

The new version has improved document control, including a ruler, a grid, a coordinate system, and a large cross hair plus 16 levels of zoom for better control and accuracy. Although PixelPaint Professional 2.0 has been a long time in the making, if it works as well as claimed, its innovative new features and greatly improved interface should more than make up for the wait.

SuperMac Technology, 485 Potrero Avenue, Sunnyvale, CA 94086; (408) 245-2202.

Olduvai plans to introduce a 32-bit version of VideoPaint for less than $700. VideoPaint Pro, or VideoPaint 32 (the name was still undecided at press time), will feature a fully customizable tool palette and effects. Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL 33143; (800) 822-0772 or (305) 665-4665.

If you want a powerful 32-bit painting program but don’t have a high-powered budget, MicroFrontier’s upcoming Colorlt 1.0 ($119.95) may be your answer. Colorlt has many features usually found in higher-priced programs, such as a virtual-memory management system that will let you open as many images in Colorlt as you like—the only limit is the amount of free space on your hard disk. MicroFrontier says its virtual system will support very large images even in low-memory conditions. You will
Pick a Peck of Pixels

So how do you handle 16.8 million tubes of paint? Color theory, a complex topic in its own right, is beyond the scope of this article. Briefly, though, 32-bit programs make different color models available for computer artists to work with. The RGB color model represents the additive...
Painting Programs

Figure 10: A Color MacCheese innovation, the transmogrifier creates textured effects by creating groups of pixels with related colors. Holding down the mouse button and dragging the transmogrifier over a purple area, for example, "sprays" pixels of various shades of purple over the area.

theory of color — equal portions of red, green, and blue light create white light. Because this model deals with transmitted light, it is the default color system for most color monitors.

All four programs use the RGB system, which you access through the Apple Color Picker, a component of the Mac's System software that lets applications use a standard interface for selecting colors. The Color Picker dialog box contains a color wheel and a brightness bar; you can simultaneously select a hue (color) and a saturation (how "strong" the color is compared with white — pink is an unsaturated red) by dragging the cursor around on the wheel (see Figure 4). Scrolling up and down the brightness bar adds or subtracts white, adjusting the darkness of the color. Such a selection method has little in common with mixing dollops and splats of paint, but using the Color Picker is the only method of selecting new colors in Color MacCheese and DeskPaint. Color MacCheese also includes a miniature version of the Color Picker.

PixelPaint Professional and Studio/32 both offer several alternatives to the RGB color system: HSY (hue, saturation, value — where value is a brightness percentage), CMY (cyan, magenta, yellow — from the subtractive theory of color — equal portions of cyan, magenta, and yellow pigment withold, or subtract, all light and thus create black), and the Pantone Matching System (a standard for specifying ink colors in the graphic-arts industry). PixelPaint Professional also has a Color Theory color picker in which you can select colors based on their relative positions on the color wheel, and it supports the CMYK (cyan, magenta, yellow, black) color system used in printing. You can work in this color model and generate separations directly from the program.

If none of this sounds very much like painting, hang on a second. PixelPaint Professional and Studio/32 both let you mix colors with the daub-and-blob method — each has its own color mixer, an area in which you can swirl colors together (see Figure 5). When a color you like emerges in the color mixer, simply click on it with the eyedropper tool to add it to your palette.

Palette Power

After picking a model and selecting your colors, you'll need a place to store your paints for quick access. Color MacCheese doesn't give you much help: It provides only two, noncustomizable palettes. The Paint palette provides access to 24 preselected colors, and the Pattern palette, which scrolls left and right, displays solid colors and patterns (see Figure 6). Unfortunately, it can display only 20 color swatches at a time, so you may do lots of scrolling.

DeskPaint provides a 256-color default swatch palette with a variety of colors and gray shades already installed. It also provides 256-Gray, Bright Colors, Pastels, and Earth Tones palettes. You can change colors within any palette by using the Color Picker, and you can save the palettes you create (see Figure 7) — for example, you could build a palette containing various shades of brown, orange, and rust; save it; and name it Autumn Colors palette.

PixelPaint Professional has a pop-down Color palette that contains four default palettes (see Figure 8). You move through the palette by using the right and left palette switches. When you've found the palette you want to work with, close the pop-down Color palette by clicking on the bar beneath the document name, and the newly selected palette will appear in the color selector for you to work with. PixelPaint's color mixer is part of this window — if you want to custom-mix a color, it can be a labor-intensive process: Go to the pop-down Color palette, mix the colors...
Wouldn't it be great if new customers were this easy to spot?

Now they can be, with Lotus® MarketPlace.

It's the first desktop product to combine quality prospect lists with software that helps you quickly target the customers you want.

Which means you'll be able to develop direct mail and prospecting lists right at your Macintosh®—with unlimited use of every list you create. What's more, MarketPlace helps you generate leads for sales and telemarketing groups, research and analyze your markets and plan sales territories. And it's so versatile you can use it to print mailing labels and contact reports, and even use its data with your favorite software programs.

There are two versions of MarketPlace delivered on compact disc. MarketPlace: Business* has data on over 7 million U.S. businesses and lets you select prospects using criteria like type of business and sales revenue. MarketPlace: Households** gives you information on 80 million U.S. households with selection criteria like age, estimated income and shopping habits.

So as you can see, MarketPlace is information you direct. And this kind of control means you'll be spending time closing sales, not looking for prospects.

For more information about MarketPlace or a free demo kit, call 1-800-842-8455, ask for ext. 912. After all, you've always known new customers were out there. Now, you'll know where.

Introducing Lotus MarketPlace

MarketPlace: Business available now. MarketPlace: Households available early 1991. © 1990 Lotus Development Corporation. All rights reserved. Lotus is a registered trademark of Lotus Development Corporation. Lotus MarketPlace and MarketPlace are trademarks of Lotus Development Corporation. Macintosh is a registered trademark of Apple Computer, Inc. *Information provided by Equifax Marketing Decision Systems, Inc.
from the scrolling palettes, and close the pop-down Color palette. (In the beta version of PixelPaint Professional 2.0 we saw, however, the interface is completely revamped; see the “On the Horizon” sidebar.)

Studio/32 also has four default palettes available in its Palette window, but they require fewer steps to use. The Palette window is a tear-off window in the upper right corner and in the color bead. Drag the color bead along the gradient bar, select a second color, and position that new color bead along the gradient bar. You can specify up to 32 colors in a gradient; placing colors far apart creates a subtle blending of color, whereas placing them close together creates more-abrupt transitions. Your blend appears in the gradient sample area, below the gradient bar.

Both Studio/32 and PixelPaint Professional come with preset palettes that offer a wide variety of colors, and you can save an unlimited number of custom palettes to disk. You can switch freely among palettes as you work, without affecting the colors in your document.

**Brushes with Greatness**

The basic tool set for all 32-bit painting programs — or for all painting programs, for that matter — has its roots in the progenitor of all painting programs, MacPaint. MacPaint’s tools were modeled after tools used by artists in the studio — brushes, pencils, erasers, and paint in buckets and sprayers. MacPaint also supplied tools for drawing straight lines, producing geometric shapes, and selecting areas of a picture for editing (see Figure 9). Unfortunately, MacPaint came with only two tubes of digital paint — black and white — a rather grim and limited palette for professional artists. Nonetheless, many MacPaint tools still provide artistic functionality — the brush, pencil, eraser, bucket, and airbrush or spray are available in today’s high-powered color programs, along with some new tools and techniques.

If you’ve ever worked in oils, you’ve probably smudged paint onto your canvas with brushes, fingers, and palette knives. If you’ve worked with watercolors, you’ve probably used a wet finger for blending. You can continue your messy habit in electronic form: All four of the programs have tools for blending colors smoothly. Studio/32’s blending tool, the water drop, can also be set to accomplish the reverse effect, sharpening the contrast between adjacent colors.

Studio/32 and PixelPaint Professional have an additional blending tool, the pointed finger. PixelPaint Professional’s finger tool simulates dragging your finger through wet paint — the finger picks up some of all the colors it touches and drags them along through the other colors. Studio/32’s finger tool acts like a finger with a dollop of paint on it — the color on the finger mixes with the colors through which it is dragged, and the effect decreases as you use up the paint on the finger.

Color MacCheese has added a transmogrifier, a tool that creates textured effects within areas of color by spraying multicolored dots from the same color family. You can, for example, use the transmogrifier to create a leafy or grassy texture from a single shade of green (see Figure 10). Another Color MacCheese tool, the rake, swaps dots from each side of the border where two colors meet and so can be used to help smooth color transitions.

**Grading the Gradients**

One of the most powerful capabilities of a 32-bit painting program is the ability to smoothly fill an area of the canvas with a blend of two colors, creating all the thousands of colors that make up the shades of difference between the two — a gradient fill.

Color MacCheese has a bucket tool that lets you produce two-color gradients in two steps. After you’ve finished painting an area with one color and selecting the second color, you just click and drag the bucket in the direction in which you want the gradient to fill; changing the direction creates different effects. In DeskPaint, you can set gradient...
Introducing the RAVEN Series. The First Macintosh Disk Array With 5.7 ms Average Access and 4.1 MB/sec Sustained Transfers.

You may be wondering just how fast 4.1 MBytes per second really is. Well here's the bottom line--the RAVEN is so fast, you can now accomplish I/O intensive applications such as animation and graphic design, three times faster than you've ever been able to before! We're not talking about small cache bursts here, but real honest to goodness sustained data transfers.

The RAVEN also gives you incredible disk array power. MicroNet starts with a pair of high speed spindle hard disk drives. Then we maximize the Macintosh NuBus by connecting them in parallel to a pair of MicroNet NuPORT, SCSI-2, synchronous host adapters. What we've created is a very powerful 16-bit disk array subsystem. Capacities range from 606 to 2,500 MB with average access times as fast as 5.7 ms. The RAVEN also makes fault tolerant RAID technology possible for the Macintosh II family, ensuring real-time data integrity.

By now you're probably wondering what else the RAVEN and our other unique SCSI storage products can offer you. Give us a call today. We'd love to tell you all about our RAVENous storage systems. 1-714-837-6033.

MicroNet Technology, Inc.

20 MASON • IRVINE, CALIFORNIA • TEL: (714) 837-6033 • FAX: (714) 837-1164
AppleLink: D1656 • Compuserve: 76004.1611

Please circle 33 on reader service card.
specifications such as direction and shape in a dialog box (see Figure 11).

PixelPaint Professional adds even more control. You can control five aspects of fill effects: Method, Style, Using, Speed, and Respect To (see Figure 12). Method lets you select Top to Bottom, Bottom to Top, and so on, and Style gives options for Standard (smooth blending of colors), Dual Blend (fades from the foreground to the blend color and then back to the foreground color), and Venetian Blinds (displays the colors in a repeated slat pattern). The Speed selection gives you options for controlling the speed of the gradient — Constant, Accelerating, Decelerating, or a combination; these options change the relative widths of the color bands to simulate motion.

Studio/32 gives you all these capabilities and more, but in an intuitive and direct manner. You can specify up to 32 colors to be included in the gradient just by dragging color swatches onto a gradient bar (see Figure 13). You control the widths of the bands by how closely together you place the swatches. You can store up to eight gradients per document in a pop-up palette and use any of them as the current paintbrush.

**Mask Making**

Artists often mask portions of a piece to prevent changes as work continues in another area. If the paintbrush stumbles over an area you’d rather it hadn’t, the paint will land on the masking material rather than on the painting: when you remove the mask, the painting remains unaffected. A good 32-bit painting program should let you mask areas with relative ease, and both Studio/32 and PixelPaint Professional meet the professional standard: You can mask any number of areas, using the selection tools, and any number of colors. Studio/32 also provides a dialog box in which to mask ranges of color.

In addition to masking, Studio/32 provides a draft page.

---

### Table 1: Pros and Cons of Graphics Programs

<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
<th>Ideal Users</th>
</tr>
</thead>
</table>
| **32-bit painting program** | • Can create subtle variations of color at the pixel level.  
• Simulates the "real" painting environment with a remarkable degree of realism. | • Once you’ve released something onto the canvas, it is part of the bit map and not easily editable as a distinct unit.  
• Cannot globally change all pixels of one color to another color. | • A 32-bit painting program is ideal for commercial artists or illustrators who want complete control over the colors applied to the electronic canvas as well as a complete palette of tools for creating images from scratch. |
| **Photo-retouching program** | • Can break an image into its component color channels.  
• Can enhance brightness and contrast, apply filters, and correct colors.  
• Provides complete control over color separation. | • Has fewer tools for creating shapes.  
• Has a nonintuitive approach.  
• Although you can use the trial-and-error method to work with on-screen images, controlling color separations requires technical expertise. | • A photo-retouching program is the program of choice for illustrators and graphic artists who build artwork on a photographic base or enhance and modify photographs. |
| **Object-oriented drawing program** | • Images are easy to edit after objects have been placed on-screen.  
• Printed output not hampered by the relationship of the bit map to the printer. Because the image is an outline, it can be enlarged or reduced with mathematical precision. | • Handles only smooth gradient fills.  
• Textures are difficult to work with.  
• Usually requires reading the manual to learn how to work with most tools. | • An object-oriented drawing program is preferred by graphic designers and technical illustrators who need precision. |
The Mac has always had great potential in graphic arts. But until now, no one has really provided a tool to unleash it. There has always been some form of mechanical trade-off imposed by input devices that inhibited artists from letting their imaginations flow naturally.

Now, Wacom introduces a totally “real” graphic tool, one that lets you interact with the Mac as intuitively as you would with a canvas. With Wacom's cordless, pressure-sensitive stylus your will is converted through manual pressure to line width, spray density, color change and other programmable effects. This allows you to create “real time” artistic images free of the artificiality and limitations of other input devices. And since the Wacom stylus has neither cable nor battery, it is also ultra-light and maintenance free.

Wacom, a leading name in computer graphics worldwide with proven man-machine interface technology, invites you to a new era in Macintosh graphics with a promise:

Once you experience it, you'll never look back.

Wacom SD-Series Digitizers:
- 10 to 48, square or rectangular
- Surface types: standard, magnetic, electrostatic, or transparent menu panel
- Pointing device: Stroke-type, or nonstroke-type cordless stylus, pressure sensitive stylus, 6-button or 12-button cordless cursor
- Driver software: All driver, mouse drivers, Windows drivers, Macintosh driver
- Compatibility: PCs, Macintosh, and workstations.

Performance Specifications
- Resolution: 1270 lines/inch (0.02mm)
- Accuracy: ±0.01 inch (±0.25mm) over entire active area
- Reading speed: Max. 20 points per second
- Data transfer rate: Max. 96K baud
- Interface: RS-232 or optional GP-1B
- Command set: Wacom II, MM, Bit Pad Two
- Power supply: built-in (A2 to 11” x 11” tables) or external (A0, A1, A2).

WACOM
West 115 Century Road, Paramus, NJ 07652, U.S.A.
Tel: (1) 201-205-4226, Fax: (1) 201-205-4722
WACOM Computer Systems GmbH:
Hellenbergstrasse 6, D-4040 Neuss 1, West Germany
Tel: (49) 2101-16001, Fax: (49) 2101-10120

Please circle 60 on reader service card.
Painting Programs

The Bottom Line

Not everyone needs a palette of 16.8 million colors. The hardware needed for 32-bit color — a 24- or 32-bit card plus color monitor — can set you back thousands of dollars, and the capabilities provided may exceed your needs. If your color work consists mostly of business graphics — bar charts, pie charts, and even photos of the board of directors — you'll probably find that the 8-bit, 256-color palette is more than adequate.

On the other hand, if you're a package designer, a graphic artist specializing in printed media for advertising, or a fine artist illustrating children’s books, we recommend that you find a place in your studio for a printer. Electronic Arts' Studio/32 1.0 ($695) is also a powerful performer, but this version of the program is not easy to work with — following the manual is a must. Fortunately, SuperMac's documentation is easy to follow and well worth reading. PixelPaint Professional also provides support for color separation that's lacking in the other three programs. (PixelPaint Professional 2.0 should be available by the time this article is in print.)

At the lower end of the spectrum, Zedcor's DeskPaint 3.03 ($199.95) comes closest to approaching a professional-level tool — it lets you save custom palettes for later use and can handle resolutions up to 4,000 dpi. Because DeskPaint isn't designed to be a high-powered program, however, many high-level features are missing — you can't mix colors the way you can in either Studio/32 or PixelPaint Professional, for example, so you need to use the Color Picker to select colors and build your own palettes. DeskPaint does, however, make a great companion program for working with 32-bit-color scanned or clip-art images. DeskPaint, a DA, is bundled with its object-oriented cousin, DeskDraw — a good buy.

Delta Tao's Color MacCheese ($99), with its 72-dpi-resolution limit and lack of rulers, is not intended to compete with PixelPaint Professional or Studio/32. Only one document can be open at a time, and MacCheese documents can be saved only in color PICT format, but the program can open MacPaint. Despite these limitations, its tools are effective and the price is remarkably low. Because MacCheese is easy to use and works as well in black-and-white as it does in color, consider it even if you have only a monochrome screen — you never know when you might upgrade to a color Mac.

The Full-Color Solution

Full-color, or 32-bit, painting programs bring the power of the Mac — and 16.8 million never-emptying tubes of paint — into the skilled hands of commercial and fine artists. Full-color does require more-expensive hardware, but if you're an artist who wants to tap into its power — to make smooth transitions between colors, to mix convincing shades of color for creating highlights and shadows as believably as you could with paint on a palette — you should move up to 32-bit. What a 32-bit painting program may lack in art-studio atmosphere, it more than adds in power and color control.

For our recommendations of which to bring into your Mac studio, see the "Bottom Line" sidebar. And if you miss the smell of turpentine that badly, you can always dab a little behind your ear.

Darryl Lewis has a master's degree in graphic arts. In previous lives, he was a printer and commercial artist and now trains firms in the South Florida area to make better use of their Macs. Kelli Wiseth, an associate editor at MacUser, is a former painter and computer-graphics artist.

Of the two professional paint programs, Electronic Arts' Studio/32 (right) gets our vote, even though SuperMac's PixelPaint Professional (left) has unique color-separation capability.
AFFORDABLE 16-INCH
DISPLAY SOLUTIONS

Turn your Macintosh into your own Personal Color Workstation with an E-Machines 16-inch display. ColorPage T16, the full-page 16-inch Trinitron display judged best for two years running by MacUserLabs, gives a whopping 70% more working space than you get on an Apple enough to view an entire year’s budget or a complete presentation slide at a glance. E-Machines’ TX, the two-page 16-inch Trinitron display packs 19-inch performance in an amazingly affordable 16-inch package, and with exceptionally sharp detail. Both 16-inch displays offer 8-bit as well as the most affordable 24-bit large screen color for desktop video and true color applications. E-Machines, The 16-inch Display Company also offers a complete line of monochrome, gray scale and color display systems.

Copyright © 1991, E-Machines. ColorPage is a trademark of E-Machines. Macintosh is a trademark of Apple Computer

Please circle 152 on reader service card.
# Painting Programs

## Table 2: Features of 32-Bit Painting Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>List price</th>
<th>Street price</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Tao Color MacCheese 1.05</td>
<td>$99</td>
<td>$55</td>
<td>A good value for the money. Not intended as a professional tool. No customizable palettes. Limited to 72-dpi output.</td>
</tr>
<tr>
<td>Electronic Arts Studio/32 1.0</td>
<td>$695</td>
<td>$449</td>
<td>Exceptionally easy to use. Extensive color-mixing capability. Separate type layer and draft page.</td>
</tr>
<tr>
<td>SuperMac PixelPaint Professional 1.0</td>
<td>$699</td>
<td>$388</td>
<td>Interface needs overhaul. Functions often buried deep within menus. Excellent documentation. Extensive CMYK color-separation support.</td>
</tr>
<tr>
<td>Zedcor DeskPaint 3.03</td>
<td>$199.95</td>
<td>$115</td>
<td>Excellent value. Convenient 32-bit painting environment in a DA. Bundled with object-oriented drawing program. Includes customizable palettes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program</th>
<th>Memory required (megabytes)</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Tao Color MacCheese 1.05</td>
<td>1 MB</td>
<td>Max. document dimensions: 3,500 x 3,500 pixels</td>
</tr>
<tr>
<td>Electronic Arts Studio/32 1.0</td>
<td>5 MB for 32-bit, 2 MB for 8-bit</td>
<td>RAM-dependent: 72 dpi, 2,540 dpi</td>
</tr>
<tr>
<td>SuperMac PixelPaint Professional 1.0</td>
<td>2 MB</td>
<td>RAM-dependent: 8, 16, 24, 32-bit</td>
</tr>
<tr>
<td>Zedcor DeskPaint 3.03</td>
<td>2 MB</td>
<td>RAM-dependent: 4,000 x 4,000 pixels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program</th>
<th>Formats opened</th>
<th>Formats written</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Tao Color MacCheese 1.05</td>
<td>MacPaint, PICT</td>
<td>PICT</td>
<td>Max. document dimensions: 3,500 x 3,500 pixels</td>
</tr>
<tr>
<td>Electronic Arts Studio/32 1.0</td>
<td>MacPaint, PICT, TIFF</td>
<td>JPEG</td>
<td>RAM-dependent: 72 dpi, 2,540 dpi</td>
</tr>
<tr>
<td>SuperMac PixelPaint Professional 1.0</td>
<td>MacPaint, PICT, TIFF</td>
<td>TIFF</td>
<td>RAM-dependent: 8, 16, 24, 32-bit</td>
</tr>
<tr>
<td>Zedcor DeskPaint 3.03</td>
<td>MacPaint, PICT, TIFF, PixelPaint</td>
<td>MacPaint, PICT, TIFF</td>
<td>RAM-dependent: 4,000 x 4,000 pixels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program</th>
<th>TIFF compression</th>
<th>Customizable palettes</th>
<th>Color mixer</th>
<th>PMS * support</th>
<th>Anti-aliasing</th>
<th>Auto-trace tool</th>
<th>Bezier curves</th>
<th>Customizable brushes</th>
<th>Linear gradient fill</th>
<th>Radial gradient fill</th>
<th>Independent text layer</th>
<th>Color separations</th>
<th>Color-printer support</th>
<th>PostScript-printer support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Tao Color MacCheese 1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Arts Studio/32 1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SuperMac PixelPaint Professional 1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zedcor DeskPaint 3.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pantone Matching System*
A particularly avid HyperCard® user once told us, "I'd pay a thousand bucks if you'd just let me create stacks with bigger cards—even more if I could combine type styles in a field, too."

For him, and for you, Claris proudly announces the HyperCard 2.0 upgrade for $49.

For that, you'll get what amounts to a HyperCard lover's wish list come true: cards sizeable from one to 18 inches tall or wide; the ability to keep several stacks open at once; total font, style, and size flexibility within text fields; display of color and gray-scale graphics; new painting tools and visual effects; faster speed; and a more powerful array of reporting and printing options. That's for starters.

You'll also receive disks crammed with new, ready-made stacks, buttons and fields, stack templates, clip art, sample scripts, a script debugger, XCMDs and XFCNs, and easy-to-use tools for creating your own stack menus and user palettes. Plus a complete guide to HyperTalk® scripting.

And every HyperCard 2.0 upgrade comes with free technical phone support from Claris.

As you can see, we've made a lot of changes in HyperCard. Now we can't wait to see what you do with it.

Order your HyperCard 2.0 upgrade now.
Use the attached form or call 1-800-628-2100 ext. 92.
Thank you for helping us design an even better drive. Through your input, 40 improvements were made to our already successful M-series drives.

But it was our idea to lower prices. The advantage of purchasing factory-direct is that when we negotiate lower prices we can pass the savings directly to you. No middlemen. No retailers. Period.

As always, you have my risk free '30 Day, Love It or Return It' guarantee. Most orders ship the same day so you can be using your new Mirror Drive tomorrow. Try us and see for yourself.

Ronald Eibensteiner, President/CEO

**EXCLUSIVE!**

**MediaManager™ Software With Every Drive.**

MediaManager™ Mirror's exclusive disk management utility lets you format and partition your drive into multiple volumes, and add password protection to each. Its Drive Spanning feature allows several drives to be viewed as one contiguous volume. In other words, two 650Mb drives can be turned into one 13Gb volume!

**EXCLUSIVE!**

**VolumeBackup™ Software With Every Drive.**

VolumeBackup’s sophisticated scripting feature lets you create custom backup procedures that automatically back up your data when it’s most convenient (like when you sleep). Back up to floppy, tape, another drive, or a SyQuest cartridge.

**FREE!**

**Award Winning Microlytics And CE Software... A $400 Value!**

With every drive, we’re including a collection of over a dozen CE Software utilities that includes Quicksæys Lite, DiskTop (V3.04), MockPackage, Ask!, and Vaccine. And we’ve included Microlytics GoFer, a high-speed text search and retrieval utility, and Inside Information, the first hierarchical dictionary for the Macintosh. Several of these wonderful utilities received MacUser Edgy awards and MacGuide Golden Gavel awards.

**The Anatomy Of A Truly Great Drive.**

- **18 Gauge DriveSteel™** is attached to the mechanism before installation to eliminate warping.
- **International Power Supply** automatically adjusts for 110 or 220 volt and has a built-in protective fuse.
- ** Whisper Quiet Cooling Fan** maintains cool operating temperature.
- **Polyurethane Polymer Feet** keep your desk scuff-free.
- **Filtered AC Receptacle** filters incoming power, and stops RF interference from traveling to your electrical system.

---

40 Improvements, And We Still Lowered The Price!

Just as the competition was catching up, we made over 40 improvements to our M-series drives. We beefed up our cabinets, added features (see diagram below), radically updated our disk management utilities and bundled award winning utilities from CE Software and Microlytics. We did all of this and still lowered our prices!

---

EXCLUSIVE!

MediaManager™ Software With Every Drive.

MediaManager™ Mirror's exclusive disk management utility lets you format and partition your drive into multiple volumes, and add password protection to each. Its Drive Spanning feature allows several drives to be viewed as one contiguous volume. In other words, two 650Mb drives can be turned into one 13Gb volume!

EXCLUSIVE!

VolumeBackup™ Software With Every Drive.

VolumeBackup's sophisticated scripting feature lets you create custom backup procedures that automatically back up your data when it’s most convenient (like when you sleep). Back up to floppy, tape, another drive, or a SyQuest cartridge.

FREE!

Award Winning Microlytics And CE Software... A $400 Value!

With every drive, we're including a collection of over a dozen CE Software utilities that includes Quicksæys Lite, DiskTop (V3.04), MockPackage, Ask!, and Vaccine. And we've included Microlytics GoFer, a high-speed text search and retrieval utility, and Inside Information, the first hierarchical dictionary for the Macintosh. Several of these wonderful utilities received MacUser Edgy awards and MacGuide Golden Gavel awards.

The Anatomy Of A Truly Great Drive.

- Two Year Warranty backed up by our DriveCare Professional.
- Front Quality Drive Mechanisms from Quantum, Fujitsu, Seagate, and SyQuest.
- External Termination Block is supplied to terminate your drive from the rear panel, the way Apple recommends.
- Gold Plated 50 Pin Connectors ensure superior electrical connection.
- SCSI Address Switch lets you set your drive's SCSI address from the rear panel.
- Dual AC Convenience Outlets are mounted safely away from the SCSI connectors, tainting clips to protect you from electrical shock.
- Rear Panel Fuse Holder has an extra fuse tucked away in a hidden compartment, should you ever need it.

---

"Thank you for helping us design an even better drive. Through your input, 40 improvements were made to our already successful M-series drives.

But it was our idea to lower prices. The advantage of purchasing factory-direct is that when we negotiate lower prices we can pass the savings directly to you. No middlemen. No retailers. Period.

As always, you have my risk free '30 Day, Love It or Return It' guarantee. Most orders ship the same day so you can be using your new Mirror Drive tomorrow. Try us and see for yourself."

Ronald Eibensteiner, President/CEO

---
A Complete Line Of Mass Storage Solutions.

Mirror Technologies helped pioneer Macintosh mass storage back in 1985. Since then we have developed the most comprehensive line of storage and backup solutions available. We offer internal and external hard drives, 45MB removable drives, tape and DLT backup, rewritable optical, and CD-ROM.

Our T150 is a rugged European engineered tape drive based on 3M's DC600 format, allowing 150Mb to be backed up on each cartridge. Complete with automated software for unattended backup.

Our new GDR10 CD-ROM drive gives you access to a vast library of reference materials and clipart. And with full audio support, you can play any compact disc! Ship with our custom Remote Control Desk Accessory.

Our DriveCare Technicians Repair Our Competitors' Drives!

Since DriveCare's introduction in August 1988, our Technicians have repaired thousands of drives from almost every one of our competitors. And their data recovery expertise has earned them a place in the hearts of many MIS managers.

All of our drives are covered by generous warranties and come with free lifetime technical support by the same professionals that have made our DriveCare third-party repair service an institution.

Choose A Better Drive At A Lower Price.

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20</td>
<td>20Mb</td>
<td>$247</td>
<td>$297</td>
</tr>
<tr>
<td>M30</td>
<td>30Mb</td>
<td>$297</td>
<td>$347</td>
</tr>
<tr>
<td>M40</td>
<td>40Mb</td>
<td>$347</td>
<td>$407</td>
</tr>
<tr>
<td>M45</td>
<td>45Mb</td>
<td>$397</td>
<td>$457</td>
</tr>
<tr>
<td>M50</td>
<td>50Mb</td>
<td>$447</td>
<td>$507</td>
</tr>
<tr>
<td>M60</td>
<td>60Mb</td>
<td>$507</td>
<td>$567</td>
</tr>
<tr>
<td>M70</td>
<td>70Mb</td>
<td>$567</td>
<td>$627</td>
</tr>
<tr>
<td>M80</td>
<td>80Mb</td>
<td>$627</td>
<td>$687</td>
</tr>
<tr>
<td>M90</td>
<td>90Mb</td>
<td>$687</td>
<td>$747</td>
</tr>
<tr>
<td>M100</td>
<td>100Mb</td>
<td>$747</td>
<td>$807</td>
</tr>
<tr>
<td>M150</td>
<td>150Mb</td>
<td>$807</td>
<td>$867</td>
</tr>
<tr>
<td>M200</td>
<td>200Mb</td>
<td>$867</td>
<td>$927</td>
</tr>
<tr>
<td>M250</td>
<td>250Mb</td>
<td>$927</td>
<td>$987</td>
</tr>
<tr>
<td>M300</td>
<td>300Mb</td>
<td>$987</td>
<td>$1047</td>
</tr>
<tr>
<td>M450</td>
<td>450Mb</td>
<td>$1047</td>
<td>$1107</td>
</tr>
<tr>
<td>M600</td>
<td>600Mb</td>
<td>$1107</td>
<td>$1167</td>
</tr>
<tr>
<td>M800</td>
<td>800Mb</td>
<td>$1167</td>
<td>$1227</td>
</tr>
<tr>
<td>M1000</td>
<td>1000Mb</td>
<td>$1227</td>
<td>$1287</td>
</tr>
</tbody>
</table>

Our new T2200 incorporates the latest digital audio tape (DAT) technology that stores 13Gb of data on a pocket-sized cassette. Complete with Automated software for unattended backup. Top and AppleShare compatible.

Our RM600 is the high capacity storage solution that can't crash! Using laser technology, the RM600 stores 600Mb of data on a 55" re-writable cartridge. Full ANSI/ISO compliance ensures industry-wide compatibility.

Call Today! Order Factory-Direct.

1-800-654-5294
Executive Information Systems
Desktop mapping software gets your data out of a spreadsheet and onto a map.

If you've ever seen a war movie, you know the map-room scene—it's the one in which a huddle of officers studies a map covered in pushpins, showing the formidable advance of the enemy and the seemingly hopeless position of the allies. Then—after studying the map for several seconds—some smart corporal visualizes a brilliant strategy and moves a few pins around the map, and half an hour later, the good guys are marching ahead in triumph.

The message: Plotting your situation can often give you the creative edge needed for planning and problem solving. If you're on the front lines of the business battle, for example, a little strategic planning in your own map room can help you understand how your data relates to the world around you. Understanding the spatial relationships contained in business data is the critical success factor in decisions about such matters as situating new stores, expanding into new territories, and developing new products.
Desktop Mapping

With the introduction of three software packages (Descartes, MapInfo, and Tactician) and major updates to two older packages (ATLAS*MapMaker and GeoQuery), desktop mapping has emerged as a new Mac-software category. Often for less than $1,000, your Mac can now do detailed geographic analyses that used to be possible only with mainframe computers and software packages that cost $100,000. The new Mac packages let you create an electronic pushpin map (called a point or location map) to plot specific locations. You can also create thematic maps that target specific regions, such as counties or zip-code areas in which residents earn more than $50,000.

Another use for desktop mapping is to balance sales territories. Rather than assigning each member of your sales staff to a territory, based solely on geography, you can divide territories by sales volume or by the number of customers located in each.

Geographic-analysis products aren’t all the same. Some are most effective when used as presentation tools. Others have extensive internal database programs and can also transparently access external databases — even on mainframes. Which product is best for you depends on your needs and your pocketbook: Prices range from less than $400 to around $10,000.

**ATLAS*MapMaker: Presentation Mapping**

If you already have an established database that’s set up in 4th Dimension or FileMaker Pro, for example, and you want to add mapping capabilities, try ATLAS*MapMaker from Strategic Mapping ($495). MapMaker is best described as a presentation mapping package. It doesn’t have an internal database program, and it can’t access any external databases directly. You have to manually enter data, import tab-delimited text files, or paste files in from the Clipboard.

The maps created in MapMaker, as in most of the other packages reviewed here, are based on boundaries such as state or county lines. MapMaker comes with many maps: the countries of the world divided by continent, Canada delineated by provinces and territories, and the U.S. divided by states and counties. In addition, you can buy specialized maps — such as those of congressional districts — from an extensive collection. MapMaker also comes with files containing demographic data, such as housing costs and population changes, and the locations of major U.S. cities.

To get an idea of how MapMaker can help you make business decisions, imagine that you own a moving company in Massachusetts and want to target your sales effort by tracking migration patterns among people in New England. The first step is to export a file from your database (or from the demographic data supplied with MapMaker) that shows recent population changes you want to plot. You can create a thematic map of New England shaded by the percentage of population change (see Figure 1). Start with a projection of the continental United States, and then select the six New England states. Next, import a text file of a spreadsheet containing a row for each county in New England and up to 30 columns of U.S. census data. MapMaker displays the map in Figure 1 on-screen in less than ten seconds. This map has an eight-element legend in the lower right corner, but you can easily redivide the data to create different legend elements. To map the other columns of census data you’ve imported, pull down the Categories menu and select the desired entry.

MapMaker can also create graduated-point maps. These maps indicate, for example, which stores within a chain have the highest sales. Another type of map you can create in MapMaker is the dot-density map, which shows the
distribution of your data. Figure 2 shows a dot-density map of Massachusetts’ population in which each dot represents 1,000 people. (The high-end package Tactician is the only other product reviewed here that can create dot-density maps.) MapMaker’s zip-code-level and county-level maps have good cartographic quality, but the state-level maps are slightly jagged.

MapMaker provides a Tool palette for adding captions, headlines, arrows, and circles of various sizes marked in miles. It also includes a digitizing tool, which lets you accurately add elements such as political boundaries, power lines, and rivers to a map. The ruler tool lets you determine the straight-line distance between two points. These excellent presentation capabilities come at a price, however. At $495, MapMaker may well cost more than the database or spreadsheet program you need to use with it.

GeoQuery: New Version, New Firm

For those who need an inexpensive mapping package that lets you access a mainframe database, GeoQuery 2.0.1 provides a lot of sophisticated features for $395 (see review, November ‘90, page 59). Previously marketed by Odesta, GeoQuery is now being sold by its original developer. It doesn’t contain a database, but it can read delimited ASCII files and, if a Mac is connected to an Ethernet network, it can query remote mainframe databases via Apple’s DAL (Data Access Language, formerly called CL/l). Because DAL transparently accesses database tables, this is a key feature if you work in a corporation that uses a central database.

GeoQuery’s base maps of the U.S. go only to the state level, which is a drawback. If you want to do county-level mapping, you have to purchase separate atlas files (see Figure A in the “Buyer, Beware” sidebar). No zip-code or international-boundary atlases are available.

GeoQuery creates point maps based on zip codes; its thematic maps are based on county or state maps. It has the sophisticated capability of mapping data based on text. Figure 3 shows, as an example, the location of U.S. energy companies by zip code, and it also shows the type of energy each company produces. GeoQuery created this map by searching data imported from Lotus MarketPlace (future versions will be able to query MarketPlace directly) and determining that there were two types of energy companies in a particular area — oil/gas and coal. It then color-coded each pin appropriately (the third color is for zip codes in which multiple energy-producing companies are located).

To be of any real use, a geographic-analysis package must go beyond creating a map, so that users can see the data values behind the coloring of regions or at the location of points. GeoQuery’s aptly named Snoop tool lets you see underlying data. To develop a list for on-site visits, a manager at an energy-equipment company could use the map in Figure 3 to create a circle around the company that shows where potential customers are located within a 100-mile radius. When the Pin List item on the Analysis menu is selected, the name of each company in the region appears (see Figure 4). The manager can transfer all the information on each site to a word-processing program to create a mail-merge letter announcing a new store location, for example.

Although it lacks an internal database program, GeoQuery is a full-featured product at a reasonable price. If you need the power of an internal database, however, MapInfo or Descartes may be the right program for you.

Descartes: Iconic Mapping

Descartes and MapInfo each contain database programs and querying tools, but unlike GeoQuery and Tactician, they can’t access remote mainframe data via DAL. This
Desktop Mapping

isn’t a problem if you have a small business that keeps all its data files on a Macintosh computer. If you’re in a corporate setting, however, the lack of DAL means that getting information from the central database to your Mac can be a hassle.

Descartes ($795), named for the famous French mathematician René Descartes, offers an easy-to-use relational-database program that uses icons to represent data and querying tools. Descartes comes with base maps only of the U.S., although Intermap says it will release international cartography soon.

Descartes has the best Macintosh interface of all the programs reviewed here. It extends the desktop metaphor into its database program by creating a Descartes folder and icons when the program is launched. This desktop is internal to the product, even though it looks as if it were created by the Finder (see Figure 5). You can create other folders to organize the data dictionary (which contains base maps and data) and launch tools by double-clicking on them.

The dictionary icon lets you access the collection of records that comes with Descartes — data on states, counties, cities, interstate highways, and zip codes. Each collection is referred to as a basket, and individual records within a basket can have links to other baskets. Boston, for example, can have a link to its parent county (Suffolk), its parent state (Massachusetts), and its zip code (02132 for general delivery).

Data manipulation — for creating presentation maps, reports, or graphs — is built around six tools: the map, bar chart, report, tiler, uparter, and importer. You must use the importer tool to place data in a modified Descartes database, because the program can’t work with foreign files directly.

The searcher and tiler tools are used to create output baskets of records that are to be mapped. Let’s say that the owner of a chain of automotive-parts stores wants to locate a new store in a nearby county in an area that comprises households that earn more than $30,000 and have at least two cars. The owner could create a basket of counties that match these criteria by entering Median_Income > 30,000 and Cars_Per_House > 2 in the Searcher dialog box. The tiler tool lets you determine how your data will be divided on the map — into four quartiles, for example. One of the tiler’s limitations is that it allows sorting based on equal numbers of records only, not on other methods such as mean and standard deviation.

To create a map, you simply drag the appropriate output baskets onto the map legend. If you’re mapping at the state level and want to delineate other boundaries, such as highways or counties within the state, the Layers pop-up menu helps you do this.

Although Descartes is easy to use, it’s not as good for creating presentations as MapMaker is, because you can’t annotate maps with arrows for identifying key features. Its detailed state and county base maps, excellent Mac interface, and internal database programs are pluses. But if you need more-sophisticated options, such as city-level mapping, take a look at MapInfo.

MapInfo: From DOS to Mac

Like Descartes, MapInfo for Macintosh — a port of the DOS version — contains an internal database program and querying language as well as mapping and graphing functions. MapInfo ($695) is built around a SQL (Structured Query Language) database that can read and write its own files as well as FoxBASE+ files. It can also read Excel, Lotus 1-2-3, and tab-delimited text files.
Buyer, Beware

If you're thinking of buying desktop mapping software, you need to look at more than just the price. The following questions should help you figure out which features are most important to you.

Do I need an Internal database program? If you buy a desktop mapping package with an internal database program, you may need to reenter data that you already have in another database or spreadsheet. This can cause problems if you need to update or revise your data. Decide if you want a package that can deal with your data directly (no matter where it resides) or one that requires importation of data.

How are data and boundary maps updated? Most vendors sell supplemental demographic data. You can use this data, along with your own sales data, to build a snapshot of a typical client and then plot the locations where those clients are most likely to be. Before buying additional data, carefully check the scope of the boundary files and demographic data to make sure it's what you need. Because zip codes and other demographic boundaries change fairly frequently, ask how often the data is updated, how much updates cost, and how you will be notified of updates.

Do I need easy access to mainframe data? Don't underestimate the difficulty of getting data from a database on a mainframe to your Mac, using a product that doesn't support DAL. DAL support can greatly reduce the time it takes to analyze ever-changing corporate data. This time savings can easily pay for a more expensive software package that supports DAL.

How much disk space do I need? The maps provided with these packages can take up a lot of space — from 1 to 19 megabytes for the minimum configuration, depending on the product. You'll need even more space if you add optional modules. A full-blown Tactician implementation that includes U.S. street maps requires nearly 700 megabytes of space — or a CD-ROM drive — and that's before you've added any of your data.

What kind of technical support is available? As with any complex software package, access to good technical support is vital. You need to ask how much it costs to extend technical support when the initial support period ends. Some vendors offer free support; others charge a percentage of the purchase price per year.

---

Figure A: How the Prices Stack Up

All prices are for entire U.S. Other maps may be available.

Figure A: The boundary files that are available for desktop mapping products can differ vastly. Some vendors include zip-code files in the base package, some require that you buy these files separately, and others don't provide these files at all. There's considerable variation in price as well. The chart shows some of the additional boundary files available for each product and compares pricing.
You Take Care Of Business.

Introducing the accounting software that does just what you need it to do. Everything.

ACCPAC® accounting software was designed specifically for businesses like yours—so you can spend less time balancing your books and more time building your business.

No matter what you need to do—send an invoice, pay a bill, write a paycheck—ACCPAC provides a quick and simple way to do it. And it's so easy to learn you'll have it up and running in minutes.

At the same time, the ACCPAC family offers more advanced and comprehensive accounting packages that your company can easily upgrade to as your business grows.

That's why today, ACCPAC is the best-selling accounting software in the U.S. and Canada. All kinds of businesses in every type of industry trust their books to ACCPAC.

So should you. Ask for ACCPAC BEDFORD® at your local software dealer or call 1-800-531-5236.

And then take care of business. ACCPAC will take care of your books.

We'll Take Care Of Your Books.

ACCPAC BEDFORD INTEGRATED ACCOUNTING and ACCPAC BPI run on PC/DOS.

Please circle 133 on reader service card.
And you thought page layout was for someone else.

"I want my documents to look good, but page layout is complicated and hard to learn. I just can't spend the time or money...."

If this sounds familiar, Personal Press™ is for you. In addition to giving you everything you need for quality desktop publishing, Personal Press can automate the process so great-looking documents don't take hours to produce.

Let AutoCreate™ automatically assemble your stories and graphics with a template. Use one of the templates provided, or create your own. Any publication can be saved as a template. Or you can design a document, enter the text "on the fly," and scan images directly into the program. Either way, you'll find Personal Press easy to use, with plenty of features and power to grow into.

Personal Press – for people who thought desktop publishing was for someone else!

FEATURING:

- AutoCreate™
- Complete word processing, with thesaurus & spell checker
- Text and graphic file previews
- Free rotation of text and graphics
- Color graphic import and display
- Gray-scale image manipulation
- Spot color separations
- Electronic Posted Notes
- On-line help

- Newsletters • Reports • Customized Forms • Brochures • Mailings • Flyers •

Silicon Beach SOFTWARE
A SUBSIDIARY OF Aldus CORPORATION

9770 CARROLL CENTER RD., SUITE J • SAN DIEGO, CA 92126 • (619) 695-6956

Please circle 167 on reader service card.

Now Shipping!
Suggested Retail Price:
US $299

Requires a Macintosh Classic, Plus, SE, SE/30, LC Portable, or LC series, with 1 MB RAM and two 800K floppy drives, or a hard disk and one 800K floppy drive.

Pacific Ocean Tour

All Aboard for Adventure!

The British trading voyage to the South Sea.

Ocean Tours

Sales Report

Pacitic Ocean Tours

Now Shipping!
Suggested Retail Price:
US $299
Desktop Mapping

MapInfo’s Browse, Map, and Graph menu items let you view database tables in three different ways. The Browse window displays data as it would appear in a standard database; the Map window lets you plot points or shade areas; and the Graph window lets you construct area, bar, line, and pie charts.

To plot data tables on the map, you select a base-map layer — such as a map of the U.S. — and then add transparent layers. You can construct a three-layer map that contains state boundaries, customer sites, and U.S. highways (which are available separately).

You can select points on the map and combine them into a subset of the original data by shift-clicking on multiple points or by selecting points with the radius and polygon tools. After selecting the points, you can use the Browse option to view the table entries for those records. You can save the collection as a separate table.

MapInfo and Tactician are the only two packages tested here that can perform street-level “geocoding,” or mapping, which lets you plot street addresses. MapInfo’s base maps for U.S. cities cost $225 per county or a steep $75,000 for the entire U.S.

When you’re geocoding street addresses, MapInfo matches the base-map table and the table field that contains the street address. If it can’t match a street address, MapInfo displays a list of streets that are spelled similarly. Although MapInfo doesn’t know the exact geographic location of each address or how many buildings there are in a block, its database does know which side of the street an address is on and the ranges of valid street addresses within a block. When it’s time to plot the map, MapInfo makes an educated guess as to the location of each address (see Figure 6).

Beyond doing street-level mapping, MapInfo can create thematic maps of zip-code boundaries, although to do this you need to buy optional boundary files. These files cost $395 per state or $3,995 for the entire U.S.

MapInfo plots maps of large areas by using latitude and longitude rather than the more common adjusted (Mercator) projections. The resulting U.S. map, for example, although accurate, looks strange. One surprising drawback of MapInfo for Macintosh is that — unlike the DOS version — it lacks digitizing support for adding boundaries and lines. This means that you can’t accurately place additional items on the map.

MapInfo is still a new product, and it contains several small bugs, the worst being its inability to import zip codes correctly. For example, when reading a tab-delimited text file containing zip codes of customer locations in Massachusetts (which begin with zero), MapInfo incorrectly reads the number as a numeric field and stripped the zero off. In addition, the program couldn’t read empty fields in a text file as separate fields, making it difficult to correctly align fields in a table.

Despite these problems, MapInfo provides high-end features for geographic analysis. If you want to use your Mac to do heavy-duty geographic analysis, however, you should consider Tactician.

Tactician: The High End

In terms of performance, you can’t get much more high end than Tactician. It’s a vertical-market application targeted toward anyone doing complex marketing and retail-sales analysis. It has an excellent, easy-to-use interface, and like GeoQuery, it supports DAL.

The Bottom Line

With five software packages available, the desktop mapping market is becoming crowded. Each of the five products reviewed here has different strengths geared to specific needs. If you want to add presentation mapping capabilities to an existing database or spreadsheet program, consider ATLAS*MapMaker ($495). It’s fast and has the best map annotation of the packages reviewed. If you buy a product that has an internal database, it will only duplicate capabilities that you already have.

For those who don’t have an existing database program and don’t require street-level mapping, Descartes ($795) contains excellent maps and a relational database for a reasonable price. If you’re working with data (including street addresses) from a variety of sources including Lotus 1-2-3, FoxBASE+, or text files, you might want to consider MapInfo for Macintosh ($695), which has good SQL and native file-manipulation features. Version 1.0.1 is a new product that has some minor bugs.

GeoQuery ($395) is best for corporate users doing sales and customer-location analysis on a budget. Its DAL interface, low price, and extensive features make it a natural in this setting.

Tactician ($995, or $3,995 for a CD-ROM disc with the base package and zip-code boundaries) is a good choice, in terms of price and performance, for anyone doing more-sophisticated marketing, retail-sales or territory analysis, and street-level mapping.
Tactician is distributed either on floppy disks ($995) or on a CD-ROM disc that also contains the boundaries of all U.S. zip codes ($3,995). You can also get street maps for the entire United States (70 percent of the country was complete as of this writing, with the remainder scheduled to be finished in mid-1991). The same information for MapInfo costs $75,000.

Tactician provides several ways to classify and divide data. It also has standard spreadsheet tools for performing mathematical operations. It uses a spreadsheet metaphor for displaying (in text form) and manipulating data. Like MapMaker, Tactician can create dot-density maps, and it contains a built-in bivariate-analysis tool, which lets you compare two mapped variables such as age and income.

Tactician has three mapping modes: Standard, Sites, and Territories. From data contained in the spreadsheet, Standard mode is for creating basic maps that contain points, polygons, and lines. The Sites mode uses an innovative 3-D spreadsheet to show retail sites and their trade areas. After defining the site name in the spreadsheet, you create the site on the map with the polygon and circle-carver tools. In this manner, you can display the site boundary and create pie or bar charts on the map that delineate data for each of the sites (see Figure 7). Tactician lets you base trade areas on whole or partial zip codes, census tracks, counties, MSAs (metropolitan statistical areas), or other optional base maps. Clicking on the name of the trade area in the spreadsheet displays a “detail” sheet, or third dimension, for all the elements in the trade area.

Although the Sites mode works with partial map elements (for example, you can divide one zip code into several areas), the Territories mode works only with complete elements (such as a whole zip code or county). Tactician lets you balance the territories on any spreadsheet column, such as sales or population. First you assign the value in a particular territory (for example, a population of at least 25,000). You can add or subtract elements from a particular territory by using the chart tool. You can immediately see how the territory fits into the value you’re looking for (a pop-up thermometer shows you when you’ve created the territory that best matches your goal).

Tactician’s strongest capability is performing street-level address geocoding across a majority of the U.S., thanks to an excellent address-matching system licensed from Geographic Data Technologies. On a Mac IIcx, Tactician can find any address in its database in less than two seconds.

Tactician fills a specialized niche. If you’re in the market for this kind of high-end analysis, you’ll find it to be a well-designed product.

**Plenty of Choices**

Geographic analysis offers valuable tools to the savvy businessperson. Understanding the spatial relationships in business data lets you make the most of your investment in corporate data — and in your Mac.

Geographer Jeffrey A. Steinberg is currently a graduate student at MIT’s Sloan School of Management.

---

From left to right: ATLAS*MapMaker, Descartes, GeoQuery, MapInfo for Macintosh, and Tactician
# Desktop Mapping

## Table 1: Features of Geographic-Analysis Packages

<table>
<thead>
<tr>
<th>Feature</th>
<th>ATLAS/MapMaker 4.5</th>
<th>Descartes 1.0.3</th>
<th>GeoQuery 2.0.1</th>
<th>MapInfo for Macintosh 1.0.1</th>
<th>Tactician 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price</td>
<td>$495</td>
<td>$795</td>
<td>$395</td>
<td>$695</td>
<td>$995</td>
</tr>
<tr>
<td>(CD-ROM disc, $3,995)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk space required (minimum)</td>
<td>3.6 MB</td>
<td>10 MB</td>
<td>1 MB</td>
<td>5.9 MB</td>
<td>19 MB</td>
</tr>
<tr>
<td>Features</td>
<td>International maps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. boundaries</td>
<td>State</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zip code</td>
<td>Zip code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADI</td>
<td>ADI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DMA</td>
<td>DMA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dot-density mapping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street mapping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal database program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Territory balancing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Files read</td>
<td>tab-delimited files</td>
<td>tab-delimited files</td>
<td>tab-delimited files</td>
<td>Excel, Lotus 1-2-3, FoxBASE+, tab-delimited files</td>
<td>tab-delimited files</td>
</tr>
<tr>
<td>Digitizing support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended technical support</td>
<td>$50</td>
<td>free</td>
<td>free</td>
<td>$145 per year</td>
<td>15 percent of purchase price per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategic Mapping, Inc.</td>
<td>Intermap, Inc.</td>
<td>GeoQuery Corp.</td>
<td>MapInfo Corp.</td>
<td>Tactics International</td>
</tr>
<tr>
<td></td>
<td>4030 Moorpark Ave. Suite 250</td>
<td>13 Dartmouth College Hwy.</td>
<td>475 Alexis R. Shuman Blvd., Suite 380E</td>
<td>200 Broadway</td>
<td>16 Haverhill St. Third Floor</td>
</tr>
<tr>
<td></td>
<td>San Jose, CA 95117 (408) 985-7400</td>
<td>Lyne, NH 03768 (603) 795-4751</td>
<td>Naperville, IL 60563 (800) 541-0161</td>
<td>Troy, NY 12180 (518) 274-8673</td>
<td>Andover, MA 01810 (508) 475-8475</td>
</tr>
<tr>
<td></td>
<td>Available separately</td>
<td>Expected to ship in 1991</td>
<td>Area of Dominant Influence</td>
<td>Designated Market Area</td>
<td></td>
</tr>
</tbody>
</table>

*Available separately
*Expected to ship in 1991
*Area of Dominant Influence
*Designated Market Area
Tomorrow's Upgrade For Your Mac Is Only $59*

A MacWarehouse Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable overnight service will have your kit in your hands tomorrow!

**MORE BRAIN POWER FOR YOUR MAC**

Never again will you have to quit your word processor just to answer a question about a spreadsheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

**PLUG IN INSTALLATION**

Adding memory doesn't require technicians in lab coats. Just open your Mac, slide out the main circuit board and plug in your SIMMs. Our FREE video will give you STEP-BY-STEP installation instructions. Every type of Mac is covered and we think we've made it a breeze.

**WHAT DO I NEED?**

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs - (2 @ $59 ea.).

The chart explains exactly what you need to achieve the desired level of performance.

<table>
<thead>
<tr>
<th>Upgrade Type</th>
<th>Memory Needed</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 MB</td>
<td>Remove all four existing 256K SIMMs, install two 1MB SIMMs, leave two sockets for future expansion.</td>
<td></td>
</tr>
<tr>
<td>2-1/2 MB</td>
<td>Remove only two 256K SIMMs, install two 1MB SIMMs.</td>
<td></td>
</tr>
<tr>
<td>4 MB</td>
<td>Replace all four 256K SIMMs with four 1MB SIMMs.</td>
<td></td>
</tr>
<tr>
<td>8 MB</td>
<td>Replace all four 256K SIMMs with eight 1MB SIMMs.</td>
<td></td>
</tr>
</tbody>
</table>

To open your Mac Plus or SE, you'll need a specially designed key - it's available from us as part of a handy tool kit for just $9.

**WHAT YOU NEED TO KNOW**

Memory chips come factory-installed on plug-in cards, called SIMMs (Single Inline Memory Modules). Each one megabyte SIMM card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dow memory products. Prices can vary a lot, based on quality, speed and demand. At press time our price for 1MB, 100ns SIMMs is $59. Please call for the very latest prices and availability. Our sales staff will tell you what you need and help you make your choice an easy one.

**SPEED**

Do you need 80, 100 or 120 nanosecond (ns) chips? Nanoseconds are billions of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor needs 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

**OVERNIGHT DELIVERY**

Place your order by 12:00 am (E), weekdays and we'll deliver overnight for just $3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

MacWAREHOUSE
1-800-255-6227
Call toll-free
Twenty-four hours a day, seven days a week.
Inquiries: 1-908-367-0440
Fax: 1-908-905-9279
© 1990 Mac Warehouse Inc.

**MACWAREHOUSE 30-DAY MONEY BACK GUARANTEE**

If, for any reason, you are dissatisfied with your MacWAREHOUSE Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return this product, postage paid, in its original condition, with the original packaging and documentation.

**ONE YEAR WARRANTY.** MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

* SIMMs prices vary. Call for latest information.
** Limited Offer! Free video with purchase of 2 or more SIMMs.
MacDraw II 1.1 (Claris)
Create a variety of graphics in addition to regular drawings. Use it for simple Desktop Publishing projects (flyers, invitations, business forms). Create illustrations, logos, and maps. Or design floor plans, landscapes, and products. MacDraw II prints everything from E size documents to color 35mm slides, and generates four-color separations. Comes with FREE MacPaint 2.0 and custom clip art. Also, FREE upgrade to MacDraw Pro. A $349 value. GRA 0118 $289.

MacPro Plus (Key Tronic)
Key Tronic's new MacPro Plus keyboard is compatible with all Macintosh computers. The enhanced 105-key layout includes Period/Comma lock capability, an interchangeable Caps Lock and Ctrl keys. Also, the connecting cable you need is offered at no extra charge. The keyboard is backed by a three-year warranty and unlimited lifetime product support. Includes offer for Tempo II, a keyboard macro package from Infinity Microsystems a $149.95 value FREE! IMP 0063 $119.

ACCOUNTING & PERSONAL FINANCE

Anirix Software
FIN0101 CheckMate II 3.1
FIN0102 Payroll 3.5
FIN0103 Ultimate Payroll
Absolute Solutions, Inc.
FIN0105 Computerized Accounting
FIN0106 CheckFree Corporation
FIN0106 CheckFree
ChipSoft
FIN0110 TurboTax Professional 1040

Access CD & Access MF (Optical Access) Access CD
Opens your Mac to the world of CD-ROM. Plays audio-only CDs and reads the new multi-mode CD-ROM formats. It has two 50-pin SCSI connectors, a switch-selectable SCSI address, and an external SCSI terminator. Comes complete with cables, software, and manufacturer's two-year warranty. DRI 0252 $399.
CATALOG J

We carry more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. If you can’t find what you need, just fill in the information requested below and we’ll start your free, one-year subscription to the MacWAREHOUSE catalog.

FREE CATALOG!

Freedom of Press Light 3.0
(Custom Applications)

Now output to non-PostScript devices from applications such as PageMaker, Illustrator or Quark XPress. Freedom of Press Light supports such printers as the HP LaserJet II, III, DeskWriter and PalsJet as well as all Apple, GCC or HP QuickDraw printers.

Includes 17 scalable, rotatable PostScript fonts and support for additional fonts including Adobe Type 1. Compatible with all Macs. UTI 0165 $56.

Freedom of Press 3.0
Includes 35 fonts, supports more than 50 black and white and color printers. UTI 0136 $255.

I’m Kerry, call me at:
1-800-255-6227
(1-800-ALL-MACS)

The “ULTIMATE” SE Carrying Case
(I/O Design, Inc.)

The “ULTIMATE” SE Carrying Case is designed with the same high quality standards as other MacLuggage products. This case offers internal, padded compartments for any Macintosh keyboard, mouse, external hard disk and cables also holds the new Macintosh Classic. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy DuPont Cordura nylon and 1/2 inch high density foam padding and you’ll see why this is the “Ultimate” carrying case for your Mac. Available in black (ACC 0427) and navy blue (ACC 0440). $79.

NEW! Express Customer Service Number:
1-800-445-9677

MacInTax 1040-90 (Softview)

MacInTax 1040-90 guides you through the process of preparing your Federal or State taxes. Just type in the requested numbers and MacInTax does the rest. When finished, just print the completed return on your LaserWriter or Image Writer. If you used MacInTax in a previous year, 1990 will read those files and bring forward relevant items, saving time and reducing errors. Send in your MacInTax registration card and Softview will send you information about their annual updates. FIN 0097 59.

FREE CATALOG SUBSCRIPTION

Free MacWAREHOUSE Catalog Subscription
1690 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
Please enter my free, one-year subscription to the MacWAREHOUSE catalog.

Name

Address Apt.

City State Zip

(Expect to receive your first issue within 4-6 weeks).
VocabuLearn/c/e 2.0

Now make studying a foreign language easier! New features include add/delete cards, type answers, insert report text, and create user options which allow you to customize your vocabulary to e/20. Over 1,500 cards. Available in seven languages and two levels. Free HyperTalk 4.0 with each program. $35.

Stylist

Stylist lets you use the full power of Microsoft Word 4.0 by taking to the mystery out of print styles settings and grids. Displays and prints style sheets. Displays and prints style sheets. Displays and prints style sheets. Displays and prints style sheets. Displays and prints style sheets.

EDUCATIONAL & INSTRUCTIONAL

Broderbund

Davidson & Associates

EDU0027 Math Blaster

EDU0037 Math Blaster

EDU0038 Math Blaster

EDU0039 Math Blaster

EDU0040 Math Blaster

EDU0041 Math Blaster

EDU0042 Math Blaster

EDU0043 Math Blaster

EDU0044 Math Blaster

EDU0045 Math Blaster

EDU0046 Math Blaster

EDU0047 Math Blaster

EDU0048 Math Blaster

EDU0049 Math Blaster

EDU0050 Math Blaster

EDU0051 Math Blaster

EDU0052 Math Blaster

EDU0053 Math Blaster

EDU0054 Math Blaster

EDU0055 Math Blaster

EDU0056 Math Blaster

EDU0057 Math Blaster

EDU0058 Math Blaster

EDU0059 Math Blaster

EDU0060 Math Blaster

EDU0061 Math Blaster

EDU0062 Math Blaster

EDU0063 Math Blaster

EDU0064 Math Blaster

EDU0065 Math Blaster

EDU0066 Math Blaster

EDU0067 Math Blaster

EDU0068 Math Blaster

EDU0069 Math Blaster

EDU0070 Math Blaster

EDU0071 Math Blaster

EDU0072 Math Blaster

EDU0073 Math Blaster

EDU0074 Math Blaster

EDU0075 Math Blaster

EDU0076 Math Blaster

EDU0077 Math Blaster

EDU0078 Math Blaster

EDU0079 Math Blaster

EDU0080 Math Blaster

EDU0081 Math Blaster

EDU0082 Math Blaster

EDU0083 Math Blaster

EDU0084 Math Blaster

EDU0085 Math Blaster

EDU0086 Math Blaster

EDU0087 Math Blaster

EDU0088 Math Blaster

EDU0089 Math Blaster

EDU0090 Math Blaster

EDU0091 Math Blaster

EDU0092 Math Blaster

EDU0093 Math Blaster

EDU0094 Math Blaster

EDU0095 Math Blaster

EDU0096 Math Blaster

EDU0097 Math Blaster

EDU0098 Math Blaster

EDU0099 Math Blaster

EDU0100 Math Blaster

EDU0101 Math Blaster

EDU0102 Math Blaster

EDU0103 Math Blaster

EDU0104 Math Blaster

EDU0105 Math Blaster

EDU0106 Math Blaster

EDU0107 Math Blaster

EDU0108 Math Blaster

EDU0109 Math Blaster

EDU0110 Math Blaster

EDU0111 Math Blaster

EDU0112 Math Blaster

EDU0113 Math Blaster

EDU0114 Math Blaster

EDU0115 Math Blaster

EDU0116 Math Blaster

EDU0117 Math Blaster

EDU0118 Math Blaster

EDU0119 Math Blaster

EDU0120 Math Blaster

EDU0121 Math Blaster

EDU0122 Math Blaster

EDU0123 Math Blaster

EDU0124 Math Blaster

EDU0125 Math Blaster

EDU0126 Math Blaster

EDU0127 Math Blaster

EDU0128 Math Blaster

EDU0129 Math Blaster

EDU0130 Math Blaster

EDU0131 Math Blaster

EDU0132 Math Blaster

EDU0133 Math Blaster

EDU0134 Math Blaster

EDU0135 Math Blaster

EDU0136 Math Blaster

EDU0137 Math Blaster

EDU0138 Math Blaster

EDU0139 Math Blaster

EDU0140 Math Blaster

EDU0141 Math Blaster

EDU0142 Math Blaster

EDU0143 Math Blaster

EDU0144 Math Blaster

EDU0145 Math Blaster

EDU0146 Math Blaster

EDU0147 Math Blaster

EDU0148 Math Blaster

EDU0149 Math Blaster

EDU0150 Math Blaster

EDU0151 Math Blaster

EDU0152 Math Blaster

EDU0153 Math Blaster

EDU0154 Math Blaster

EDU0155 Math Blaster

EDU0156 Math Blaster

EDU0157 Math Blaster

EDU0158 Math Blaster

EDU0159 Math Blaster

EDU0160 Math Blaster

EDU0161 Math Blaster

EDU0162 Math Blaster

EDU0163 Math Blaster

EDU0164 Math Blaster

EDU0165 Math Blaster

EDU0166 Math Blaster

EDU0167 Math Blaster

EDU0168 Math Blaster

EDU0169 Math Blaster

EDU0170 Math Blaster

EDU0171 Math Blaster

EDU0172 Math Blaster

EDU0173 Math Blaster

EDU0174 Math Blaster

EDU0175 Math Blaster

EDU0176 Math Blaster

EDU0177 Math Blaster

EDU0178 Math Blaster

EDU0179 Math Blaster

EDU0180 Math Blaster

EDU0181 Math Blaster

EDU0182 Math Blaster

EDU0183 Math Blaster

EDU0184 Math Blaster

EDU0185 Math Blaster

EDU0186 Math Blaster

EDU0187 Math Blaster

EDU0188 Math Blaster

EDU0189 Math Blaster

EDU0190 Math Blaster

EDU0191 Math Blaster

EDU0192 Math Blaster

EDU0193 Math Blaster

EDU0194 Math Blaster

EDU0195 Math Blaster

EDU0196 Math Blaster

EDU0197 Math Blaster

EDU0198 Math Blaster

EDU0199 Math Blaster

EDU0200 Math Blaster

EDU0201 Math Blaster

EDU0202 Math Blaster

EDU0203 Math Blaster

EDU0204 Math Blaster

EDU0205 Math Blaster

EDU0206 Math Blaster

EDU0207 Math Blaster

EDU0208 Math Blaster

EDU0209 Math Blaster

EDU0210 Math Blaster

EDU0211 Math Blaster

EDU0212 Math Blaster

EDU0213 Math Blaster

EDU0214 Math Blaster

EDU0215 Math Blaster
Streamlines the art production process. Converted images as an Encapsulated PostScript file and places into your page layout or enhance or manipulate photographs into posterized line art. A drawing package. New features allow the image in Adobe Illustrator or another technical illustration software to be placed into your page layout or enhanced or manipulated. Product available mid-February.

SPECIAL!

For a limited time, we are offering a special deal on our latest software release. Don't miss this opportunity to upgrade your current software and take advantage of the new features. Prices are subject to change without notice. For more information, please contact us or visit our website.

Business Sense

All time favorite Macintosh accounting package for small business. Business Sense was designed exclusively for the Mac and is easy to learn and use. All the Major accounting functions including GL, AR, AP, Payroll, and Sales Invoicing are integrated on a single disk. FIN 0013 $129.

FastLabel 2.0

Slick it to the choo of simple label printing in three easy steps! Import addresses, lists and graphics then use FastLabel's preformatted templates to create your own labels to produce everything from disk labels, and cassette labels to name badges, signs and more. BUS 0105 $45.
Rival Monitors
(MegaGraphics Display System)
MegaGraphics Large Screen Monitor Systems include both the interface card and the monitor. Choose monochrome, gray scale, or 24-bit color. All monitors include an ergonomically designed tilt/swivel stand. The systems operate at a high refresh rate (60 Hz) to deliver a stable, flicker-free image, with a 75 dpi resolution (1024x862 pixels). All come with the manufacturer, one year warranty (extended warranties available through the manufacturer at extra cost).

Starting at $1269.

Baseline Publishing
ENT0051 Talking Mode

Broderbund
ENT0052 Stafford's Cafe
Where's Carmen Sandiego? $29

Builds City Software
ENT0165 MacPaint Revenge

Bullseye
ENT0154 Ferrari Grand Prix 1.6
ENT0146 Tekken Fighting Simale 2.23
ENT0190 PS1 Mustang 2.0

Central Software, Inc.
ENT0156 Blackjack Strategy Trainer
(w/BlackJack Ace) $45

MacProof 3.2.1 (Expertise)
You'll never get a second chance to make a first impression! MacProof 3.2.1 is your English proofreader. Without leaving your document, it proofreads all text written on your word processor, business, educational, personal and professional. MacProof is a disk accessory for the Macintosh Plus, SE, II, and IIc. It checks mechanics, word usage, writing style and structure. You can customize the usage and spelling dictionaries to your specific requirements. Compatible with MacWrite II V.1.0, MacWrite V.4.6 and 5.0, Microsoft Word 4.0, PageMaker 3.03/3.0/2.0/2.1/2.2, and PageMaker V.1.1/2.1/2.2. SLP $29.95.

MacProof 3.2.1 (Student)
ENT0167 CropMaster
ENT0164 BlackJack Ace
ENT0165 CreativeMaster Deluxe Mac II Version $55
ENT0177 CreativeMaster (Plus/SEE) $45

Electronic Arts
ENT0068 LaserWriter
ENT0159 Starlight

Sir Tech Software, Inc.
ENT0056 Wanda
ENT0147 Wanda 6 Wield of Diamonds

Spectrum Holobyte
ENT0144 FACES
ENT0132 TERROR
ENT0148 Wellness

The Software Toolworks
ENT0148 Chiropractor 2000
ENT0140 Life & Death
ENT0150 The Hunt For Red October

Three-Sixty
ENT0133 Stands of Fire

ToyoGo
ENT0150 GM Master 4.7
ENT0148 Nemesis Deluxe

XOR Corporation
ENT0174 MacSoft Classic
ENT0130 MacSci
ENT0172 NFL Challenge

MacProof 3.2.1 (Educational)
Adolescent
ENT0024 Adobe Type Manager 2.0 $55
ENT0047 Adobe Type Manager Plus Pack $108
ENT0026 Adobe Type Set 1.5 $69
ENT0040 TypeShop
ENT0025 Adobe Type Reunion

Alphas
ENT0015 Art Importer 2.0 $55
ENT0014 Fontographer 3.2 $215
ENT0034 Metatypographer 1.6 $95

Broderbund
GRAD0050 TypeStyler

Dulci-Click
ENT0031 Macromatix 3.0 $31

Pacific Data Products
NP0108 Pacific McPaint $425

FONTS & APPLICATIONS
Adobe Systems, Inc.
FONTS: Adobe Type Manager 2.0
PACIFY: Adobe Type Manager Plus Pack
RHYTHM: Adobe Type Set 1.5
SYNAPSE: Fontographer 3.2
TYPHOON: Metatypographer 1.6
VOCAL: Art Importer 2.0
SONATA: TypeStyler

Electronic Arts
LASER: LaserWriter
STARLITE: Starlight

Sir Tech Software, Inc.
WANDA: Wanda
WANDY: Wanda 6 Wield of Diamonds

Spectrum Holobyte
FACES: FACES
TERROR: TERROR
WELLNESS: Wellness

The Software Toolworks
CHIROPRACTOR: Chiropractor 2000
LIFE: Life & Death
HUNTER: The Hunt For Red October

Three-Sixty
STANDS: Stands of Fire

ToyoGo
GM MASTER: GM Master 4.7
NEMESIS: Nemesis Deluxe

XOR Corporation
MACSOFT: MacSoft Classic
MACSCI: MacSci
NFL CHALLENGE: NFL Challenge

MacProof 3.2.1 (Professional)

Creative Software
GRO024: Easy Color Paint 2.0
Deneba Software
GRO075: Canvas 2.1
GRO183: UltraPaint
Dream Maker
GRO185: Clipping Vol 1 Business Images
GRO184: Clipping Vol 2 Business Images
GRO182: Clipping Vol 3 Spots
GRO181: MacSafety (Hypercard version)
GRO180: MacGallery (MacPaint version)

Electronic Arts
GRO069: Sierra
GRO068: Sierra 2.0
Farallon Computing
GRO221: MicroTracks
GRO222: MicroTracks Multimedia Pack

Graphsoft
GRO223: Blueprint
GRO220: MiniCAD 3.0

Innovative Data Design
GRO205: MacDraft 2.0

Color MacCheese

INIT Manager and 1 Shot Worksheet (Baseline)
Color MacCheese
INIT Manager
Take control of startup documents before they load. Saves sets of INITs, disable INITs, control startup icons, and generate reports. Includes a Damage Control feature to prevent recurring crashes.

UTI 0187 $35.
1 Shot Worksheet
Ideal for estimating, proposals, and amortization schedules. Combines a powerful forms generator and the mathematical capabilities of a spreadsheet to save time and money.

BUS 0149 $59.
**MacWAREHOUSE**

1-800-259-6227

**HARDWARE & PERIPHERALS**

**Aura Systems**
- GRP0202 ScintilSlow (600dpi) - $99
- GRP0203 TypeForm - $49

**ColStar**
- INF0132 LakesideWriter (22792) - $159

**CoastStar**
- INF0201 LakeWriter - $165

**Hewlett Packard**
- HP DeskWriter 22792 - $159

**MegaGraphics**
- MIND015 8-bit 11" Hi-Res Greyscale for Mac II - $199
- MIND016 8-bit 11" Hi-Res Greyscale for SE/30 - $199
- MIND0000 Real System for Mac II - $129
- MIND0001 Real System for Mac SE - $129
- MIND0002 Real System for Mac Plus - $129

**Selkofsa**
- INF041 SclakTrack 2300 AP Printer - $39

**COMPUZ**
- controls (X2000, X2510, X2420) - $29

**IBM**
- controls (X2000, X2510, X2420) - $29

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free.  It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**INPUT & OUTPUT**

**Calcomp**
- RP0110 The Wii Pen - $37
- RP0111 The Wii Tablet - $159

**Ch Products**
- RP0117 RayMac II/IV - $75

**Computer International**
- RP0119 RayMac III/IV - $99

**DataOub**
- RP0118 RayMac III/IV - $99

**Kensington**
- RP0119 Turbo Mouse - $109
- RP0120 Turbo Mouse II/III - $109

**Key Tronic**
- RP0120 KeyTronic III - $116

**MacPlus/SE with Extended Keyboard**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**MacPrint 1.2**
- Print Mac documents on your HP LaserJet or LaserJet IIId. Hard or soft internal and cartridge fonts. Low-res graphics and high-res text on the same page. Cable included. UTI 0098 95.

**Metro ImageBase**
- Electronic Clip Art Add power to your documents with fabulous art images from Metro ImageBase®! Make newsletters, presentations, reports and brochures communicate more effectively. Each of the 18 ImageBase® Libraries contains at least 100 topic-related images drawn by professional artists. (digitized at 300 dpi or in EPS format). $85 ea.

**Metro Touch**
- RP0118 Turbo Mouse II/III - $109

**MicroTouch**
- RP0120 KeyTronic III - $116

**MicroTech International**
- RP0121 RayMac II/IV - $75

**OpenDesk**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Pamper Your Mac**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Pamper Your Mac**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Pinpoint**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**ProMax**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Solutions, Inc.**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Strata**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Strategic Mapping, Inc.**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**T/Maker Co.**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**Texas Instruments**
- RP0122 Mac Plus/SE with a Targus case made of Silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. There's room for everything from your Mac, a desk drive, and the extended keyboard to pockets for your mouse, floppy, cables, and pens. ACC 0250 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistencies. FIN 0114 599.

**TurboTax Personal/1040**
- TurboTax Personal/1040 takes the hard work out of preparing your federal taxes while making them error free. It's features include on-line help in both IRS wording and layman's language. It prints out your complete tax form and all supplemental schedules and warns you of questionable deductions and inconsistenci
Teleport, the ADB Modem (Global Village Communications)

The perfect choice for powerful yet compact Mac communication. This 2400 baud modem with MNPS data compression packs Hayes compatibility and error free communications. Teleport plugs into your mouse (ADB) port and provides a pass-through connector for other devices. It uses no external power supply, and leaves your serial port free for other uses! Teleport/FAX also includes SendFAX software. Hold OPTION as you drag FILE/PRINT to easily send FAXes worldwide. MO 0049 $129.

MUSIC & SOUND

Altech Systems MUS0032 ALTECH MIDI Interface $59.

Music Software MUS0044 Final 2.5

Electronic Arts MUS0046 Deluxe Music Construction 2.5 $59.

Parallax Computing MUS0058 MacRecorder 2.0 $159.

Tactical Software Sound Clips Vol. 1, 2, 3, 4 $89.

SECURITY & VIRUS PROTECTION

AsD Security, Inc. UT0013 FileGuard 2.5 $139.

UT0013 FileGuard 2.5 - Office Pack 10 $349.

Fifth Generation System UT0019 Softlock 118.

Kensington ACC020 Apple Security Kit $34.

PassProt 70.

Kent Marsh UT0008 MacSafe II 107.

UT0064 NightWatch 1.03 86.

Bookends 1.2 and Sensitive Grammar (Sensible Software)

Bookends 1.2

Automates the process of tracking information in books and magazines.

Just select authors, journals, and keywords from your Hypercard list instead of retyping them. Imports tab delimited text files from dial-up services. WRD 0023 $51.

Sensitive Grammar

Now runs 70% faster than before. Say goodbye to mismatched subject and verb forms, awkward language, non-standard punctuation, long sentences and paragraphs, and other errors that weaken your writing. Works with MS Word, Write, Works, WordPerfect, WriteNow, and MacWrite. SFL 0018 $51.

Microsoft Excel 2.2 (Microsoft)

Now use the full memory of your Mac-up to 8 Megabytes. Excel 2.2 recalculates 40% faster while empty cells consume no memory at all. Cell annotation lets you add notes to any cell and auditing functions help you trace cell references. The new Search and Replace function makes global changes. Charts are now dynamically linked to the original worksheet, so the chart automatically reflects any changes in the spreadsheet. Also supports "warm links" to Word 4.0, so changes to your spreadsheet data automatically appear in your Word documents. BOS 0003 $245.

ChipIt

Apple Software Abbott Systems, Inc. CHP0013 1 Meg Simm 100ns $59.

Total Systems DRI0295 Mercury 16MHz $389.

DRI0299 Mercury SCSI Module - Plus $89.

Gemini- Full Line Available

Bookaids Tectlic Software

Farallon Computing

MUS0035 MacRetro 2.0 $159.

UT10064 NightWallch $0.3 $86.

UT10028 MacSale II $107.

UT10135 FileGuard 2.5 · Security Kit $34.

UTI0131 FileGuard 2.5 · Security Kit $34.

PassProol $70.

Bookaids

WealthBuilder by Money Magazine

WealthBuilder uses your financial data and your decisions about goals and acceptable risks to calculate the best investment strategy. It reads data directly from both Quicken and QuickBooks. Managing Your Money.

It has a stock tracking and portfolio management system, and now includes 5000 stocks and 2000 bonds from Standard & Poor's, in addition to 1450 mutual funds.

FIM 0008 $145.
Fastcachc Ulci and PowerCard 030

(Daystar)

Fastcachc Uli

Unleash the full speed of tine Uli. This high-speed, 25 nanosecond, 64K memory bank, has the capability to store application code so that the 25 MHz 68030 co-processor does not have to wait for the relatively slow 80 nanosecond main memory to catch up. DR1 0224 $289.

PowerCard 030

Turn your Mac II, IIsx or Isx into a speed demon. Installs into the CPU socket, leaving all NUBus slots free. Each uses a 68030 chip that's faster than the factory supplied processor, plus a 68882 math co-processor appropriate to its clock rate, including a 32K static RAM cache. Starting at $1324.

ON Technology

ON Technology

Preferred Publishers

UTI0142 ON Location

UTI0148 HandOff II

Salient

Zedcor

UTF0001 Z8as 5.0

UTF0028 FullWrite Professional V1.1 - SPECIAL! (Daystar)

UTF0031 Sensible Software

UTF0032 BookEdge 1.2

UTF0034 Sensible Grammar

UTF0035 SNA, Inc.

UTF0036 Tactic Software

UTF0037 Rich/Writ

UTF0038 Stylex

UTF0039 Magic Typist

UTF0040 T/Maker Co.

UTF0041 WriteNow 2.2

UTF0042 Word 4.0

UTF0043 Microsoft Office

UTF0044 Claris Corporation

UTF0045 RightWrite

UTF0046 Tactic Software

UTF0047 T/Maker Co.

UTF0048 Word 4.0

UTF0049 SuperPaint 2.0

UTF0050 SuperPaint Personal Press

UTF0051 Sensible Software

UTF0052 BookEdge 1.2

UTF0053 Sensible Grammar

UTF0054 SNA, Inc.

UTF0055 Tactic Software

UTF0056 T/Maker Co.

UTF0057 WriteNow 2.2

UTF0058 Word 4.0

UTF0059 SuperPaint (Silicon Beach)

UTF0060 SuperPaint 2.0

UTF0061 Combines Paint and Draw graphics in one program. Allows novices and professionals alike to access an abundance of powerful features including adjustable airbrush, calligraphy brushes, arrows, draw graphics. Three time winner of Macworld World Class Award! GRA 0112 $135

UTF0062 Personal Press

UTF0063 Create professional layouts with ease. Has AutoCreate to assemble stories and graphics into templates. Includes a full-featured word processor, controls for scanned images, spot color separations, posted notes, link navigator, extensive page previewing, and on-line help. DTP 0040 $199.

FU The HandOff Corporation

UTI0179 Norton Utilities for Macintosh II (SUM) 99.

UTI0180 Norton Utilities for Macintosh II (SUM) 99.

UTI0181 Norton Utilities for Macintosh II (SUM) 99.

UTI0182 Norton Utilities for Macintosh II (SUM) 99.

UTI0183 Sensible Software

UTI0184 Tactic Software

UTI0185 T/Maker Co.

UTI0186 Word 4.0

UTI0187 Microsoft Office

UTI0188 Claris Corporation

UTI0189 RightWrite

UTI0190 Tactic Software

UTI0191 T/Maker Co.

UTI0192 Word 4.0

UTI0193 SuperPaint Personal Press

UTI0194 SuperPaint (Silicon Beach)

UTI0195 SuperPaint 2.0

UTI0196 Combines Paint and Draw graphics in one program. Allows novices and professionals alike to access an abundance of powerful features including adjustable airbrush, calligraphy brushes, arrows, draw graphics. Three time winner of Macworld World Class Award! GRA 0112 $135

UTF0064 SuperPaint 2.0

UTF0065 Combines Paint and Draw graphics in one program. Allows novices and professionals alike to access an abundance of powerful features including adjustable airbrush, calligraphy brushes, arrows, draw graphics. Three time winner of Macworld World Class Award! GRA 0112 $135

UTF0066 Personal Press

UTF0067 Create professional layouts with ease. Has AutoCreate to assemble stories and graphics into templates. Includes a full-featured word processor, controls for scanned images, spot color separations, posted notes, link navigator, extensive page previewing, and on-line help. DTP 0040 $199.

UTF0068 The HandOff Corporation

UTF0069 UTI0179 Norton Utilities for Macintosh II (SUM) 99.

UTF0070 Norton Utilities for Macintosh II (SUM) 99.

UTF0071 Norton Utilities for Macintosh II (SUM) 99.

UTF0072 Norton Utilities for Macintosh II (SUM) 99.

UTF0073 Norton Utilities for Macintosh II (SUM) 99.

UTF0074 Norton Utilities for Macintosh II (SUM) 99.

UTF0075 Norton Utilities for Macintosh II (SUM) 99.

UTF0076 Norton Utilities for Macintosh II (SUM) 99.

UTF0077 Norton Utilities for Macintosh II (SUM) 99.

UTF0078 Norton Utilities for Macintosh II (SUM) 99.

UTF0079 Norton Utilities for Macintosh II (SUM) 99.

UTF0080 Norton Utilities for Macintosh II (SUM) 99.

UTF0081 Norton Utilities for Macintosh II (SUM) 99.

UTF0082 Norton Utilities for Macintosh II (SUM) 99.

UTF0083 Norton Utilities for Macintosh II (SUM) 99.

UTF0084 Norton Utilities for Macintosh II (SUM) 99.

UTF0085 Norton Utilities for Macintosh II (SUM) 99.

UTF0086 Norton Utilities for Macintosh II (SUM) 99.

UTF0087 Norton Utilities for Macintosh II (SUM) 99.

UTF0088 Norton Utilities for Macintosh II (SUM) 99.

UTF0089 Norton Utilities for Macintosh II (SUM) 99.

UTF0090 Norton Utilities for Macintosh II (SUM) 99.

UTF0091 Norton Utilities for Macintosh II (SUM) 99.

UTF0092 Norton Utilities for Macintosh II (SUM) 99.

UTF0093 Norton Utilities for Macintosh II (SUM) 99.

UTF0094 Norton Utilities for Macintosh II (SUM) 99.

UTF0095 Norton Utilities for Macintosh II (SUM) 99.

UTF0096 Norton Utilities for Macintosh II (SUM) 99.

UTF0097 Norton Utilities for Macintosh II (SUM) 99.

UTF0098 Norton Utilities for Macintosh II (SUM) 99.

UTF0099 Norton Utilities for Macintosh II (SUM) 99.

UTF0100 Norton Utilities for Macintosh II (SUM) 99.

UTF0101 Norton Utilities for Macintosh II (SUM) 99.

UTF0102 Norton Utilities for Macintosh II (SUM) 99.

UTF0103 Norton Utilities for Macintosh II (SUM) 99.

UTF0104 Norton Utilities for Macintosh II (SUM) 99.
Once you try the new L-View® Multi-Mode™, you may find other monitors a bit limiting.

See the only 19" monitor that lets you pick the view to fit your job.

Finally, see the big picture.

Now you can truly zoom in and out of your work. Zoom out to see 70% more of your job on screen. Zoom in to see a 200% close-up. Or any of 4 other sizes in between, with one touch.

From the incredible clarity of the 120 dpi wide angle, to the super close-up 36 dpi, you now have the unprecedented power to see your work in 6 sizes and resolutions. From desktop publishing to word processing to spreadsheets, you pick the best view for the job.

No squinting. No scrolling and scrolling. Just click. It's that easy.

So see your local dealer, and see how fast you can zoom through a job. And how much better your eyes will feel when you're done.

Compare the L-View® Multi-Mode™ against the Radius TPD™

<table>
<thead>
<tr>
<th>Feature</th>
<th>L-View® Multi-Mode™</th>
<th>Radius Two Page Display™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style</td>
<td>19&quot; Monochrome</td>
<td>19&quot; Monochrome</td>
</tr>
<tr>
<td>Display Sizes</td>
<td>Six (120/92/72/60/46/36 dpi)</td>
<td>One (82 dpi only)</td>
</tr>
<tr>
<td>Refresh Rate</td>
<td>92 Hz @ 72 dpi</td>
<td>72 Hz</td>
</tr>
<tr>
<td>Price*</td>
<td>$1999</td>
<td>$1990</td>
</tr>
<tr>
<td>Low VLF Emission</td>
<td>No extra charge</td>
<td>Not Available</td>
</tr>
<tr>
<td>OGLI Anti-glare</td>
<td>$200 Option*</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

One look, and you'll see there's just no going back.

SIGMA DESIGNS
46501 Landing Parkway, Fremont, CA 94538
Tel: 415 770-0100 • FAX: 415 770-0110 • TLX: 171240

Please circle 390 on reader service card
Is Bitstream Swiss the same typeface as Adobe Helvetica? Now you can find out for sure. Version 2 of the Bitstream Typeface Library includes Analogue, a DA that cross-references all known names for a particular font. Cool. Bitstream's updated library also improves screen legibility, naming conventions, ATM compatibility, and family linking problems—and yes, the fonts are now hinted according to Type 1 specs.

By Aileen Abernathy

Eddy watch, DTP edition: OK, you now know the winners of the 1990 Eddy Awards. But what’s in store for 1991? Here are my current picks (but ask me again next week). Page layout: QuarkXPress 3.x or FrameMaker 1.x. Then again, there’s Personal Press. Typography: A product that creates, converts, or otherwise deals with TrueType (assuming, of course, that TT still exists by then . . .). Drawing: FreeHand 3.0. No contest. Painting: Oasis, the early favorite, or PixelPaint Professional 2.0. Image retouching: Digital Darkroom 2.0 looks good, but competition in this category is heating up and Photoshop, the heavyweight, should have a new rev out. Utility: Multi-Ad Search, a very slick art-cataloging program that should put Curator into a body bag. No-show: Ventura Publisher, Mac Edition (following in PageMaker 4.0’s footsteps).

Printer evolution: A couple of years ago, you had but two choices for desktop-color proofing. Now a score of color printers are crowding the market, and the second generation is taking wing. Tektronix, maker of one of those pioneering printers, has introduced the Phaser II series, six thermal wax printers that are smaller and lighter than its current models, modular (for easy upgrades), and networkable. These 300-dpi printers range from the low-end IISX ($4,995) — a thermal wax bargain that relies on the Macintosh for image processing — to the IIPXN ($10,995), which offers such features as multiple interfaces (including Ethernet), PostScript compatibility, and Pantone certification.

Product news: Yet another entry in the burgeoning low end of the page-layout market, RagTime Classic ($195) is targeted at users of low-end Macintoshes. RagTime (the company) hopes this strategy will finally make the integrated page-layout, spreadsheet, and word-processing package the hot seller here that RagTime 3 is in Europe. The Santa Fe Collection ($79.95) offers well-drawn clip art based on designs of Native Americans of the Southwest. The 600 images and 140 borders are in MacPaint format. Contact RT Computer Graphics at (800) 245-7824. The Linotronic Imaging Handbook (Torrance, California: Micro Publishing Press) is the first practical guide to using the ubiquitous-but-temperamental Linotype. Authors James Cavuoto and Stephen Beale focus on desktop-publishing needs and have the official okey-doke from Linotype. MacArtist is a monthly newsletter for (you guessed it) Macintosh artists that has a hands-on focus. Write P.O. Box 10072, Costa Mesa, CA 92627.
Introducing Generic CADD™— real CADD with a true Macintosh® Interface. From first inspiration to final production drawing, it’s the one program that you can use in every phase of your design.

Generic CADD combines drawing ease, drafting precision, and Generic Software’s renowned technical support—all for hundreds of dollars less than the competition.

For a free brochure and the name of your nearest dealer, call us at 1-800-228-3601.

It’s CADD that’s worth a closer look.
The Paper Trail

A laser printer puts special demands on paper. Here's how — and where — to get the best paper for your printer.

By Daniel J. Rosenbaum

Laser printers put special demands on paper. The paper has to withstand high temperatures, tortuous turns through the printer, and pressure from rollers. Its surface has to be smooth enough to let toner adhere without flaking or cracking, and the paper itself must have a good crisp feel to it.

Papers differ in more ways than weight, color, and size. When choosing paper for your laser printer, you should also consider the paper's brightness, opacity, and smoothness. Brightness, measured on a scale of 0 to 100 percent, indicates how much light is reflected from it. Pure-white paper should have a brightness level of (or close to) 100 percent. Opacity, also measured in percentage points, describes how much the printing shows through on the paper's other side — important if you're doing double-sided printing. Watermarked paper has a design embedded into it that can be seen if you hold the paper up to the light.

A paper's smoothness is indicated by a Sheffield rating — the higher the rating, the smoother the paper. Most paper falls between 75 and 300. Typical copy-machine paper has a smoothness of about 175, and good laser-printer paper checks in at about 350. Toner adheres better to smooth paper, but you might select a rougher finish to achieve an aesthetic effect. A smooth paper is usually described as having a wove finish; a laid finish is a textured, ribbed effect.

Paper is also classified by weight and fiber content. As you might expect, a heavier paper feels more substantial. To say that a paper weighs 24 pounds means that 500 17-x-24-inch sheets weigh 24 pounds. If you're looking for durable paper, choose one with a cotton rag content. At least 25 percent of this kind of paper is cotton-fiber pulp.

Not all laser papers are appropriate for all purposes. Crane Crest (Crane & Co.) is fine for correspondence, but its off-white color rules it out for printing camera-ready copy. On the other hand, Laseredge HR-50 (CG Graphic Arts Supply) is great for camera-ready art, but it's too heavy and expensive for casual use (about $30 for 250 sheets). Also, unless you'll be using them for paste-up, avoid papers with "wax holdout." One side of this type of paper is specially treated to hold wax, and that side is often a different color from the side you're supposed to print on.

The prices in Table 1 are approximate — costs vary, depending on your location and the distributor that supplies the paper. The paper industry is structured to serve major accounts, not folks who buy a case or three every so often. If you fall into this latter category, the best thing to do is to go through your local stationery store, a printing shop, or a paper distributor.

You can also try Paper Direct, a mail-order company that specializes in selling small quantities of paper from various manufacturers. You can get a sample kit for $14.95, which is refunded with your first order. Contact Paper Direct at 57 Romanelli Avenue, South Hackensack, NJ 07606; (800) 272-7377. Portico Press sells a complete and well-written report on laser papers, which includes about 70 samples of different papers you should try. The report and samples cost $21.95, including shipping and handling. Contact Portico Press at P.O. Box 190, New Paltz, NY 12561; (914) 255-7165.
## Table 1: Laser Papers

<table>
<thead>
<tr>
<th>Paper name</th>
<th>Price (per ream)*</th>
<th>Weight (pounds)</th>
<th>Colors</th>
<th>Legal size</th>
<th>Comments</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boise Cascade Laser Paper</td>
<td>$7</td>
<td>20, 24</td>
<td>white</td>
<td>yes</td>
<td></td>
<td>Boise Cascade Advanced Technology Papers 1600 S.W. 4th Ave. Portland, OR 97201 (503) 224-7250</td>
</tr>
<tr>
<td>Crane Bond White Wove</td>
<td>$30</td>
<td>20, 24</td>
<td>white</td>
<td>no</td>
<td>100-percent cotton. Watermarked.</td>
<td>Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634</td>
</tr>
<tr>
<td>Crane Crest</td>
<td>$30</td>
<td>20, 24</td>
<td>white</td>
<td>no</td>
<td>100-percent cotton. Watermarked.</td>
<td>Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634</td>
</tr>
<tr>
<td>Crane Fluorescent White Opaque</td>
<td>$30</td>
<td>20, 24</td>
<td>white</td>
<td>no</td>
<td>100-percent cotton. Bright white. Watermarked.</td>
<td>Crane and Co., Inc. 30 South St. Dalton, MA 01226 (800) 826-6634</td>
</tr>
<tr>
<td>Finch Laser Opaque</td>
<td>$6</td>
<td>20, 24</td>
<td>white</td>
<td>no</td>
<td></td>
<td>Finch, Pruyn and Co. 1 Glen St. Glens Falls, NY 12801 (518) 793-2541</td>
</tr>
<tr>
<td>Hammermill Bond</td>
<td>$4.50</td>
<td>20, 24</td>
<td>15 colors; legal size in white only</td>
<td>yes</td>
<td>Watermarked.</td>
<td>Hammermill Papers 6400 Poplar Ave. Memphis, TN 38197 (901) 763-7000</td>
</tr>
<tr>
<td>Hammermill Laser Plus</td>
<td>$9.50</td>
<td>24</td>
<td>white</td>
<td>yes</td>
<td>Wax holdout.</td>
<td>Hammermill Papers 6400 Poplar Ave. Memphis, TN 38197 (901) 763-7000</td>
</tr>
</tbody>
</table>

*Approximate price for 500 sheets of 8.5-x-11-inch white, 24-pound (if available) paper in single-carton lots
Need artwork with a professional touch?

ProArt Professional Art Library — nine collections of incredibly useful art images available on floppy disk or compact disc in Mac or PC format.

In search of a way to organize artwork?

Multi-Ad Search — an innovative new image cataloging and retrieval system designed especially for the professional production environment.

Want to create exceptional layouts?

Multi-Ad Creator — a revolutionary ad makeup program that features free rotation of graphics and text, copyfitting, advanced object drawing and manipulation, and more.

Hard disk utilities give you SUM of what you need, Now Utilities 2.0 provides the rest.

Products like SUM let you get the most out of your hard disk. Now Utilities lets you get the most out of your software. As MacWorld put it, “This collection of 12 programs really does have something for everyone.” In addition to everything pictured above, Now Utilities 2.0 includes two Finder enhancement utilities, a facility for previewing documents before you print them, and a system profiler. In short, it gives you everything you need to get the most out of your Macintosh... in one box, with everything guaranteed to work together, for only $129. The result? According to MacUser, “you’ll become more productive and probably have more fun.” And isn’t that why you bought a Mac in the first place? Call us toll-free at 1-800-237-3611 to learn more about what Now Utilities 2.0 can do for you.

Now Utilities, AlarmClock, DeskPicture, MultiMasterr, Now Menus, Stereo Center, StereoLyric, SuperBoomerang and WISPYG Menus are trademarks of Now Software, Inc.

Please circle 26 on reader service card.

Call 1-800-447-1950, ext. 500

Eliminate the guesswork — Use WISPYG Menus to group type families together and display them in their own font.

Avoid conflicts — Have Startup Manager control all of your startup documents and control panel devices.

Spice up your Mac — Let DeskPicture put color or B&W pictures on your Desktop.

Quit mousing around — Let Now Menus create submenus for all the DAs in the Apple menu and popup the menu bar anywhere on the screen.

Find what you’re looking for — Have Super Boomerang list frequently used files and folders in all Open/Save dialogs and do lightning fast file searches.

Keep your guard up — Use Screen Locker to password protect your Mac while you’re away from the office.

Get busy — Let MultiMasterr quickly launch files and applications for you from either the keyboard or the mouse.
### Table 1: Laser Papers, continued

<table>
<thead>
<tr>
<th>Paper name</th>
<th>Price (per ream)*</th>
<th>Weight (pounds)</th>
<th>Colors</th>
<th>Legal size</th>
<th>Comments</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammermill Laser Print</td>
<td>$7</td>
<td>24, 32</td>
<td>white</td>
<td>yes</td>
<td></td>
<td>Hammermill Papers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6400 Poplar Ave. -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Memphis, TN 38117</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(901) 763-7000</td>
</tr>
<tr>
<td>Kimberly Writing</td>
<td>$13</td>
<td>20, 24</td>
<td>8 colors</td>
<td>no</td>
<td>25-percent cotton. Watermarked.</td>
<td>Neenah Paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wove and laid finishes.</td>
<td>1400 Holcomb Bridge Rd.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Roswell, GA 30076</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 241-3405</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(404) 577-8000</td>
</tr>
<tr>
<td>Lancaster Neu-Tech</td>
<td>$22</td>
<td>20, 24</td>
<td>white</td>
<td>yes</td>
<td>100-percent cotton. Watermarked.</td>
<td>Gilbert Paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>430 Ahnaip St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Menasha, WI 54952</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 992-2311</td>
</tr>
<tr>
<td>Laseredge HR-10</td>
<td>$37</td>
<td>27</td>
<td>white</td>
<td>yes</td>
<td>Laseredge papers are specifically made for</td>
<td>CG Graphic Arts Supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>producing camera-ready art.</td>
<td>481 Washington St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>New York, NY 10013</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 342-5858</td>
</tr>
<tr>
<td>Laseredge HR-20</td>
<td>$50</td>
<td>32</td>
<td>white</td>
<td>yes</td>
<td></td>
<td>CG Graphic Arts Supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>481 Washington St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>New York, NY 10013</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 342-5858</td>
</tr>
<tr>
<td>Laseredge HR-30</td>
<td>$53</td>
<td>38</td>
<td>white</td>
<td>yes</td>
<td>Company recommends that HR-30 be fed manually.</td>
<td>CG Graphic Arts Supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>481 Washington St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>New York, NY 10013</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 342-5858</td>
</tr>
<tr>
<td>Laseredge HR-50, HR-60RC</td>
<td>$61</td>
<td>30</td>
<td>white</td>
<td>yes</td>
<td>HR-50 and HR-60RC are the same, but HR-50 is</td>
<td>CG Graphic Arts Supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>erasable. Both have wax holdout.</td>
<td>481 Washington St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>New York, NY 10013</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(800) 342-5858</td>
</tr>
<tr>
<td>Legacy Laser 25-Percent Cotton</td>
<td>$24</td>
<td>24</td>
<td>white</td>
<td>no</td>
<td>Packaged for retail sale. Same paper as</td>
<td>The Legacy Co.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strathmore Writing.</td>
<td>333 Park St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>West Springfield, MA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(413) 737-4770</td>
</tr>
<tr>
<td>Legacy Laser Bond</td>
<td>$21</td>
<td>24</td>
<td>white</td>
<td>no</td>
<td>Packaged for retail sale in 100-sheet packs.</td>
<td>The Legacy Co.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Same paper as Hammermill Laser Print.</td>
<td>333 Park St.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>West Springfield, MA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(413) 737-4770</td>
</tr>
<tr>
<td>Mead Ultratech</td>
<td>$15</td>
<td>20, 24</td>
<td>3 colors</td>
<td>yes</td>
<td>Watermarked.</td>
<td>Mead Paper Co.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Courthouse Plaza N.E.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dayton, OH 45463</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(513) 222-6323</td>
</tr>
<tr>
<td>Moistrite Lasergraphic</td>
<td>$8</td>
<td>20, 24</td>
<td>9 colors</td>
<td>yes</td>
<td></td>
<td>Mead Paper Co.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Courthouse Plaza N.E.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dayton, OH 45463</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(513) 222-6323</td>
</tr>
</tbody>
</table>

*Approximate price for 500 sheets of 8.5-x-11-inch, white, 24-pound (if available) paper in single-carton lots
“Precise layout is essential for fast turn-around. At BBDO we depend on QuarkXPress.”

Bill Morgan, Art Director, BBDO Detroit

“Success in the advertising industry depends on the ability to respond quickly to the needs of clients. When an opportunity arises and we have to move fast, or when a last minute change needs to be made, we don't have time to wonder if our software will be able to handle the job. Because QuarkXPress can precisely manipulate type, text runarounds, and rotation, production is one less thing we have to worry about. Regardless of how complex a design might be, we always know QuarkXPress will come through!"

BBDO is an internationally recognized advertising firm with a wide variety of corporate clients. The firm’s Detroit office handles advertising for Chrysler’s Dodge division.

Visit your local dealer and experience the power, precision, and ease of QuarkXPress.

QuarkXPress is a registered trademark of Quark, Inc. All other trademarks are the property of their respective owners.

Please circle 410 on reader service card.
### Table 1: Laser Papers, continued

<table>
<thead>
<tr>
<th>Paper name</th>
<th>Price (per ream)*</th>
<th>Weight (pounds)</th>
<th>Colors</th>
<th>Legal size</th>
<th>Comments</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neenah Classic</td>
<td>$13</td>
<td>20, 24</td>
<td>2 whites</td>
<td>no</td>
<td></td>
<td>Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000</td>
</tr>
<tr>
<td>Crest Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nekoosa Laser 1000</td>
<td>$10</td>
<td>24</td>
<td>white</td>
<td>yes</td>
<td>Designed for camera-ready art.</td>
<td>Georgia Pacific 100 Wisconsin River Dr. Port Edwards, WI 54469 (715) 867-5111</td>
</tr>
<tr>
<td>Old Council Tree</td>
<td>$22</td>
<td>20, 24</td>
<td>2 whites</td>
<td>yes</td>
<td>100-percent cotton. Watermarked.</td>
<td>Neenah Paper 1400 Holcomb Bridge Rd. Roswell, GA 30076 (800) 241-3405 (404) 587-8000</td>
</tr>
<tr>
<td>Bond N.P.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Approximate price for 500 sheets of 8.5-x-11-inch, white, 24-pound (if available) paper in single-carton lots

---

**I had a dream of how it should be...**

So tiny and light I could carry all 120 MB in the palm of my hand,

So reliable I could trust it with my most important data even if it took a fall,

So fast that it waits for me, I don’t wait for it...
<table>
<thead>
<tr>
<th>Paper name</th>
<th>Price (per ream)*</th>
<th>Weight (pounds)</th>
<th>Colors</th>
<th>Legal size</th>
<th>Comments</th>
<th>Company</th>
</tr>
</thead>
</table>
S. Broad St.  
Westfield, MA 01085  
(413) 568-9111 |
S. Broad St.  
Westfield, MA 01085  
(413) 568-9111 |
| Renewal 25 Percent|                   |                 |         |            |                                       | Strathmore Paper Co.  
S. Broad St.  
Westfield, MA 01085  
(413) 568-9111 |
| Strathmore       | $14               | 20, 24, 28      | 1 colors | no         | 25-percent cotton. Watermarked.        | Strathmore Paper Co.  
S. Broad St.  
Westfield, MA 01085  
(413) 568-9111 |
| Writing 100 Percent|                 | 24, 28          | white  | no         | 100-percent cotton. Watermarked.       | Strathmore Paper Co.  
S. Broad St.  
Westfield, MA 01085  
(413) 568-9111 |

*.and iDS made my hard drive dream come true.*

- Tiny in size (1.3" x 4.7" x 7.9")
- Light in weight (less than 1.5 lbs)
- Big in capacity (up to 120MB)
- Heavy in reliability (100,000 MTBF)
- Fast in performance (as low as 15ms)
- Affordable in price (from $329)

The stuff dreams are made of.

See it for yourself.  
Or call 1-800-733-0078 and ask for your local dealer.  
International sales call  
(408) 752-2952.

Please circle 79 on reader service card.

*MacUser* March 1991 187
"We've Broken the Price Barrier to Large Screen Productivity!"

We've Made Large Screen Productivity Affordable.

Our engineers and designers were given the charter to build no-compromise display systems. The result is a full line of large screen display systems that rival the very best (Radius, SuperMac and RasterOpt, at prices that make them a better value. The savings that you realize are not due to product differences so much as distribution differences. You see, we choose to bypass the middleman, thereby eliminating rep commissions and dealer mark-ups to save you over 40 percent.

Finally, A 20" Trinitron System That Breaks The $3000 Barrier!

Our engineers designed our PreView® System around Sony's patented Trinitron technology, which has become the standard by which all Macintosh screens are measured. Expect vivid color, superior geometric linearity, and sharp focus, only before available in systems selling for twice the price.

We designed our PreView interface cards to minimize component count and power consumption for superior reliability and long life. Our PreView 8-Bit Interface lets you choose between 1, 4, or 8 bit modes and gives you up to 256 colors.

At $4297 Our 24-Bit Trinitron System Costs Less Than Most 8-Bit Systems.

Our new PreView24 Trinitron System gives you photographic image quality with 16.7 million colors available. If you're doing desktop publishing, color graphic design or retouching color photos, PreView24's photo-realism will enhance the speed and quality of your productions.

At $2997 Our PixelView II Gives You WYSIWYG Scaling For Under $1000!

You've heard the reviewers speak of WYSIWYG (what you see is what you get) scaling and its importance to graphic applications. Now it's available on a two page display for under $1000!

Our engineers chose P104 phosphor for reduced eyestrain. And an anti-glare coating that allows the PixelView II to be used in any lighting situation. Plus a screaming 78Hz refresh rate for a rock solid flicker-free screen image.

"Most Mac owners don't have large screens because they can't "afford" them. So they put up with the squinting, eye strain, and the constant scrolling on a 9" screen. What a tragic loss of productivity!

But now with the ability to purchase factory-direct, you can't afford not to own a large screen. Without dealer markups and rep commissions you save over 40 percent.

But not all large screen systems are alike, so do your homework! We have. And the result is four complete systems designed to seriously impact your productivity.

We're so proud of our display systems that each comes with a 30 day "Love-It-Or-Return-It" guarantee. So take advantage of this risk-free opportunity to increase your productivity with a large screen. You'll wonder how you ever lived without it!"

Ronald Eibensteiner, President/CBO
Our PixelView I portrait display allows you to view a full page at one time. You get a paper-like display with a crisp, stable image. And like all Mirror displays, the PixelView I has its own memory so it won’t slow down your computer (like the IIsi or IIC’s built-in video circuitry). Its ergonomic design takes a minimum of desk space and adjusts to any viewing angle.

EXCLUSIVE!
DeskTop Designer™ Software With Every Mirror Display System.
DeskTop Designer™ is a unique set of utilities that lets you customize your new display system. Until now, features like Pop-up Menus, Enlarged Cursor and Menubar, Screen Saver and Screen Copy were available only from Radius on systems costing twice the price. These important features are included with every Mirror Technologies display system.

FREE!
Award Winning VideoPaint... A $495 Value.
For a limited time, we are including Oldova’s VideoPaint with every ProView. Trinitron system at no extra charge. This sophisticated graphic design and re-touching software was awarded 5 mice by MacUser France.

Designed For Plug & Play Simplicity.
Each Mirror display system was designed to make installation and operation a snap. All systems include everything you’ll need to get up and running: monitor, interface card, cables, and software.

Make The Right Choice!

<table>
<thead>
<tr>
<th></th>
<th>PixelView</th>
<th>PixelView II</th>
<th>ProView 8</th>
<th>ProView 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display type</td>
<td>1-bit mono</td>
<td>1-bit mono</td>
<td>8-bit color</td>
<td>24-bit color</td>
</tr>
<tr>
<td>Screen size</td>
<td>15&quot;</td>
<td>19&quot;</td>
<td>20&quot;</td>
<td>20&quot;</td>
</tr>
<tr>
<td>Viewing area (sq. in.)</td>
<td>90.71</td>
<td>151.58</td>
<td>151.58</td>
<td>151.58</td>
</tr>
<tr>
<td>Resolution (dpi)</td>
<td>80</td>
<td>72</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>Vertical refresh</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Pop-up menus</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Enlarged menubar</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Enlarged cursor</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen saver</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen copy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Full year warranty</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>VideoPaint</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DeskPaint v1.5</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Tilt and swivel</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Works with Plus, SE, Classic</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Dealer markup</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Call Today! Order Factory-Direct.
1-800-654-5294

Technical Support Hotline: (612) 633-2105
Hours: Weekdays 8 a.m. - 6 p.m. CST
Telephone: (612) 633-4450
Fax: (612) 633-3136
2644 Patton Road, Roseville, MN 55113

Please circle 106 on reader service card.
For a FREE catalog featuring all 600 Image Club typefaces call 403 262 8008

Buy One Get One Free!
For a Limited Time Only

PC FORMAT Image Club Type for the PC is compatible with Ventura Publisher™, CorelDRAW™, Adobe Type Manager, Aldus PageMaker™ and most Windows™ applications. Use Image Club Typefaces with any PostScript™ or non-PostScript™ printer such as HP LaserJet. For non-PostScript printers, ATM™, CorelDRAW or a PostScript interpreter is required.

CD ROM FORMAT The Art+Type CD ROM Mac only puts every Image Club font and art image on your desk top with a click of your mouse. To buy fonts from ATM™ call us toll free and we will give you the access key that immediately unlocks fonts from the CD ROM disks. With the Art+Type CD ROM you never have to worry about another deadline waiting for a font to arrive. The LetterPress CD ROM is our entire collection of 600 fonts on one single CD ROM disk available for the Mac or PC.

PRICES Individual Fonts $25 – Complete families only
LetterPress CD ROM $3999 – includes all 600 fonts
Art+Type Vendor CD $999 – includes 20 fonts & 1 volume of art

1 Select the fonts you want at 25% complete families only
2 Select the same number of fonts you want for FREE complete families only
3 With credit card ready call the Fontline
4 Orders placed before 4pm MST are shipped the same day.
Filtered Effects

You can easily add special effects to simple black-and-white line art if you know how to use the filters that are built in to a painting or image-editing program.

By the editors of Verbum magazine

Most painting programs (PixelPaint, Studio/8, SuperPaint, UltraPaint) and image-editing applications (Photoshop, ColorStudio) include special filters that can enhance all or selected portions of a bit-mapped image. Filters add power to computer graphics by letting you quickly and automatically add detail, richness, or interesting distortions to otherwise simple line art or scans. Some programs come with as many as two dozen different filters that can darken, lighten, soften, sharpen, posterize, speckle, or add a mosaic pattern to an image.

Janet Ashford, a designer in Solana Beach, California, used the filters in PixelPaint 2.0 to add detail to a series of picture cards for her daughter Molly. Ashford first scanned in line art and then used the Trace Edges filter to generate a double outline of all image elements. After adding flat colors, she applied the Smooth filter, which added intermediary colors to the art, producing the rich, detailed look of a painting.

Verbum: The Journal of Personal Computer Aesthetics can be reached at Box 15439, San Diego, CA 92115.
**2 Tracing the Edges**

PixelPaint's Trace Edges filter is applied to the entire image. This filter draws a thin line along both sides of the lines in the original image, creating closed tubular shapes that can be filled with color. The traced image is checked for broken lines, which must be repaired before color is added.

**3 Adding Flat Color**

Ashford uses the paintbucket tool to add solid colors to the larger areas of the image. The bright, youthful colors are chosen from the Vivid palette, one of several ready-made palettes that come with PixelPaint.

**4 Coloring the Traced Edges**

Contrasting colors are added to the tubular shapes created by the Trace Edges filter. Because the tubes are small and narrow, the image must be magnified to position the paint bucket accurately.

**5 Adding Painterly Detail**

Using the paintbrush tool, Ashford adds strokes of color in different saturations to various parts of the image (dress, cheeks, chair legs). The strokes add depth and detail to the flat color and give the image more of a "painted" look. The image is proofed on a color printer to check color accuracy; the blues are too dark on paper, so lighter shades are substituted.

**6 Using the Smooth Filter**

The entire image is selected, and the Smooth filter is applied. This filter softens the image by averaging the color of pixels in adjacent areas and producing new intermediate colors along the borders. Black lines look fuzzier, for example, because colored pixels near the lines become a little grayer. Brush-stroked details are blended into the background.

**7 Adding a Background**

A rectangle is drawn around the finished image and filled with solid color. By adjusting the width of the paintbrush, Ashford adds borders, decorative dots, and squiggles to the background. The halo effect around the doll and chair is hand-drawn; in Studio/8, however, you can achieve this look automatically, using the Trace With Brush feature. Type is hand-drawn with the mouse, filtered with Trace Edges, and filled with color.
Have you ever noticed the way your colleagues use graphics? How they seem to make their reports and presentations come alive? Chances are, they’re using MacDraw II software, the most popular drawing tool for the Macintosh.

With MacDraw II you can illustrate reports, design products, publish flyers, and present proposals in a way that makes people sit up and take notice. Even if you have never used a drawing tool before.

What’s more, MacDraw II is advanced enough to keep you satisfied for years to come. Its power and depth have made it a standard for companies who need a tool that beginners can start with and expert designers can stay with.

So as you find more things to do with graphics, MacDraw II gives you plenty of power to draw from. And don’t be surprised if you advance quickly, either. MacDraw II works like you think. So the feel is totally natural.

But why not see for yourself. Just ask a colleague to show you MacDraw II. Or stop by an authorized Claris dealer to find out how effective you can be at the art of business.

### Special Offer

**Free Upgrade.**

Buy MacDraw II now and get a free upgrade this spring to MacDraw Pro. Plus, buy now, join our 500,000 other users, and you’ll get free MacPaint and free clip art along with MacDraw II. See your Claris dealer today.
One Gateway Fits All!

Now the leading Macintosh 3270 company does WINDOWS! If your organization consists of Macintoshes, PCs, or a combination, Tri-Data has the solution for you.

For four years we have been the leading supplier of Mac-to-Mainframe connections, and now we have applied those years of Graphical User Interface experience and knowledge to creating our own Microsoft WINDOWS 3270 emulation package, WIN3270* for the Netway.*

Due to this addition to our product line, we are currently the only vendor capable of concurrently supporting both Macintoshes and WINDOWS-based PCs through the same 3270 gateway.

Imagine 3270 usage as simple as "point-and-click"! It is with our feature-rich Macintosh and WINDOWS emulators. Multiple sessions, keyboard re-mapping, keystroke Macros, Model 2 through 5 support, All Points Addressable (APA) graphics and 3287 printer emulation are all available to you now with the purchase of just one gateway product. With our powerful APIs you will also have the ability to create your own specialized host interfaces or work with desktop-to-mainframe solutions from developers such as Oracle, SimWare, MITEM, Network Innovations (CL/11), Mariette Systems (MacPROF*), Concentrix, and Software AG.

With our powerful Netway Family of gateways, we can offer a wide range of solutions for your LAN and host connectivity needs. Additionally, because we support from 8 to 128 simultaneous sessions as well as multiple host connections, you will never outgrow your Tri-Data Solution.

Our gateways are specially designed and dedicated communications processors utilizing the latest in high-performance technology—SPARC and VME. For workstation access, we support LocalTalk, Ethernet and Token Ring (4 and 16 Mbps) LANs with AppleTalk and Netware IPX protocols. For host access, the Netways provide remote SDLC access up to 64Kbps or Token Ring (TIC) connections at up to 16Mbps. Additionally, with our Connectivity Manager Software you can configure, download, and monitor a network of gateways from one centralized site.

So plan for your future now, call Tri-Data at 408-727-3270 and ask about our no risk purchase plan.

Please circle 124 on reader service card.
Keyboard, mouse, and fax machine? Yup. Global Village Communication is now shipping TelePort/Fax. The original TelePort is the Eddy-winning 2,400-bps modem that connects to the ADB (Apple Desktop Bus), as your keyboard and mouse do. It’s ultracompact (3 x 5 inches) and doesn’t require a separate power supply (most modems do). TelePortFax is software that adds 4,800-bps fax-send capability to the package.

By Henry Bortman

MacX and Videotex: For UNIX buffs, Apple is now shipping version 1.1 of MacX, which lets a Mac act as an X Window server. Major new features: 8-bit-color graphics; the ability to cut, copy, and paste from X Window windows to Mac windows; and significant speed improvement. Also now available from Apple: X Window System 2.1 for A/UX. It includes the new MacX, plus a complete Native X Window System client environment for A/UX. (Client and server are backwards with X Window: Applications run on the client, user windows display on the server.) The new package is a full implementation of X11, Release 4. White Pine Software, maker of MacX’s major competitor, eXodus, recently introduced VTXpress for accessing VAX/VMS-based videotex information from a Mac. Videotex is a popular document-retrieval system.

Blue Utilities: Responding to Insignia’s AccessPC challenge, Dayna has announced a new version of its DOS Mounter utility. Both products allow Mac users to mount DOS-formatted disks directly on the Mac desktop. Dayna says the new version is faster than its 1.0 predecessor and can format Mac and DOS disks, low- or high-density, directly from the Finder. For the True Blue among you, Traveling Software, maker of LapLink Mac, now offers WinConnect, a DOS-to-Windows utility. Say you’ve got your Windows machine in your office and a DOS-only portable that you take on the road. Connect the two via a serial cable and run WinConnect, and the portable’s DOS volumes appear on the Windows desktop. Pacific Microelectronics has introduced Common-Link, a software utility that runs on a Sun SPARCstation and enables it to read from and write to DOS- and Mac-formatted 3.5-inch floppies.

Speaking of SPARCstations: Sun now has a new high-end lineup. Starting at $15,000 for the monochrome SPARCstation 2 and topping out at a whopping $50,000 for the SPARCstation 2GT (intended for ultrafast 3-D solids-rendering), the new machines are rated at 28.5 MIPS. They all come with 16 megabytes of RAM, built-in Ethernet, a 3.5-inch floppy-disk drive, and Sun’s annoying optical mouse. There’s also a “low-cost” $25,000 SPARCserver 2, for small work groups.

Iris on Your PC: If you can’t afford one of Sun’s new machines, try IRISVISION. It’s a real-time 3-D-graphics coprocessor for MicroChannel and AT machines, just announced by Silicon Graphics, that comes in 8- and 24-bit versions. AutoDesk, Pixar, Virtus, Wolfram Research, and a host of other software developers are busily writing applications for the new board.

MacUser March 1991 195
The floppy disk icon “DOS-1.44M” is actually an MS-DOS disk, brought to you by AccessPC.


Click, It’s A MAC.

Click Click, It’s A MAC And A PC.

Load SoftPC, click twice, and you’ve got a window wide open to the entire MS-DOS world. Everything a Mac can do plus everything a PC can do, in one machine.

Whether you’re a Macintosh user who needs access to PC software and data, or a PC user who wants to go Macintosh without losing PC compatibility, you can have it all with Insignia’s best-selling software solutions.

SoftPC is a software emulation precise enough to run the toughest PC applications—Norton Utilities, Lotus 1-2-3, Harvard Graphics, AutoCad, even custom development programs. You get complete XT or AT compatibility for the SE/30, Macintosh II family and the Macintosh Portable.

Add on EGA/AT Option Module, and get vibrant EGA color compatibility, LIM expanded memory and math coprocessor support.

New AccessPC lets you use PC and PS/2 disks just like Mac disks. Now you can move and view PC file and disk icons—even in locked or full disks!—format DOS disks, launch Mac applications and much more.

For more information and the name of a SoftPC dealer near you, call Insignia at 800-848-7677 (U.S. only) or 408-522-7600 (outside U.S.).

Insignia Solutions, Inc. 254 San Geronimo Way, Sunnyvale, CA 94086. Fax: 408-733-9541. We give a SoftPC (retail $599) or AccessPC program (retail $129) daily to caller selected at random.

SoftPC is a registered trademark and AccessPC is a trademark of Insignia Solutions, Inc. Other product names are trademarks or registered trademarks of their respective owners.

Please circle 155 on reader service card.
Apple Gives Nod to Ethernet

Five new Ethernet products point in a clear direction toward higher-speed networking for the Mac.

By Henry Bortman

Networking has been part of the Macintosh vision since its beginning. LocalTalk, a relatively low-speed implementation of Apple's AppleTalk network-protocol system, is built into every Mac. It's LocalTalk that lets you connect a group of Macs to a LaserWriter and print with the ease that Apple calls plug-and-play networking.

However, as networks — and the files that move across them — grow in size, the bandwidth (data-carrying capacity) of LocalTalk begins to feel the strain. This is why many users are beginning to migrate their networks from LocalTalk to higher-speed Ethernet.

Apple has supported Ethernet with its EtherTalk NB Card for NuBus Macs since January 1988. And more than a dozen third-party vendors now supply competing Ethernet interfaces, not only for NuBus Macs but also for SEs, SE/30s, LCs, Pluses, and Classics (see "Are You Ready for Ethernet?,” June ’90, Buyer’s Guide, page 20).

Apple recently announced a new group of Ethernet products that represents a giant step toward higher-speed networks. The five new products in the Ethernet line (see Figure 1) include two cards (one for NuBus machines, the other for the LC) and three media adapters (for thin-coaxial-cable, 10BASE-T-compliant twisted-pair, and AUI connections).

Figure 1: Apple's new Ethernet line consists of five aggressively priced products: two Ethernet cards (one for NuBus machines, one for the LC) and three media adapters (for thin-coaxial, 10BASE-T, and AUI connections). Any of the three media adapters can work with either of the two cards.
A new way of looking at modems

TELEPORT, the MNPS modem designed for your Macintosh—and you:

TELEPORT, the MNPS modem designed in the Macintosh' spirit. TELEPORT plugs in like your mouse and keyboard (on your Apple Desktop Bus), eliminating a power adaptor, freeing your serial port, and enhancing portability. TELEPORT is easy to use and opens your Macintosh to the world of telecommunication.

Fast, reliable connections. TELEPORT's MNPS data compression passes your data faster than generic 2400 baud modems, while error correction protects you from telephone line noise.

Put FAX on your menu. Let TELEPORT send your documents to fax machines worldwide, as easily and quickly as you print. Whether you choose 4800 or 9600 baud, the optional TELEPORT/FAX software is the most convenient way to send faxes, from any application, while you use your Mac for other purposes.

Value in Personal Communications. Call us today at 1-800-736-4821. We'll tell you more about TELEPORT, the distinctively Macintosh modem with fax option, and help you find the dealer nearest you.

One of the complications of using Ethernet is that it can run over any of a number of cabling schemes. Most Ethernet card vendors address this problem by offering different cards for different cables or by putting multiple transceivers on the same card. Apple took the opposite approach. It opted to leave the transceivers off the cards in order to provide flexibility at a low cost. To pull off this shift, Apple introduced Yet Another New Connector, which it calls the Apple Ethernet Port. But — trust me — this time it was a smart idea. With this new port, switching cable types only requires changing media adapters. No jumpers. No switches. It's true plug-and-play Ethernet — a very elegant piece of work.

Apple added some other nice touches. The Ethernet NB Card (for NuBus machines) contains its own 68000 microprocessor with 512K of RAM (expandable to 2.5 megabytes). This will allow Apple or third parties to download TCP/IP, DECnet, or other network protocols directly on the card, relieving the main CPU of that task. With expanded memory, this feature may someday also enable router software to run directly on the card.

My Favorite New Thing, though, is that Apple Ethernet Thin Coax Transceiver and accompanying coax cables sport self-terminating connectors. Don't ask me why nobody ever did this before, but I'm glad Apple's done it now. Usually when a connection is broken anywhere on a thin-coax Ethernet network, the two resulting cable segments become unterminated and the whole network dies. With Apple's cables and connectors, both cable segments always remain terminated and both continue to function. Users can continue to work, albeit with limited connections, and network managers can easily locate and repair the break.

Apple has priced these new products aggressively. The total cost of the Ethernet LC Card ($200) and one of the three media adapters ($175) is only $375 — less than most Mac Ethernet cards on today's market. The NuBus card lists for $424; when you add in an adapter, the total is $599. This is a little on the steep side but is still $100 less than Apple's current Ethernet NB Card — and the new card is far more capable. The new cards will ship with Apple's Phase 2 EtherTalk drivers only. Apple may live to regret this decision, but the Mac's maker really wants people to make the switch to Phase 2. Apple had not made a decision at press time about whether it would make a Phase 1 driver available on request.

Several third-party vendors simultaneously announced support for Apple's new Ethernet scheme. Asante, Farallon, NRC, and SynOptics will all provide Ethernet-compatible transceivers of various types, with prices as low as $149. Asante will offer a competing LC card bundled with either a 10BASE-T transceiver ($349) or a three-way transceiver (10BASE-T, coax, and AUI — $399). NRC will offer NuBus and SE cards and routers that conform to Apple Ethernet. No one at press time had announced either an SE/30 card or an external SCSI-to-Ethernet interface for Pluses and Classics that would work with the new port.

One last thing. No hard facts, but Apple has dropped a significant hint that one of the reasons for adopting the new compact port is to prepare for the probably-not-too-distant day when Ethernet will be available on Mac motherboards — and maybe even on LaserWriters.
This is your hard disk severely fragmented

This is how a typical fragmented hard disk looks. The abuse fragmentation can deal is a crime, and it's causing a national epidemic in offices everywhere. But the more you use your computer, the more your files are spread all over your hard disk. As a result, your disk has to work a whole lot harder than it has to. And increased head movement not only slows down your file access times, it will slow you down, too.

This is your hard disk defragmented

Even defragmentation software can’t help much. Wimpy defraggers just place pieces of individual files adjacent to each other. Defraggers just don’t have the intelligence to constantly monitor your file usage. So, any increase in performance are modest and only temporary, disappearing as soon as you use your computer again.

This is your hard disk with DiskExpress II

Only DiskExpress II has revolutionary Disk Optimizer™ technology designed to safely keep your disk optimized forever. And only DiskExpress II has the intelligence to work transparently while you work, the way you work. Which means only DiskExpress II can monitor your daily file activity and determine the absolute optimum priority for file placement on your particular computer. Frequently used files are placed first, then free space and then seldom used files at the back of your disk where they belong. That not only minimizes head movement, it delivers the kind of mind-boggling increase in speed and performance you could get hooked on and be better off for it. To order your new DiskExpress II 2.04, call ALSoft today.

Any Questions?

DiskExpress™ II
Disk Optimizing
$89.95

MultiDisk™
Disk Partitioning
$89.95

MasterJuggler™
Resource Optimizer
$89.95

ALSoft, Inc.
P.O. Box 927 • Spring TX 77383-0927
713/353-4090 SALES • 713/353-9868 FAX
ALSoft, MasterJuggler, DiskExpress, MultiDisk and Optimizer are trademarks of ALSoft, Inc. All other trademarks acknowledged. © 1990 ALSoft, Inc., all rights reserved. Shipping and handling $3 inside USA, $10 outside USA.

Please circle 71 on reader service card.
Until now this age-old annual problem had two solutions. You'd either pay someone lots of money to do your taxes, or suffer through doing them yourself, and end up wishing you'd paid someone to do them.

Introducing the third and better option.

TurboTax®. The tax preparation software designed for your Macintosh® that's like having someone to help you, and hold your hand while you prepare your own taxes. While it knows all the tricks of an accountant, it incorporates the care that only you can have for your hard-earned money.

It guides you through preparing a tax return step by step. More than 60 commonly used forms, schedules and worksheets are included.

If you run into tough tax terminology, TurboTax will use a hypertext format to translate it into easy English. It lets you try various tax scenarios to maximize your refund. Declare a stock loss, for example. Depreciate income property. Or try a different W4 deduction for next year's return.

TurboTax guides you in categorizing and filing more than 90 types of expenses and income. Then proofs your return in over 250 areas to help ensure no mistakes in logic, calculation, or any missed savings opportunities slip through.

It'll even help you sleep at night.
Tables showing the percentage of the returns audited for the amounts you're claiming can be used as a safety check. So there's little worry that anything on your return might flag the IRS.

All the number crunching is done in under 5 seconds. Then, when you're finished, you can print out and mail in your return right off your computer.

When you spend about $89 for our program, you're part of a program. Because TurboTax is offered to you every year after at half price.

If you would like to try our award-winning tax preparation software, drop by your software store, or call us at (800) 755-8829.

Ask about the whole family of ChipSoft products, including our 10 interfaceable State Programs and an Electronic Filing Option.

You'll find out why over 3 million returns were prepared with TurboTax last year alone. Or, for that matter, why more PC users use TurboTax than any other tax software.

Please circle 82 on reader service card.

Now TurboTax has come to the Macintosh.

And, for even more people, thankfully, taxes will never be the same again.
GO Corp. unveils its new PenPoint operating system and ushers in the era of mobile, pen-based computing.

By Henry Bortman

Problem #1: Computers are hard to use. Computer experts will tell you that the Mac's graphical user interface has made computing so easy that anyone can learn to do it. A lot of people who don't use computers will disagree. They're still intimidated — yes, even by Macs. The mouse might simplify things, but computers, regardless of who makes them, still act like, well, computers.

Problem #2: Computers are not mobile. Portable, yes, but not mobile. The latest rage is "notebook" computers. Trouble is, these new welterweights aren't really like notebooks. They still have keyboards, which means they still take two hands to use. And before you can use them, you still have to set them down somewhere — even if that somewhere is your lap. Ah, but where does your lap go when you stand up? More importantly, where does your laptop go? Odds are, it goes back into the briefcase, and you revert to that old standby: pen and paper.

Solution: PenPoint.

After three years of development, GO Corp. has finally taken the wraps off PenPoint, its new operating system for mobile, pen-based computers. (Note: I said operating system.) GO has a computer too that runs PenPoint, but at press time, it was available only to developers. You've heard of point-and-click? Get ready for tap-and-flick. The pen will have as great an impact on computing as the mouse did. Maybe greater. This is Significant Technology.

With PenPoint, the mouse and keyboard are gone (although a keyboard is optional), replaced by a very simple, time-tested input device: the pen. No buttons. No Command or ALT keys. Just a pen. If you know how to write, you can learn to use PenPoint.

And you can use it anywhere: Walking around a warehouse, to enter inventory counts. Sitting in a client's office, to access notes on the last three meetings you've had with him — or the name of that seafood restaurant he likes. Visiting a construction site, to work up an estimate of the cost of modifying the electrical wiring. Just like a notepad — only smarter.

Last November GO gave the MacUser Labs NetWorkShop a sneak preview of PenPoint. Although the version we saw was pre-beta and some features may have changed by the time you read this, here are the basics of how it works.

Of Objects and Pens

The first thing to know about PenPoint is that it is a completely new operating system — it's not DOS or Windows or the MacOS or UNIX with a few pen-handling routines bolted on. It is a fully object-oriented system, built from the ground up specifically to support mobile, pen-based computing.

Being object-oriented means that it allows developers to create extremely compact applications, averaging 100K to 200K. This is important when you consider that a computer running under PenPoint is likely to be running off batteries, without a disk drive. All the information it needs — system, applications, and data — has to be stored in static RAM.

Being object-oriented also means that as new features such as support for additional
network protocols, floppy-disk formats, and printers are developed, they can be installed painlessly and become instantly available throughout the system. Likewise, if GO or some third party develops a better handwriting-recognition algorithm, for example, that too can be installed with a minimum of disruption.

**Tapping Around**

The metaphor for the Mac operating system is a desktop; PenPoint’s is a notebook. When you start up a computer running PenPoint, the first thing you see is a table of contents (see Figure 1). All the documents in the notebook are listed in the TOC. Documents can be grouped into sections, which are similar to folders on the Mac. On the right side of the TOC page are tabs like the tabs on notebook dividers. You can create a tab for any document or section. If you want to work with a document, you tap the pen on a page number in the TOC or on a tab. PenPoint takes you to the selected page.

What if you just want to launch an application? Sorry, not in PenPoint. Everything’s a document. The only time you see an application is when you first install it. After that, PenPoint hides it from you. If you turn to a text document, the PenPoint machine runs a word processor. If you turn to a spreadsheet, it runs a spreadsheet program.

As there are no applications in the traditional sense, you might wonder how you create a new document. Simple. Tap on the Create menu, which contains a list of document types (GO calls these template documents *stationery*). Tap on the type of document you want to create. PenPoint runs the requisite application and creates a new page in the notebook.

But you don’t have to use the Create menu. It’s probably easier to draw an insertion mark (a caret) over the spot in the TOC where you want the new document to be inserted. The Create menu then pops onto the screen, and after you select the type of stationery you want, the new document is inserted in the notebook at the point where you requested it. New stationery documents are added to the Create menu automatically each time you install an application. You can also create your own stationery documents by modifying existing ones and saving them.

PenPoint allows you to embed one type of document within another. When you draw a double-caret anywhere on an existing document, the Create menu again pops onto the screen. Select the stationery of your choice, and the new document appears, embedded within the old one. No imports and exports. No hot links. No publishing and subscribing (the Mac’s System 7.0 approach to interapplication links). And, although each embedded document on a page may be handled by a different application, you’ll never know it. It’s all live, all the time.

**Reading Your Writing**

OK, you’ve got your notebook, you’ve got your pen, you’ve got your document. Say it’s an order-entry form with a bunch of blank fields (see Figure 2) and you’re ready to enter some data. How do you tell the computer where you want the data to go? Just touch the tip of the pen to the computer screen and write. Unlike with mouse-and-keyboard systems, in most cases you don’t have to select something
Figure 1: Instead of a desktop, PenPoint’s metaphor is a notebook. When you first turn it on, it displays a table of contents — a list of all the documents available. You create a new document by choosing a document type and adding a new page to the notebook.

A. Sections are represented in the table of contents by folder icons.

B. Documents are represented by document icons. Shown here is a fax-document icon.

C. Users can custom-define hypertext buttons that link to any object in the notebook, such as a document, a phrase, a part of a drawing, or an appointment on a calendar.

D. The PenPoint operating system provides menus, but many of its functions can be performed more easily with gestures.

E. Tapping on a tab in the table of contents takes you quickly to a document or section of your notebook.

F. The Create menu lists the types of stationary documents. You create a new document by selecting a stationary type and assigning it to a new page in the notebook.

G. Tapping on a page number in the table of contents takes you directly to that page in the notebook.

H. PenPoint’s shelf is your access point to system utilities, disk access, online help, and other features.

When you’ve finished writing, PenPoint translates your handwriting into formatted text and enters it into the field where you first pressed the pen down. Don’t worry if your scribbles stray outside the boundary of the entry field as you write. PenPoint is forgiving. And if it can’t read what you’ve written, it displays an edit pad on the screen and asks you to try again. (By the way, when you write, you have to print. And keep each letter separate — PenPoint can’t interpret cursive or connected letters.)

You say your handwriting’s illegible, that PenPoint will never be able to decipher it. Don’t worry. PenPoint can be trained. If it’s having trouble interpreting your o’s — it didn’t like mine at first — you can use the Handwriting Customization utility to give it a lesson. It stores what you teach it in a Handwriting Profile. You can also save more than one profile in the system — handy when more than one person shares the same computer.

Figure 2: You enter data into a PenPoint document by writing directly on the computer screen. If PenPoint can’t decipher what you’ve written, it displays an edit pad and asks you to try again. Shown here is a sample order-entry form created with Slate’s PenApps (an application-development system).
The Leading Translator Works Undercover As A Transfer Product.

MacLinkPlus/PC is the only product clever enough to give you one-step file translation and file transfer. So why settle for just transferring files, when you can have a product that does both?

With MacLinkPlus/PC, when you transfer a file you also translate it. For example, you can take a document in WordPerfect on the PC and send it to Microsoft Word on the Mac, so it arrives completely ready to use, with style and formatting intact... graphics too!

MacLinkPlus/PC transfers and translates in both directions between a Macintosh and a PC, Sun or NeXT machine for more than 175 combinations of popular programs, including word processors, spreadsheets, databases, and graphics. The product comes complete with everything you'll need... software for both machines, built-in communications to work with the included cable or your modems, and our complete library of translators.

If you're already using your server, network, or DOS drive to access PC files, then you can simply purchase MacLinkPlus/Translators. It's the same product without the cable and communications software.

Get smart. Make MacLinkPlus your secret agent.

For more information, call DataViz at (203) 268-0030.

DataViz. The Industry Leader in File Translation.

Please circle 146 on reader service card.

*Product names are trademarks of their manufacturers.*
Gesture This

To edit text, circle it. Again an edit pad appears. To insert something, draw a caret, as you would if you were editing on paper. Up pops another edit pad. To cross out a word or a selected block of text, draw an X through it or scratch it out. PenPoint even knows I used on context, the difference between a cross-out X and the letter X. Most of the time.

GO calls such pen actions gestures. Gestures are an essential part of PenPoint. In fact, they’re the key to its success. There are 11 core gestures in the PenPoint operating system and 20-odd less frequently used ones. You already know about the X and scratch-out for deletion, the circle for editing, and the caret for insertion. These are all core gestures. “Flick” is another biggie. To flick, you put the pen point down on the screen and give it a shove. Flick up, and you scroll the page upward. Flick down, and you go the other way. Flicking to the right or left takes you to the next or previous page in the notebook.

Multiple-flicking takes you farther in the indicated direction. PenPoint provides a traditional elevator-type scroll bar too, for those who insist on it. But flicking is easier.

Gestures can also be used to modify text. Writing a B over the top of a word or a selected block of text makes it bold. An I makes it italic. Drawing up or down arrows increases or decreases type size. And speaking of text selection, you can say goodbye to shift-clicking or clicking
"Dow Jones helps me protect the assets of this vital multinational outfit."

—David Hess, Executive Director, Environmental Resources and Energy Committee, Pennsylvania Senate

David Hess works for the state.
But he also works for his neighbors, strangers and countless inhabitants of the animal kingdom.
Because David Hess helps develop environmental legislation for the state of Pennsylvania.
And he's discovered a significant way to help protect the world's limited resources. He simply taps into the practically unlimited resources of Dow Jones News/Retrieval.
Within seconds of his request, a world of comprehensive, timely and accurate information makes its way to his computer. And suddenly David Hess knows how communities next door and thousands of miles away approach the same problems.
If wetlands legislation is enacted anywhere in the country, one of the many local and regional newspapers will have the story. If a fast food company announces a new recycling plan, the news is on the screen within seconds of its release. Also making his job easier are hundreds of other rich information sources, including the complete text of The Wall Street Journal and full coverage of all the Dow Jones Newswires.

As Hess says, "Before, I had to pore through the library, call each state over and over again. Or worse, not have the information at all. I can't emphasize enough how much time I save by using News/Retrieval for everything I do."
A savings that's reflected on the profit/loss statement of the one enterprise we all belong to.

Dow Jones News/Retrieval®
The lifeblood of business.


Dow Jones News/Retrieval is a registered service mark and The Wall Street Journal is a registered trademark of Dow Jones & Company, Inc. © 1990 Dow Jones & Company, Inc. All Rights Reserved.

Please circle 34 on reader service card.
Now you can let your imagination run wild. At a very conservative price. Because Tektronix introduces the first color printer that is PostScript-compatible for less than $5000.

The Phaser II SX is great for individuals or small groups. It works with Windows 3.0 or Macintosh QuickDraw and is software-based PostScript-compatible. It also delivers brilliant 300 dpi thermal-wax color as only Tektronix printers can.

For bigger businesses, we offer the new Phaser II PX. This printer is hardware-based PostScript-compatible with HP-GL and is licensed by Pantone, Inc.* It also works with Macs, PCs, and UNIX workstations. All at once.

Now, say you buy an SX, your business grows, and you end up wishing you'd gotten the PX. No
need to worry because all Tektronix printers are upgradable so you'll never outgrow them.

And in case you didn't notice, this entire ad was created by one of our printers. That includes the brilliant graphics you see above and the crisp type you're reading now. Because we have so much faith in our color printers, we let them do their own ads. No one else can make a statement this bold.

Printout for printout, ad for ad, you won't find a better color printer. Call 1-800-835-6100, Dept. 13A for more information. The rest is up to you.
and dragging. An open bracket defines the start of a selection, a close bracket the end. That's all there is to it. Even if you already have text selected, you can use brackets at any time to extend the selection — in either direction.

Software in Search of a Platform

Contrary to what you may have heard, GO is not in the business of selling computers. It does software, PenPoint was still a beta release at the January announcement. The current GO Computer is a '286-based platform that will never see the retail market, as it's for developers and evaluators only. GO is working on a '386-based platform, and when PenPoint release 1.0, which is designed for '386 platforms, ships in the fall of 1991, third-party vendors — and perhaps GO itself — will offer '386-based systems.

Even though it's now for developers only, the Go Computer points in some interesting hardware directions. As its key design criterion is mobility, the basic unit runs entirely off static RAM. No floppy- or hard-disk drive. No network. For interaction with the outside world, it has only a single connector. This can be attached to a compatible floppy-disk drive, which has a SCSI port for hard-disk drives. And the disk drive can connect to a "QuickCharger" power-supply/interface unit. The QuickCharger has a power supply, and it is from here that RS-422 connections to modems, fax modems, and printers can be made. GO calls its QuickCharger, floppy-disk drive, and other similar units, which can be connected to each other, BaseStation Modules. An optional PC-style keyboard can also be attached to the QuickCharger.

GO is relying on other companies to produce the hardware that most people will use to run the PenPoint operating system. IBM was the first company to announce a licensing agreement with GO, although at press time, it had not yet announced a product. PenPoint is evidently scalable, suitable for shirt-pocket-sized notepad computers to conference-table-sized models for work-group computing. Expect to see several vendors making hardware announcements in 1991, with pricing in the $3,000-to-$5,000 range.

Connecting to the Real World

Now that you've heard about the wonders of this totally new and different computing system, you may be wondering how it's going to interact with the already crowded and confusing world of hardware, operating systems, page-description languages, and network protocols. Here's a quick rundown of what's planned.

Disk Drives. Initially, PenPoint will support only DOS-formatted disks, although GO is hoping to add support for Mac-formatted disks in the near future. GO's floppy drive can read and write 3.5-inch 1.44-megabyte floppies. For SCSI drives, GO uses a SCSI-2 (miniature 50-pin) connector, but with an adapter cable, Mac-type SCSI drives may work as well.

One of the shortcomings of the everything-in-RAM notebook approach is that data stored on external disks must be manually swapped into the notebook with the Disk Browser utility before the data can be used. This is one area in which GO's attempt to shield users from the fact that they're using a computer breaks down. However, the '386 PenPoint-based computer will implement a virtual-memory scheme that will reduce the amount of manual intervention needed.

On the plus side, when PenPoint imports a file created by an application on another system, it doesn't say, "Application not available"; it asks you how you want to translate it. A list of applications for which the system has available translators pops onto the screen (see Figure 3), and the file is imported in the format you select. ASCII and RTF export are included in PenPoint, along with a MiniText word-processing application. The fax application included with PenPoint imports and exports TIFF. Third-party vendors are expected to include appropriate translators with their applications.

Networking. In its initial release, PenPoint will include TOPS client software. PenPoint users will be able to read files from and write files to a Mac or a PC that has "published" a TOPS server volume on an AppleTalk network, or a PC running TOPS to which a PenPoint-based...
"I Make Hard Drives Reliable On The Inside Because My Name Goes On The Outside."

I take extra pride in every drive that leaves our shipping dock because it carries the Ehman name. And because of that extra dedication, what started in my garage six years ago, has mushroomed into the largest third party producer of Macintosh mass storage.

Today I honestly believe no one makes a better hard drive than Ehman. Our newest E-series products have all the “bells and whistles” of drives costing several hundred dollars more. Features like two extra power outlets for single switch system bootup and dual fuse circuitry for added protection in the event of an electrical surge.

Ehman drives are fast and quiet, but it’s our commitment to your total satisfaction that separates us from the pack. All our drives come with a 30 day money back guarantee and a two year limited warranty as well as my own personal commitment to giving Ehman customers the best. If you’re not happy with an Ehman drive I want to hear from you and I’ll make it right!

After all it’s not just a hard drive you’re getting, it’s an Ehman.
Complete Ready-to-Run Macintosh Systems

CDA, the leader in complete Macintosh solutions, offers systems that are truly complete and ready-to-run. All systems are tested and preformatted before shipping. When you purchase your Macintosh system from CDA, you will receive top quality components, unlimited technical support, our One Year Performance Guarantee, free software, and loads of extras!

Macintosh LC 40Mb System
- Macintosh LC w/Apple 40Mb HD, Apple SuperDrive, 2 Mbs of RAM, Microphone, Keyboard and Mouse
- Apple 12" Color Monitor
- HyperCard and MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager
- 6 Outlet Surge Protector
- Mouse Pad
- 10 High Density 3.5" Diskettes
- Diskette Storage Case
Ask for Package #9150
CDA $2,569 or $67.41/month

Macintosh Classic 50Mb System
- Macintosh Classic w/Apple SuperDrive, Keyboard, Mouse, & 4 Mbs of RAM
- Microtech 50 Mb Internal Hard Drive
- HyperCard and MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager
- 6 Outlet Surge Protector
- 10 High Density 3.5" Diskettes
- Diskette Storage Case
- Mouse Pad
Ask for Package #9102
CDA $1,599 or $45.26/month
Macintosh Classic system above with:
100 Mb Hard Drive ....................... $1,799

Macintosh Iici Power System
- Macintosh Iici w/built-in Video Card, Apple SuperDrive, 4 Mbs of RAM
- Microtech Nova 105 Mb Internal Hard Drive w/5 Year Warranty
- Magnavox 14" Color RGB Monitor
- Keytronic MacPro Keyboard w/Tempo II Software
- HyperCard & MultiFinder
- Virex Anti-virus Software
- Adobe Type Manager Software
- Norton Utilities, Total Recall and Loads of Free Shareware
- 6 Outlet Surge Protector
- Mouse Pad
- 10 High Density 3.5" Diskettes
- Diskette Storage Case
Ask for Package #9107
CDA $5,869 or $134.61/month

THE CDA GUARANTEE
30 Day Money Back Guarantee - Every CDA product carries our own 30-day money back warranty. If you are not 100% satisfied with your purchase you may send it back for a hassle-free refund or exchange (some items are subject to restocking fees). Extended Guarantee - Everything we sell is guaranteed to be free of defects for one year or we will repair or replace the item free.

Upgrade Your Macintosh
New Low Prices! Fast 80ns SIMM Modules
2 Megabyte Upgrade (Plus/SE) ............... $110
4 Megabyte Upgrade (SE/30/Mac II) ............ $220
4 Megabyte Upgrade (1fs) .................... $349
16 Megabyte Upgrade (68030) ............... $1099
1 Megabyte Upgrade (Mac Classic) .......... $119
3 Megabyte Upgrade (Mac Classic) .......... $189
Mac Classic Hard Drive / Memory Bundles
Europa 20 Mb Internal HD w/5 Mbs RAM ........ $479
Europa 30 Mb Internal HD w/5 Mbs RAM .... $579
Europa 100 Mb Internal HD w/5 Mbs RAM .... $899

Leasing Available — Call for Details! Purchase Orders Welcome
- GO CDA on CompuServe’s Electronic Mall 24 hours a day & watch for weekly specials!
- Hours: Mon-Fri 8am-10pm; Sat. 9am-6pm
- Customer Service: 800-520-5314 - 9am-5pm
- Order via Fax: (908) 832-9740
- CODs up to $1000 accepted ($4 charge).
- CDA Plaza, Box 533, Califon, NJ 07830
Call or Write for CDA’s latest Mac Catalog featuring a complete list of Hardware, Software and Accessories!

Outbound Portable Laptop
Outbound w/ROM, 40Mb HD & 2Mbs RAM $3095
Outbound w/o ROM, 40Mb HD, 2Mbs RAM (use your Plus, SE, or Classic's ROM) .......... $2995
Outbound/Classic Bundle w/40Mb HD, 2Mbs RAM, and the Macintosh Classic CPU ......... $5595

Printers
LaserWriter LINT w/cable and toner ........ $3395
LaserWriter LINTX w/cable and toner ........ $4955
Personal LaserWriter NT w/cable .......... $2475
Ti microLaser PS 35 w/cable ................ $1999
HP DeskWriter w/cable .................... $759
NEC SilentWriters 2 Model 90 w/cable .... $1845
Kodak Dicon MT 150 + w/ATM & cable .... $529
QMS PS-810 w/cable & toner ............... $2995
QMS PS-410 w/cable & toner ............... $1299

Modems
DoveFax Desktop modem ................... $299
Abaton Interface 24/96 ..................... $399
AE DataLink Express 2400 External .... $160
AE DataLink Express w/MNP-5 External .... $199
AE DataLink Mac 2400 Internal (Mac II) .... $199
AE DataLink MacPortable w/Send Fax ..... $199
Zoom 2/400 baud w/cable & software .... $129

All prices subject to change. Apple/Macintosh is a registered trademark of Apple Computer Inc. CDA is not an authorized Apple dealer. Product names are registered trademarks of their respective companies.
Hardware, Software, & Accessories

**The Rival 19" Monochrome Display by Mega Graphics**
MaccWorld Magazine rated the Rival the top performing WYSIWYG big screen — outranking dual-page displays costing much more.

"Its darkened-glass screen effectively enhances contrast and reduces glare." — MacUser Magazine

Rival 19", Monochrome w/video card .......................... $1199
Rival 19" Gray Scale (Mac II) w/video card $1449
Rival 19" Gray Scale (SE/30) w/video card $1449

**Monitors & Video Cards**
Magnavox Mac Color 14" RGB .......................... $459
NEC MultiSync 14" Color ................................ $499
Apple High Resolution 15" RGB ............................ $799
E-Machines ColorGT 16" w/video card ... $2149
Radius Pivot Display w/interface Card ........ $1415
Ikegami CT20 20" w/6-bit card .......................... $279
RasterOps SL 19" Trinitron w/6-bit card ........ $4569
RasterOps SL 19" Trinitron w/6-bit card ........ $5999
RasterOps ColorBoard 264 (Mac II) ................. $539
RastorOps ColorBoard 364 (Mac II) ................. $949
Micron 8-bit Video Card (Mac II, SE/30) .......... $349

**Connectivity**
Asante MacMac+ IIET .......................... $334
Asante MacMac+ SE/30ET ......................... $334
Farallon PhoneNET StarController 300 .............. $859
Farallon PhoneNET StarController EN ............... $1599
Farallon PhoneNET Controller (DEN-8) ............... $289
Farallon PhoneNET Repeater ......................... $315
Farallon Timbuktu 3.1 .......................... $125
Farallon Timbuktu/Remote 1.01 ....................... $125
Dayna Dos Monitor 2.0 .......................... $189
Dayna EtherPrint .......................... $1599
DaynaPort ES/30, ES/30, or ESII ............... $359
DaynaTalk PC ................................ $219
DaynaTalk Micro Channel ......................... $289
DaynaTalk Speed Guard Collision Filter ....... $52

**Your Iic! Will run faster than a Iiff!**
The DayStar PowerCache Ici Card will accelerate your Iic to Iiff speeds and beyond. It installs easily into your cache card connector slot. If you already have a cache card, CDA is now offering a Trade-in Rebate Program for up to $1,000 back — call for details!

DayStar PowerCache Ici Cards .......................... $259
DayStar PowerCard 030-40 MHz ....................... $1399
above w/88882 processor .......................... $1645
DayStar PowerCard 030-50 MHz ....................... $1899
above w/88882 processor .......................... $2245

**The Freight's On Us!**
"CDA will ship your order free via Federal Express® Economy Two Day Service. This applies to stock items under 15 lbs. and orders over $1,000 shipping within the contiguous United States.

US/Canada 800-526-5313
NJ/Outside US 908-832-9004

The Magic of Mac, The Power of People

**Input / Output Devices**
Keyetronics MacPro Keyboard w/Tempos II ....... $159
Apple Extended Keyboard .......................... $189
Apple Standard Keyboard .......................... $189
Kensington Turbo Mouse ADB ....................... $109
Kurta Tablet (8 1/2" x 11") .......................... $279
Wacom Graphics Tablet .......................... Please Call

**Out of serial ports? Add four more w AE's QuadraLink.**
Simply plug the QuadraLink card into a NuBus slot in your Mac II, and you have four new serial ports, ready for your network, printer, scanner, graphics tablet or whatever. The QuadraLink package includes software to create a "shadow driver" so its serial ports will be recognized by older software. .......................... $205

**Drives**
Microtech Europa 20 Mb External .................. $379
Microtech Europa 40 Mb External .................. $419
Microtech Europa 80 Mb External .................. $599
Microtech Europa 100 Mb External ............... $729
Microtech Athena 50 Mb External .................. $569
Microtech Athena 100 Mb External ............... $849
Quantum Internal w/software & bracket ........ $249
40 Mb Internal 19ms w/5 yr warranty ............. $449
80 Mb Internal 19ms w/5 yr warranty ............. $619
105 Mb Internal 19ms w/5 yr warranty .......... $679
120 Mb Internal 19ms w/5 yr warranty .......... $679
170 Mb Internal 19ms w/5 yr warranty .......... $999
DataPak Removable Cartridge Drives w/Disk Doubler software and 2 year warranty.
DataPak (SE footprint) .......................... $769
DataPak Duet ................................ $1569
DataPak II (Mac II, Iics, Iiff footprint) .......... $899
DataPak II Duet .......................... $1599
DataPak Iicx (Mac Iics/ci footprint) .............. $825

**Scanners**
DEST Scan 3000 ................................ $1599
Logitech ScanMan 32 .......................... $379
Thundervue ThunderScan .......................... $169
Microtek MS-II ................................ $1029
Microtek MSF 3000S w/SCSI ....................... $1299
Microtek 3000S w/image & Color Studio ........ $1899
XIS 5C Transparency/Slide Upgrade .............. $1799

**DEST Personal Scan**
Now you can have the best of both worlds with the DEST Personal Scan. This is the first scanner to combine full-page, one pass, hand-held scanning with ten-page capacity sheetfed scanning. .......................... $689

**Software**
- Over 2,000 Mac Software Titles
- We Stock all Adobe Fonts
- Free Freight on Software Orders over $100*

With EZ Vision, a MIDI instrument, and the MIDI Translator, you can create and edit your own musical composition. You don't have to be an experienced musician to use EZ Vision—it was designed for educators, and the entry level musician. ................ $115

**Opcode**
MIDI Translator .......................... $49
MIDI display .......................... $48
Vision VI.1 .......................... $359
Studio III .......................... $269
SoundExciter .......................... $48
Trax .......................... $59
Mark of the Unicorn .......................... $365
Coda .......................... $59
MusicPro .......................... $299
MusicWriter Ltd. .......................... $89
Pyware .......................... $109

**Passport Designs**
MasterTracks Pro $219
Encore .......................... $365
Trax .......................... $59
Mark of the Unicorn .......................... $365
Coda .......................... $59
MusicPro .......................... $299
Pyware .......................... $109

**SoundQuest**
MIDI Quest .......................... $159

**Digidesign's Desktop Music Studio** — a powerful integration of MIDI and multitrack digital audio to produce a complete digital music workstation on the Mac. Orchestrate an entire tune with MacProteus. Add vocals and acoustic instruments by recording directly to hard disk with DECK and Audionema. MIDI and CD-quality digital audio all on the Mac — the perfect solution for any musician.

**MacProteus**, the NuBus card based on E-MS Systems' top selling digital sound module. Now you can put the same world class sounds right into your Mac. Special Low Price ........ $999
Audionema .......................... $799
DECK Software .......................... $799

Ad# 28-03
computer is connected directly via a non-network serial line. But a computer running under PenPoint will not be able to act as a TOPS server.

To make networking easier for novice users, a PenPoint-based computer connecting to an AppleTalk network will automatically mount all TOPS server volumes present on the net. On large networks that have dozens of TOPS volumes available, this could get a little overwhelming. A utility that would allow users to be a bit more discriminating would be welcome.

GO is also looking into implementing AppleShare client software as part of PenPoint. At press time, however, the company had not committed to a delivery date for this. Don’t be surprised to see NetWare (IPX), TCP/IP-NFS, DECnet, and other protocols, either from GO or from third parties, in the future.

Electronic mail is also on the no-comment-unannounced-products agenda for the future. PenPoint connections to Sitka’s InBox and CE Software’s QuickMail are likely candidates, but don’t expect to see Microsoft Mail work with PenPoint anytime soon. Microsoft’s Bill Gates recently announced plans to add pen support to a future version of Windows, and odds are low that he’ll want to give an E-mail boost just yet to the competition.

Imaging, Printing, and Fax. PenPoint uses GO’s new imaging system, ImagePoint. It supports both bit-mapped and object-oriented graphics, as well as outline fonts. GO chose not to go the PostScript route, because of PostScript’s memory and storage requirements. Four fonts will ship with PenPoint’s first release, and additional fonts may be offered later on. GO hasn’t addressed the question of possible future support for Type-I-PostScript or TrueType fonts.

For printing, GO’s first release of PenPoint will support HP LaserJet II- and III-series printers, IBM ProPrinter IIIs and 24s, the Diconix 150 Plus, and the Epson 500—all via serial connections. Drivers for these printers will be included as part of PenPoint’s first release. GO is working on providing support for PostScript printers on AppleTalk networks but hasn’t announced a delivery date yet.

PenPoint will also support fax-send-and-receive capability with Group 3 compression. Unfortunately, OCR technology is not the same as handwriting-recognition technology, so PenPoint won’t be able to translate incoming faxes to editable text. This looks like an obvious third-party opportunity.

The Drool Factor

If you’ve read this far, you probably already want a PenPoint computing device. Whether you will be able to afford one is another question—one that for the time being will have to go unanswered.

But pen-based computing will not long remain in the domain of technojunkies. On the contrary, one of PenPoint’s big selling points is that it will lower the entry-level-computing threshold for thousands—perhaps millions—of today’s non-computer users.

When all is said and done, however, the key to PenPoint’s certain success is simply this: It will help people manage information more productively.

FastTrack Schedule™ 1.5

So much to schedule—so little time.

"Provides the highest degree of functionality and the best on-screen and printed graphic ability in its class." MacUser, October 1989.

Please circle 102 on reader service card.
Top Salesperson Meets Top Customer

I enjoy working with customers, especially those who do their homework. A case in point is Dr. Terry Barnett, Professor of Chemistry at Southwestern College in Winfield, Kansas. He spent a month researching hard drives for his computer lab. In the end, he chose our Protegé drive. And months later, he's still happy with his choice—the Protegé and his free copy of OnLocation make even writing organic chemistry exams easier!

Kelley Muehlhansen, one of MacAvenue's top sales representatives

We do our homework, too. We spend as much as five hours a week with our vendors learning about their products for your needs. We listen to you, too. You said you absolutely, positively needed your order fast. So we made a special arrangement with Federal Express that gives you next-day delivery for only $2. You said you wanted to get the most for your money, so we keep our prices really competitive. And we don't forget you after the check clears. Our toll-free tech support and money-back guarantee keep you happy after the sale.

Give us a call! Once you try us, I know you'll agree with Dr. Barnett when he says, "I have no doubt that I'll be ordering from MacAvenue again."

Instant Information with MacFax . . .
MacAvenue's MacFax is the fastest way to get authoritative information on any MacAvenue product. Dial our MacFax number — 1-800-933-9002 — and within minutes, our computer will fax you spec sheets on selected MacAvenue products. We want you to have up-to-the-minute information because we're convinced that well-informed Mac buyers choose MacAvenue.

MacAvenue's Fast Lane Leasing . . .
Our leasing program is the best way to keep the latest equipment in your workplace without tying up money in equipment purchases. Your agreement usually can be completed in one day, and we'll give you great rates that are easy on your budget. Call Today! 1-800-395-6221.

Unbeatable Service . . .
We guarantee every hardware product and every office accessory we sell. If you have a problem with any MacAvenue product, call our product support staff at 1-800-766-6221. If we cannot resolve the problem over the phone, we'll replace the product with equivalent merchandise and pay the Federal Express shipping both ways. You can be sure MacAvenue is the most reliable resource for Macintosh products.

Free With Every Order
Dr. Macintosh's Software Prescription — a disk with 10 convenient and innovative shareware programs compiled by Bob Levitus, Dr. Macintosh

Call Today! 800-395-6221
Choose MacAvenue's Protege Line for a Great Picture or a Smooth Drive.

MACAvenue ANNOUNCES THE END OF THE SCROLL BAR!

Constant scrolling takes the creative joy out of graphic design—not to mention drives you crazy. And waiting for the screen to refresh can chase off the most ardent Muse. MacAvenue rescues you from the creative doldrums with a larger and sharper image of your whole design. No scrolling.

Our Protege monitors are value leaders in large-format Macintosh displays. Sharp screen images, flicker-free refresh rates and convenient ergonomic features such as a tilt/swivel base mean Protege monitors are comparable to Apple and Radius products that can cost twice as much.

The 15-inch, ultra-high resolution screen of the Protege Full-page Monitor displays a complete 8 1/2" x 11" page with no reduction of image size or quality. Complete with video card, it's only $495. Or get a 2-page view with the 20" Protege Dual-page Monitor for a mere $895. Your graphics life will show definite improvement. And so will your nerves. Just to make sure you get full enjoyment from your Protege monitor, we bundle the After Dark screen saver,—FREE! There's nothing like a flying toaster to perk you right up!

Sure, other companies offer large monitors. But MacAvenue's After Dark — FREE! A $39.95 Value!

PROTEGE: THE BEST HARD DRIVE AROUND

How can we look you straight in the eye and tell you we have the best hard drive on the market? Everyone knows that the heart of any hard drive system is the disk mechanism—and it's usually the same, no matter whose name is on the product.

So what makes the Protege drive different?

It's not just another pretty case. The Protege's metal interior and plastic exterior — just like the Mac's — allows us to control air flow and buffer the drive noise. When you work with the Protege, all you hear is the sound of one hand clapping! Our DiskMaster™ management software lets you set up password-protected partitions that are easily accessible via the Control Panel. ProDOS, A/UX and disk spanning are also supported. But don't take our word for it. Ask Robert Wiggins, MacUser's longtime business columnist, who gives the Protege drive his "highest recommendation." Or Steven Bobker, contributing editor to MacUser and Computer Shopper who says the Protege is "far and away the best value on the market."

MacAvenue
800-395-6221

Protege Hard Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>External</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>20+MB</td>
<td>$345</td>
<td>$295</td>
</tr>
<tr>
<td>40+MB</td>
<td>$395</td>
<td>$325</td>
</tr>
<tr>
<td>60+MB</td>
<td>$555</td>
<td>$465</td>
</tr>
<tr>
<td>100+MB</td>
<td>$695</td>
<td>$599</td>
</tr>
<tr>
<td>200+MB</td>
<td>$995</td>
<td>$945</td>
</tr>
</tbody>
</table>
Federal Express For $2

Tax Help From MacInTax

Four-time World Class and Eddy award winner! MacInTax is the best-selling tax product for the Macintosh. Loaded with new features for 1991! And MacInTax is the only tax product available that prints exact replicas of IRS forms and schedules on blank paper. Full integration with 13 optional state supplements.

MacInTax (SoftView). 28502 ......... $61

Communications

Fariallon Computing

Tribula/Remote v2.0. 27669 $123

Hayes

SmartCom v3.x. 27662 $94

Microcom

Carbon Copy Mac v1.04. 27708 $119

Microsoft

MS Mail ii Pack v2.0. 27680 $159

MS Mail Workstation. 27676 $83

Prodigy Services

Prodigy Startup Kit. 27726 $27

Solutions Inc.

Faxoline Plus. 27712 $37

SW Ventures

Microphone V1.0. 27660 $213

HP Printing Utility

MacPrint lets you print from any Mac application to the Hewlett-Packard Laserjet and Deskjet series printers as well as the Epson I 2LP 6000. Convenient Chooser-level driver selection provides straight forward Mac printing.

MacPrint v1.2 (Mac). 30428 $94

HP LaserJet

8500. 30582 $299

MacPrint Plus. 27718 $118

Fariallon Computing

Tribula v1.0. 27667 $95

Insignia Solutions

Soft PC AT w/EGA Add-on Module. 27716 $355

Soft PC V1.3. 27714 $245

Education and Entertainment

A Lasting Impression

ReturnPro. 38016 $39

Broderbund Software

Calculus v1.2. 27964 $57

Geometry v1.2. 27962 $57

Physics v1.2. 27966 $57

Type v1.0. 27958 $18

Carla Software

Voyager v1.2. 28004 $87

Davidson & Associates

AppleBuster Plus. 28042 $37

Math Blaster Mystery. 27970 $27

Math Blaster v2.0. 27968 $40

Goldilocks & Bear

Mac Bible. 28026 $22

Mac Bible (Super). 28028 $29

Great Ware

KidLisp v1.1. 27990 $25

Individual SW

Training for Pagemaker. 28030 $33

MECC

Exploring Microsoft Works. 28032 $17

Number Munchers. 28034 $29

Word Munchers. 28036 $29

Sensible Software

Sensible Grammar v1.6.2. 28010 $50

Simon & Schuster

Typing Tutor. 28008 $28

Vocabulary Software

Synchronicity v2.5. 28040 $39

HP LaserJet

HP LaserJet

Master Your Correspondence

Address Book Plus 2.0 offers the most complete way to manage and print your names and numbers. Letter Writer Plus is a handy Desk Accessory that puts powerful letter-writing and mail-merge tools at your immediate disposal. The two programs work together for the fastest and easiest mail merge.

Address Book Plus (Power Up) 2.0 30442 $59

Letter Writer Plus (Power Up). 30440 $54

Address Book Plus/Letter Writer Plus bundle. 29043 $85

3-D Graphics Made Simple

Use Psoftopia's SwivelArt to create 3-D graphics for models and product prototypes. Easy to learn and includes more than 100 readymade three-dimensional models.

Swivel Art (Psoftopia). 29308 $582

The Graphic Arts

MOSTLY DRAWING/PAINTING

Adobe

Illustrator v3.0. 29920 $148

Photoshop v1.0.7. 29926 $499

Aldus

FreeHand. 29928 $326

Baseline

Color MacCHEESE v1.0. 29110 $55

Claris

ClarisCAD 2.0. 29207 $139

General Software

General CADD. 29280 $172

Paracomp

Spectrum CADD Professional. 29294 $437

MOSTLY GRAPHICS EDITING

Paracomp

FilmMaker. 29900 $147

PRESENTATION MANAGERS

Symantec

MacPlus. 30805 $265

CERTIFICATE AND AWARD GENERATORS

Broderbund Software

Print Shop. 29236 $10

GRAPHICS UTILITIES

Frame Technology

FrameMaker Mac. 29984 $745

GRAPHIC ART COLLECTIONS

Multi Ad Services

Pocket Holders. 29276 $95

Pocket Spreads. 29278 $95

Paracomp

Swivel Art. 29308 $82

DO IT YOURSELF PROGRAMMING

Microsoft

QuickBasic. 27590 $64

Sponsorware

PLUS v2.0. 27826 $279

Symantec

Just Enough Pascal v1.0. 27582 $48

THINK C v4.0. 27586 $163

THINK Pascal v2.0. 27584 $162

OPTICAL CHARACTER RECOGNITION

Dest inc

Recognizer. 30640 $479

800-395-6221
Choose the Best Monochrome

The Sigma L-View will zoom out to display your work as small as 7(11(, or zoom in to show an image as large as 25280 x 1107

<table>
<thead>
<tr>
<th>Model</th>
<th>Resolution</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>26294 S17</td>
<td>25280 x 1107</td>
<td>$77</td>
</tr>
<tr>
<td>26292 1207</td>
<td>25280 x 1107</td>
<td>$107</td>
</tr>
<tr>
<td>26295 1207</td>
<td>25280 x 1107</td>
<td>$120</td>
</tr>
</tbody>
</table>

“Cream of the 2-D Crop” (Continued)

Generic CAD from Generic Software gives you powerful-aided design features and sophisticated tools—all the tricks of the trade—at a price that’s only a shadow of other CAD package prices.

Generic CAD, 29283 $372

DayStar Gives You Top Speed

When you’re ready for serious high-end performance—in Mhz speeds—you need DayStar Digital’s PowerCache HIC. Plug in this turbo-charged cache card and your Mac will be the fastest Mac alive, faster than even the far more expensive machines.

PowerCache HIC (DayStar), 23649 $1195

DATA ANALYSIS AND PRESENTATION

Odessa

DeskTop v.0.5

27804 $185

DATABASE

Informix

4th Dimension v.2.1

27790 $489

Fire force

27820 $247

Claris

HyperCard Pro

27979 $216

Fox Software

File/Manager v.2.1

27991 $292

Microsoft

Microsoft Word v.2.0A

27994 $125

MySoftware

PowerMail v.2.0

28126 $50

Preferred Pub’s DanC

2834 $67

Sensible Software

Shadows v.2

28780 $50

Ventura

Ventura Publisher v.6.0

29206 $1382

OFFICE PRODUCTIVITY PROGRAMS

Microsoft

Microsoft Word v.2.0

30495 $85

PowerUp

Letter Writer Plus

30440 $55

SPREADSHEET PROGRAMS/TEMPLATES

Wings v.1.7

31184 $245

800-395-6221
MacAvenue Fun Pak 29400 .............................. $39.95

Make Life Better
The MacAvenue Better Living Pak gives you Dinner at Eight (including The Encore Edition and The Weeknight Gourmet), QuickLeter, Synchronicity and Protector Shark. Six packages worth more than $300!

MacAvenue Better Living Pak 29402 .................................. $49.95

NEW MacAvenue Software Paks!
More Fun, Less Money
The MacAvenue Fun Pak includes 5 programs: Hitchhiker's Guide to the Galaxy, Leather Goddess of Phobos, Crystal Quest, Satirical Royale and Talking Moose. A $299 value!

CREAMMUNET 
IOMB External Protege .................................. 24390 1455
IOMB Extomal Protoge .................................. 24190 1599
IOMB Intern. (SE/Ix) ................................ 24200 1945

COMMUNICATIONS-MODEM
Apple
MacCon+ 16B/4Win ................................ 22588 1395
MacCon+ I6B/shlk/UTP ................................ 22589 1399
MacCon+ SE16B/UTP ................................ 22590 1399
MacCon+ SE16B/UTP ................................ 22591 1399

COMMUNICATIONS-NETWORK
Apple
Ethernet
FastPlan Computing
Lanux v. 3.0 ........................................ 27744 1259
PhoneNET Connector DB-9 ........................................ 22531 51
PhoneNET Connector Db-8 ........................................ 22533 51
PhoneNET Repeater ........................................ 22573 1317
PhoneNET StarControlr ........................................ 22516 888

COMPUTER ACCESSORIES
Apple
MacCon+ 16B/4Win ................................ 22588 1395
MacCon+ I6B/shlk/UTP ................................ 22589 1399
MacCon+ SE16B/UTP ................................ 22590 1399
MacCon+ SE16B/UTP ................................ 22591 1399

COMPUTER MONITORING
Apple
MacAvenue Still 9000 .................................. 22526 1299
MacAvenue Still 9000 .................................. 22525 1299

COMMUNICATIONS-AUX
Apple
Systor
Contour 3160 ........................................ 1279
NvtModem X232 .................. 22504 1275

COMPUTER HARDWARE
Apple
MacAvenue Still 9000 .................................. 22526 1299
MacAvenue Still 9000 .................................. 22525 1299

Computer Express For $2

NEW LOW PRICE! $49/Megabyte
Get the most processing power out of your Mac; build your four-slot SE to 4MB or your 8-slot Mac to 8MB. Only the best surface-mounted 80 nanosecond memory products. Call Macsfax for pricing chart.

2 x 1MB SIMM Kit – 80ns Technology Works .................................. 25480 $98
4 x 1MB SIMM Kit – 80ns Technology Works .................................. 25482 $196

More Serial Ports
Expand your system's expandability. Applied Engineering's easy-to-install QuadraLink lets you add four additional serial ports to your Macintosh. Includes a "shadow driver" so that all the new ports will be recognized by virtually all software.

QuadraLink (Applied Eng.). 26917 .................................. $205

MAKE IT SMARTER THAN THE NEXT MAC

COMMUNICATIONS-MODEM
Apple
MacCon+ 16B/4Win ................................ 22588 1395
MacCon+ I6B/shlk/UTP ................................ 22589 1399
MacCon+ SE16B/UTP ................................ 22590 1399
MacCon+ SE16B/UTP ................................ 22591 1399

NEW LOW PRICE! $49/Megabyte
Get the most processing power out of your Mac; build your four-slot SE to 4MB or your 8-slot Mac to 8MB. Only the best surface-mounted 80 nanosecond memory products. Call Macsfax for pricing chart.

2 x 1MB SIMM Kit – 80ns Technology Works .................................. 25480 $98
4 x 1MB SIMM Kit – 80ns Technology Works .................................. 25482 $196

800-395-6221

Hardware

PRINTERS, SCANNERS AND FAXES
Quest 35-S00 Color Scanner w/lif 22763 1824
Kodak M150 Mac Portable 22855 1599
Logitech ScanMan 32 22751 519
MicroTek-MSI Microl 3800 Color Scanner 22755 1945
Orchad OrchExFAX Modern 22702 549
Reelink Telax RA2/110 22700 395
Sekio Label Printer ........................................ 22826 1995
Sekio Labels for Sekio Label Printer 26929 1199

ACCELERATOR AND EXPANSION BOARDS
Apple
Mac II 386 1MB Upgrade Kit 25488 1599
Mac Portable 1MB Upgrade Kit 25487 1499

MEMORY EXPANSION
Apple
My Electronic 1MB 11 Laser Memory Upgrade Kit 25489 215

TELEPORT MODERN
Apple
Teleport Modern (Global Village). 22311 ........................ $134

MONITORS AND VIDEO CARDS
Apple
MacAv•••••• 1024X768 ................................ 25484 1585
Mac 8-Bit 640X480 ................................ 25483 1584
Mac 8-Bit 640X480 ................................ 25482 1583

THE EASIEST-TO-USE MODEM
Apple
The TelePort Modern from Global Village is ready to send as soon as you plug it into the ADB port on your Mac. Fits anywhere, includes MNP5 error correction and automatically matches the transmission speed of your connection.

Teleport Modern (Global Village). 22311 ........................ $134

Hardware

PRINTERS, SCANNERS AND FAXES
Adobe Postscript for Mac ................................ 28342 1299
Complete PC Complete Page Scanner 22153 758
Dell Personal Scan w/ Recognized Software 22762 669
Dove DownFax-External 22701 529
Epson TS-500 Color Scanner w/lif 22765 1824
Kodak M150 Mac Portable 22855 1599
Logitech ScanMan 32 22751 519
MicroTek-MSI Microl 3800 Color Scanner 22755 1945
Orchad OrchExFAX Modern 22702 549
Reelink Telax RA2/110 22700 395
Sekio Label Printer ........................................ 22826 1995
Sekio Labels for Sekio Label Printer 26929 1199

ACCELERATOR AND EXPANSION BOARDS
Apple
Mac II 386 1MB Upgrade Kit 25488 1599
Mac Portable 1MB Upgrade Kit 25487 1499

MEMORY EXPANSION
Apple
My Electronic 1MB 11 Laser Memory Upgrade Kit 25489 215

TELEPORT MODERN
Apple
Teleport Modern (Global Village). 22311 ........................ $134
Try MacsFax! 800-933-9002

Build Your Wealth

WealthBuilder by Money magazine will guide you through the stormy waters of financial planning and give you advice on investing, saving and strategic planning. You just ask questions. WealthBuilder has all the answers.

WealthBuilder by Money magazine
(Reality Software) 28496 $145

Safety, Maintenance and Repair Utilities

DATA ORGANIZATION

On Technologies 0.10 v.1.0 30434 $15

DATA STORAGE, MANAGEMENT, REPAIR

Basicbook

ABF Express v.1.0 30544 $15
Central Point Mac Tools Deluxe 30365 $19
MicroData 911 Utilities 30150 $14
Complete UnDelete v.1.0 30420 $15
Salient Data Doubler v.3.0 30546 $14
Syntalic Norton Ltd for the Mac 30436 $15
Sun v.1.0 30419 $18

SHORTCUT AND TIME SAVING UTILITIES

Individual SW 101 Series 6 Buttons 30426 $15
Software Innovations Huron II 30510 $11

SCREEN SAVER UTILITIES

Beckley Systems

After Dark v.2.0 30425 $14
FM Generation

Pens v.4.0 30399 $15
Rip/Move 3.1 30538 $11
Protector Shark 30538 $11

VIRUS DETECTORS AND ERADICATORS

Microsource

Vines v.2.7 30413 $11

Toll-Free Technical Support • 90-Day Product Replacement

If you experience a problem with anything you purchase from MacAvenue, call our product support staff at 1-800-766-6221 weekdays from 8:00 am to 7:00 pm, CST. We will replace the item and pay Federal Express shipping both ways.

One-Year Limited Warranty

For up to one year after your purchase, MacAvenue will replace or repair (at our option and without cost to you) any product with which you are not completely satisfied, and we will pay for Federal Express return freight to you.

Everything at MacAvenue is designed to give you the affordable, reliable Macintosh products you want when you want them.

Orders placed by 8:00 pm, CST, weekdays for in-stock items ship the same day (barring system failure) with a $2 overnight delivery charge.

For your convenience, we accept VISA, MasterCard, Discover or American Express — no surcharge will be added.

If you use a credit card to pay for your order, your account will not be charged unless we ship your order.

If we have to split an order into two shipments, you will be charged only once for shipping. All orders under $30 will be shipped UPS Ground.

COD orders accepted (Add $8, including shipping).

Corporate and institutional purchase orders accepted, $500 minimum for the first order, $50 thereafter.

Look for MacAvenue products in the following CompuAdd Superstores:

- Portland, Oregon
- Austin, Texas — Shoal Creek
- Watch for More Store Openings Soon!

Call now for FREE catalog!

800-395-6221

Mac Avenue

A Division of CompuAdd Corporation

12303 Technology Boulevard — Austin, Texas 78727

MacAvenue is a trademark and CompuAdd is a registered trademark of CompuAdd Corporation. Mac, Macintosh, HyperCard and Apple are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective companies. All return items must be accompanied by a return merchandise authorization (RMA) number. Prices and product descriptions are subject to change without notice. Neither CompuAdd nor MacAvenue is liable for damage due to signals or typographical errors.
If you're not careful, the zone lists that users see in the Chooser can get scrambled and users can lose access to printers and servers.

By Kurt VanderSluis

No matter where you are on an AppleTalk internet, the zone list you see in the Chooser is the same one. Or at least it should be. The zone that's highlighted, the "home zone," might vary, depending on where in the internet your computer is, but the contents of the list should be the same. Because of a loophole in Apple's protocols, however, a network manager can inadvertently destroy this zone-name uniformity. Let's look at how this can happen, how to avoid it, and how to cure it.

Zone by Zone

A zone name represents a grouping of network resources, such as printers and file servers. The grouping is mostly for users' convenience, so they don't have to search through all the printers on the network to find the one they need.

Network managers assign zone names and network numbers when they configure a router. For a LocalTalk-to-Ethernet router such as a FastPath or GatorBox, you assign a zone name and network number to both the LocalTalk port and the Ethernet port. Although users never see network numbers, they are useful as a network manager's reference.

When you turn a router on, it begins exchanging information with the other routers already functioning on the internet. It soon learns the identity of all the other network numbers and zone names by building and maintaining information tables (called routing maintenance tables) in its memory that tell it how to send packets between devices in different networks. The initial information you give a router when you configure it is the seed of those tables.

Figure 1 shows an Ethernet backbone connecting several LocalTalk networks—a common way to build an internet. One of the rules of AppleTalk is that all the routers on the backbone network must share their knowledge of how the internet is built every ten seconds, using RTMPs (routing-table-maintenance packets). Because of this exchange, every router knows about every other router on the backbone as well as the networks and zones they connect.

Messing with the Internet

Let's use Figure 1 as a sample to see how changes can affect the operation of an internet.

When a new router (router 4 [R4]) is added to the internet and it sends out its first RTMP, all the other routers add the number of the newly connected network, 12 in this case, to their tables.

The network number is stored in all the other routers, but its zone name is still undefined, because RTMPs don't include zone information; they include only network-number information.

In each routers' ZIT (Zone Information Table), the new network number is noted, but a nil value is placed in the table for the zone name. The nil value triggers the routers to ask the new router for the missing zone-name information. The new router then informs
them that network 12 corresponds to the Finance zone.

Routers that disappear from the network, because of failure or human intervention, stop sending out RTMPs. The other routers notice that these packets are no longer coming, and after some time, usually about ten minutes, they drop the corresponding network number and zone name from their tables.

At some later point, you may decide to rename one of the zones. For example, let's change the name of the zone connected to router 1 (R1) from Sales to Eastern Sales, and for the sake of the example, we'll say that the change takes only three minutes to accomplish. During this three minutes, R1 is not sending its RTMPs and the other routers are preparing to drop network 23 from their tables, because it may not be a reliable destination. When R1 is reconnected in three minutes' time and resumes sending out its RTMPs, the other routers consider it safe to send packets through R1 to network 23 again.

Because the ten-minute time limit was never reached during the change to R1, network 23 was never dropped from any of the routers' tables. The other routers don't consider it necessary to ask R1 what network 23's zone name is, because they already have a zone name for network 23 — Sales.

If you're on one of the Macs in network 23, when you open the Chooser, your Mac will ask the router for a zone list and you'll see Eastern Sales as your home zone. If you're on any of the other LocalTalk networks, Eastern Sales won't appear in your zone list because none of the other routers know of its existence — that zone is still listed as Sales. If you're directly connected to Ethernet, your Mac will pick one of the routers to ask for a zone list — whichever router your Mac received a packet from last. Approximately a quarter of the time, this router will be R1, so Eastern Sales will appear in the list you see in the Chooser. The rest of the time Sales appears instead.

Preventing Conflict

There are two ways to avoid this naming conflict or to cure it if you do have it. The first way is to make sure that R1 stays off the network for at least 20 minutes before you reconnect it, so that all the other routers will drop network 23 from their tables and ask for the zone name when R1 reappears.

The other method is to renumber network 23 at the same time that you rename it. If you were to change the number of network 23 to 24, for example, network 23 will be dropped from all the routers' tables and the new network number will trigger the zone-name request. Either way prevents you from messing up your internet when you mess with your internet.

DataClub

How would you like a Macintosh network that runs astonishingly fast, becomes more powerful as it grows, and never goes down? You can have all this and more with DataClub — the breakthrough in file server software.

**DataClub is faster.** Instead of requiring dedicated hardware, DataClub utilizes every Mac on the network to create a powerful virtual server. The result is parallel processing which enables your network to perform with blinding speed.

**DataClub is always available.** Thanks to our new virtual server technology, network bottlenecks and down-time are history. No matter how many Macs are running, users can always perform network operations at the same time — with absolutely no waiting!

**Files are easy to get to.** All shared information is found under a single desktop icon, so no one wastes time searching for files.

Each Mac contributes to the virtual server, offering parallel processing and record performance.

**More users means more power.** DataClub harnesses the combined processing and storage capacity of all the Macs in the network. So, while conventional file servers lose performance as more users are added, DataClub actually gains capability as your network expands! And you can add or remove machines without the hassle and expense of reconfiguration. DataClub handles the change for you — automatically and instantaneously.

**Highest security and standards.** You get nine levels of access privileges, AFP & AppleTalk® compliance, and compatibility with Macintosh applications.

**A price breakthrough, too.** DataClub offers all these advantages over other file server systems, at a substantially lower cost! Call us toll-free to get your hands on this networking masterpiece. Discover the power of DataClub. Then sit back and watch your network perform.

CALL 1.800.733.2822

International Business Software
1270 Oakmead Parkway, Suite 314, Sunnyvale, CA 94086-4834
(408) 722-8000

Please circle 363 on reader service card.
Publish-It! Easy

In Less Than an Hour.

The all-in-one desktop publisher for the rest of us.

Makes your document design fast, easy and fun!

Everything is Included.

Now you can bring words and graphics together to express your ideas like never before! Write a document, check the spelling, mix and match type styles, add graphics, and print it out, all in a few simple steps—all with one easy-to-use program. And get professional-looking results—every time:

- A Fully Integrated Word Processor
- A 112,000-Word Spell Checker
- A 240,000-Word Thesaurus
- Advanced Page Layout
- Built-in Drawing & Painting Tools
- A Quick-Start Mini-Manual
- 72 Sample Page Layouts

Special “What-if” Design Features.

Experiment with document design all you want. Easy’s “Libraries” and Proxies let you alter page elements instantly—making changes and experimentation easier than ever before. When you’re happy with the results, save it as your final document.

Try stretching or condensing your headline or body copy. Or rotate text for special accents, or make your type textured or shaded. But don’t think all these exciting capabilities are difficult. They aren’t. They’re Easy.

Automatic Everything.

If you’re not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It’s all automatic. You won’t have much to learn or to do!

Publish It! Easy

We make desktop publishing easy. And at $249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.

*Not compatible with Macintosh 128K or 512K machines.

Best Page Design Program Nominee
MacUser, 1990

“Publish-It! Easy supplies more basic features than PageMaker (3.02)… runs much faster (on any Mac)… and may eliminate your need to purchase separate word processing, drawing and painting programs.”

Darryl Lewis
MacUser

Auction!! Auction!!

See this month’s Topic on Page 1

FREE Preview Today’s Hottest Desktop Publishing Program, FREE!

Publish-It! Easy was recently nominated for the prestigious MacUser Editor’s Choice Award. If you would like to acquire a self-running Preview Disk of this amazing DTP program, please send $2.75 to cover postage and handling.

Order Your FREE Demo Disk Today!

Write to the address above or call 1-708-948-9206

Please circle 116 on reader service card.

Special “What-if” Design Features.

Experiment with document design all you want. Easy’s “Libraries” and Proxies let you alter page elements instantly—making changes and experimentation easier than ever before. When you’re happy with the results, save it as your final document.

Try stretching or condensing your headline or body copy. Or rotate text for special accents, or make your type textured or shaded. But don’t think all these exciting capabilities are difficult. They aren’t. They’re Easy.

Automatic Everything.

If you’re not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It’s all automatic. You won’t have much to learn or to do!

Publish It! Easy

We make desktop publishing easy. And at $249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.

*Not compatible with Macintosh 128K or 512K machines.

Best Page Design Program Nominee
MacUser, 1990

“Publish-It! Easy supplies more basic features than PageMaker (3.02)… runs much faster (on any Mac)… and may eliminate your need to purchase separate word processing, drawing and painting programs.”

Darryl Lewis
MacUser

Auction!! Auction!!

See this month’s Topic on Page 1

FREE Preview Today’s Hottest Desktop Publishing Program, FREE!

Publish-It! Easy was recently nominated for the prestigious MacUser Editor’s Choice Award. If you would like to acquire a self-running Preview Disk of this amazing DTP program, please send $2.75 to cover postage and handling.

Order Your FREE Demo Disk Today!

Write to the address above or call 1-708-948-9206

Please circle 116 on reader service card.

Special “What-if” Design Features.

Experiment with document design all you want. Easy’s “Libraries” and Proxies let you alter page elements instantly—making changes and experimentation easier than ever before. When you’re happy with the results, save it as your final document.

Try stretching or condensing your headline or body copy. Or rotate text for special accents, or make your type textured or shaded. But don’t think all these exciting capabilities are difficult. They aren’t. They’re Easy.

Automatic Everything.

If you’re not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It’s all automatic. You won’t have much to learn or to do!

Publish It! Easy

We make desktop publishing easy. And at $249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.

*Not compatible with Macintosh 128K or 512K machines.

Best Page Design Program Nominee
MacUser, 1990

“Publish-It! Easy supplies more basic features than PageMaker (3.02)… runs much faster (on any Mac)… and may eliminate your need to purchase separate word processing, drawing and painting programs.”

Darryl Lewis
MacUser

Auction!! Auction!!

See this month’s Topic on Page 1

FREE Preview Today’s Hottest Desktop Publishing Program, FREE!

Publish-It! Easy was recently nominated for the prestigious MacUser Editor’s Choice Award. If you would like to acquire a self-running Preview Disk of this amazing DTP program, please send $2.75 to cover postage and handling.

Order Your FREE Demo Disk Today!

Write to the address above or call 1-708-948-9206

Please circle 116 on reader service card.

Special “What-if” Design Features.

Experiment with document design all you want. Easy’s “Libraries” and Proxies let you alter page elements instantly—making changes and experimentation easier than ever before. When you’re happy with the results, save it as your final document.

Try stretching or condensing your headline or body copy. Or rotate text for special accents, or make your type textured or shaded. But don’t think all these exciting capabilities are difficult. They aren’t. They’re Easy.

Automatic Everything.

If you’re not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It’s all automatic. You won’t have much to learn or to do!

Publish It! Easy

We make desktop publishing easy. And at $249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.

*Not compatible with Macintosh 128K or 512K machines.

Best Page Design Program Nominee
MacUser, 1990

“Publish-It! Easy supplies more basic features than PageMaker (3.02)… runs much faster (on any Mac)… and may eliminate your need to purchase separate word processing, drawing and painting programs.”

Darryl Lewis
MacUser

Auction!! Auction!!

See this month’s Topic on Page 1

FREE Preview Today’s Hottest Desktop Publishing Program, FREE!

Publish-It! Easy was recently nominated for the prestigious MacUser Editor’s Choice Award. If you would like to acquire a self-running Preview Disk of this amazing DTP program, please send $2.75 to cover postage and handling.

Order Your FREE Demo Disk Today!

Write to the address above or call 1-708-948-9206

Please circle 116 on reader service card.

Special “What-if” Design Features.

Experiment with document design all you want. Easy’s “Libraries” and Proxies let you alter page elements instantly—making changes and experimentation easier than ever before. When you’re happy with the results, save it as your final document.

Try stretching or condensing your headline or body copy. Or rotate text for special accents, or make your type textured or shaded. But don’t think all these exciting capabilities are difficult. They aren’t. They’re Easy.

Automatic Everything.

If you’re not sure about which type style is best, Publish It! Easy will automatically select the type for you. Change the shape or size of your text area, and Easy will automatically reflow the text to fit. Automatic headlines and subheads, automatic indentation, book binding margins, page numbering, on-line help. It’s all automatic. You won’t have much to learn or to do!

Publish It! Easy

We make desktop publishing easy. And at $249.95 (Suggested Retail), very affordable. In fact, with our 60-day full money-back guarantee and free 60-day technical telephone support, downright unbeatable!

See your favorite Dealer or order direct from Timeworks, 444 Lake Cook Rd., Deerfield, IL 60015. Or call 1-708-948-9206. Fax: 1-708-948-9212.

PUBLISH IT! is a trademark of Timeworks, Inc. © 1990 Timeworks, Inc. All Rights Reserved. All other trademarks are of their respective companies.

*Not compatible with Macintosh 128K or 512K machines.
Apple's Extended Keyboard lists for $229 and has 105 keys. Because you're paying more than $2 a key, it's worth knowing what all of them do. Here's a collection of hidden tricks, characters, and shortcuts that can make your keyboard pay for itself.

By Michele Stokol

**Esc Key**
This key first appeared on the ADB (Apple Desktop Bus) keyboards that debuted with the SE and Mac II. You can use it instead of Command-period to cancel an action. Apple also indicated that Esc should mean Cancel in a dialog box (although Apple itself doesn't always follow this rule); not all developers have adopted this idea (Microsoft did), but it's a good one. If you're a QuicKeys user, you can create a universal macro that clicks on a Cancel button whenever Esc is pressed.

**Tab Key**
In addition to entering tabs, the Tab key usually advances a cursor sequentially through the fields of a dialog box. Don't forget that pressing Shift-Tab often moves you backward through the fields.

**Control Key**
Before 1987, Mac keyboards had no Control key. The key was added so running DOS software — where Control plays the same role that Option does on the Mac — would be easier. It's also useful for sending Control characters from your Mac when you're using it as a terminal. In practice, though, the Control key's most important function is to provide a host of additional key combinations that can safely be assigned to keyboard macros. It can be used for this because most Macintosh programs don't use Control for anything.

**Option Key**
This is the most underused key on most keyboards and the one with the most confusing officially sanctioned symbol in menus (⌥). Here are just a few of the most important uses for this key:
- When you hold down the Option key while dragging a file from one location to another within a single volume, the file is copied to the new location, not moved to it.
- To switch to a different Finder without restarting your Mac, hold down the Option and Command keys and double-click on the Finder file you want to launch.
- If you're in the Finder and want to switch to MultiFinder, hold down the Option and Command keys while double-clicking on the MultiFinder icon in your System Folder. Once you've switched to MultiFinder, however, you can't switch back to the Finder without restarting your Mac.
- If you're closing a window while in the Finder, holding down the Option key changes the Close command to the Close All command. Similarly, holding down the Option key when you click on the close box of a folder window causes all other folder windows currently open to be closed too.
- Holding down the Option key when you open a folder causes the folder that contained that folder to close — a great way to keep your desktop from becoming cluttered.
- Holding down the Option and Command keys when you mount a hard disk rebuilds its Desktop file. This is a hard-disk housekeeping function that Apple recommends you perform once a year.
- With Font/DA Mover open to fonts, you can load fonts into an application or HyperCard stack if you hold down the Option key while clicking on the Open button for the second window. This lets you access and open applications and stacks in the Font/DA Mover window.
- Holding down the Option key while dragging a file into the Trash overrides any file lock or query from the System about whether you really want to throw away an application.
- If you run DOS software on your Mac, the Option key does double duty as an Alt key. Because you use Ctrl-Alt-Del with DOS to reset the computer, this might come in handy when your DOS application crashes.

**Command Key**
The Command key has been with the Mac since the beginning and is probably the second-most-important modifier key (the Shift key is the first, unless you're a follower of e.e. cummings). The Command key is used for keyboard command equivalents, which are keyboard shortcuts for menu items. It also provides access to many special characters, which are detailed elsewhere in this article.

**Semicolon**
Press Option and the semicolon key, and you'll discover that this is where Apple hid the ellipsis (...).

**5 and 6**
You can be forgiven if you didn't know that Shift-Option-5 produces the ligature and Shift-Option-6 produces the fl ligature (unless you're using Apple screen fonts such as Geneva and New York). Forgiven unless you typeset books that sell for $100 or more, that is.
G, 2, R, 4

Here's a cluster of frequently used symbols: Option-G produces the copyright mark (©). Option-2 produces the trademark symbol (™). Option-R produces the registered-trademark symbol (®), which at least makes some sense. And for real cents (¢), try Option-4 (look for the dollar sign and you won't forget).

Option-8 gives you a solid bullet (•) in most fonts — essential for résumés and overhead transparencies. (To get the correct accents for résumés, read on.) Add a Shift key to Option-8 and you get another round thing: the degree symbol (°). Need a hollow bullet? Apply outline style to a regular bullet.

Option-·

These keys all create accent marks when used with the Option key. For most, you press the desired key combination and then type the letter to which you want to add the accent. See Table 1 for a listing of all the accent marks. For example, if you press Option-E and then type an e, the result will be é. Incidentally, you can't add an accent to just any character. You won't be able to put an umlaut (Option-U) over a v, but you can put an umlaut over a y. But you can't put a circumflex (Option-I) over a y.

Confused? Here's a rule of thumb: You can put any accent (except the cedilla — ç) over any regular vowel, and sometimes over y. The cedilla, however, doesn't work like other accents; it's actually a special character that you access by pressing Option-C. If you're hunting for the Option-letter combinations to create hard-to-remember accent characters (and you don't have Table 1 handy), remember that all the letters that give you accents (except the grave accent [-], and tilda [-], which have a key all their own) are in the name Eunice.

Option-Shift-I gives you a slash (/) that's slightly different than the run-of-the-mill character under the question mark. Typography connoisseurs use it for fractions. (Not all Apple screen fonts include this character.)

### Function Keys

Function keys are an extended-keyboard exclusive. As with Esc and Control, they were borrowed from the DOS world to assist people running DOS programs on Macs. For those who run Mac software on their Macs, the function keys provide another definable-key resource for creating macros. And applications with hundreds of menu items, such as Microsoft Word, rely heavily on function keys.

The real purpose of function keys, however, is to become confused in people's minds with Fkeys. Fkeys are not the same as function keys — in fact, they're not really keys at all. Fkeys are actually small,
utilitarian programs that can be invoked with a keystroke or keystroke combination. Apple supplies several useful Fkeys with the System—see Table 2. For more about Fkeys and how they work, see “The Perils of Prediction,” by Michael Swaine (June '90, page 251).

Dashes
Before the Mac and desktop publishing came along, only editors and typesetters worried about em and en dashes. Apple obviously didn’t expect that to change, or it would have made the em dash (—) easier to type. As it is, you have to press Option-Shift-hyphen. Use the en dash whenever you would otherwise type two hyphens.

The en dash (–) is easier to type (Option-hyphen). Use it between two numbers to signify a range, as in 1960–1967 or pages 92–108. In many fonts, it makes a better- looking minus sign than the stubby little hyphen does. The em and en dash are so named because (theoretically) their lengths correspond to the width of the letters m and n.

Quotes and Bracket Keys
Nobody notices when you use smart quotes (" "). But a lot of people will notice when you don’t and use dumb quotes (") or dumb apostrophes (’) instead. Most good word processors have an option that lets you generate smart quotes and apostrophes automatically.

Better yet, get an INIT such as Lincoln D. Stein’s freeware program Quote INIT (available from Zmac and other freeware sources). It lets you turn smart quotes on and off with whatever program you’re using. (Because smart quotes and apostrophes don’t always translate when you’re sending a text file via an on-line service, it’s useful to be able to turn this feature on and off easily.)

Help Key
Putting a Help key on the keyboard was a good idea. Unfortunately, Apple put it too close to Delete, so lots of people hit it by mistake when they really want to delete something (and vice versa). If you find this happening to you, use a keyboard macro program to create a macro that does absolutely nothing and then assign it to the Help key. On those rare occasions when you do need help, you can access help from a menu (usually the Apple menu) or press Command-?.

Forward Delete Key
Sometimes overlooked, this handy key deletes whatever is in front of it, as opposed to the regular Delete key’s regressive aggression.

Status Lights
These three status lights are another extended-keyboard exclusive that owe something to the DOS world. They correspond to the keyboard’s three locking keys: Caps Lock, Num Lock, and Scroll Lock. Most Mac software uses only the Caps Lock light, although Excel 2.2 can light all three.

From the stupid-Mac-tricks file: Several programmers with nothing better to do have written programs — such as Keylights by Rick Kaseguma and ADB Express by Dave Kalin — that cause a light show to play on the three status lights as you type. Look for them from Zmac and other freeware sources.

Care and Feeding
Although the extended keyboard needs little attention, you do need to defend it from its greatest natural enemies, dust and liquid.

If you should spill Jolt cola or any other liquid on your keyboard, turn off your Mac, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If the keyboard doesn’t work afterward, take it to an Apple dealer to be repaired. Don’t let the dealer pronounce your keyboard unsalvageable before doing some diagnostics. It’s possible that all you did was short out an inexpensive (less than $1) chip on the keyboard.

You can postpone dust-related problems by keeping the keyboard covered when you’re not using it. If dust does become a problem, get a miniature vacuum cleaner such as the Mini Vac from Inmac (2465 Augustine Drive, P.O. Box 58031, Santa Clara, CA 95052; (800) 547-5444, $43.95.)

Finding Hidden Characters

The Key Caps DA shows you the optional special character sets that are produced when you select an Option or Shift-Option key combination. It is especially helpful if you use special characters or fonts often. Print two copies of the Key Caps keyboard by pressing Command-Shift-3—one with the characters you get when you select Option and one with the characters you get when you select Shift-Option—to create cheat sheets for finding the location of these unusual characters.
When It Comes To Viruses, There's No Such Thing As Overprotection.

Introducing Symantec AntiVirus for Macintosh (SAM”), Version 2.0.

The original version of SAM just locked up the 1989 Eddy as "The Best AntiViral Program" you can buy. Now with added protection and security, new SAM 2.0 is even more effective. And more essential. Because, when your business is at stake, no amount of protection is too much.

SAM finds and destroys all known viruses and clones. It also protects you from new, unnamed viruses by constantly scanning for suspicious virus-like activity. And only SAM 2.0 protects you with instant virus updates from our exclusive 24-hour Virus Newsline.

To keep viruses from ever becoming a problem, SAM keeps them out. SAM prevents any infected application from launching and spreading a virus, and detects "Trojan Horse" attempts to damage a disk. It checks every floppy or removable you insert, and just touch a hot-key to check files downloaded from networks or by modem.

Total protection. It makes SAM the best-selling, highest rated antiviral program ever created for the Mac. So get new SAM 2.0 today and relax. Because, with SAM 2.0, viruses can come knocking. But they can't get in.

SEE YOUR DEALER, OR CALL FOR MORE INFORMATION:
(800) 228-4122 Ext. 651F

Please circle 28 on reader service card.
Welcome to the wonderful — and wonderfully easy — new world of CompuServe, where you can now use the power of your Mac while taking advantage of the vast online information and communications resources we have to offer.

CompuServe now features CompuServe Information Manager software, making us friendlier and more helpful than ever. Now, you can utilize a powerful Macintosh interface. And you can do more offline — composing letters or reading answers to Mac support questions, for instance.

And we’re offering you this whole new world of CompuServe for only $39.95*, including software and a $25.00 usage credit. Usage charges are as low as 10c a minute.

So let us show you how CompuServe can put you on easy street. If you’re already a member, just type GO ORDER. If not, see your computer dealer, or call us today. CompuServe®

800 848-8199

Requirements for Mac version of CompuServe: Mac Plus or later model Macintosh with at least one megabyte of RAM.
Mac System 6 or later version: hard disk, one 800K (or higher) floppy drive. Hayes compatible modem recommended.

*Suggested retail price.

Please circle 120 on reader service card.
There's more to comparing LaserJet PostScript® Language Emulation Cartridges than just the name

<table>
<thead>
<tr>
<th>Pacific Data Products PacificPage P•E for Macintosh®</th>
<th>Hewlett-Packard PostScript® Cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$699</td>
</tr>
<tr>
<td></td>
<td>$695</td>
</tr>
<tr>
<td>AppleTalk® interface</td>
<td>Included</td>
</tr>
<tr>
<td></td>
<td>$275</td>
</tr>
<tr>
<td>2 MB printer memory</td>
<td>$299</td>
</tr>
<tr>
<td></td>
<td>$560</td>
</tr>
<tr>
<td>Additional font cartridge option</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Upgrade program</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Warranty</td>
<td>Lifetime</td>
</tr>
<tr>
<td></td>
<td>One Year</td>
</tr>
</tbody>
</table>

Don't settle for less just to buy the HP name. Ask for Pacific Data Products' PacificPage P•E. It's the PostScript language emulation cartridge for HP LaserJet IIP, IID, III and IIID printers that offers you more for less.

Compare the price. PacificPage P•E with the PacificTalk interface module costs only four dollars more than the HP cartridge alone. That's like getting the AppleTalk free!

And compare its lifetime warranty, upgrade program for keeping current with the latest version, and the powerful optional companion cartridge, PacificType.

To learn how you can get more for less, call your nearest dealer or contact: Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, (619) 597-4632, Fax (619) 552-0889.
When I heard “balance sheet,” I broke into a sweat. I know type, advertising, printing. Now I was forced to do our books.

No choice. We were on our third part-time bookkeeper in eleven months, and she was called away suddenly. Sound familiar?

But I’m the boss and the buck stops with me. We had bills to pay, payroll checks to write, invoices to send, truces to set aside.

And deadbeats to collect from—only I had no idea who owed us how much or for how long. Some suppliers may have even thought of us as deadbeats. I needed to know our cash flow, and get a handle on all this. But I didn’t have a lot of time.

Step one: find an accounting program that feels as familiar as our Macs, that starts out easy, but has lots of reserve firepower for later on.

Hound atOnce! The manual looked orderly. I dug in...

The familiar with the unfamiliar atOnce! starts you off with a tutorial that uses HyperCard, one of my old favorites. I was at home.

Numbers are my nemesis, but the tutorial was actually fun and got me comfortable. It takes you step by step through the program, and gives you some easy-to-swallow accounting basics so you’re not reading a foreign language. There’s context-sensitive help, just in case.

And while you learn, you can start to set up your books. So it doesn’t come in a flash and you sweat a little. But you do it and you learn.

I started off light. Double-clicked on one of the default charts of accounts and my General Ledger was practically set up for me. Then entered a few client names in Accounts Receivable, to get an idea of what was coming in. Prepared six invoices—and atOnce! calculated sales tax. Nice. Printed the invoices which I re-designed in atOnce!—realigned a field here, changed a font there. The usual.

Then ran a Customer Aging Report to identify the slow-payers (I had no idea such a terrific thing was even possible).

A hidden bonus that made my day

When our bookkeeper returned, I showed her atOnce! Now she’s back doing the books, even makes sure my plants are green, and I can supervise like a boss should. Putting the books on the Mac gives me the numbers I need when I want them. It lets me take control of income and expenses.

Here’s some free advice: Take control of your own business. Buy atOnce!

What I didn’t know was costing my company

I discovered a key client who hadn’t paid in two months. I called and collected and now he wants to know about atOnce! I wrote payroll checks for the staff, and sent our bank a balance sheet I printed out myself—no sweat.

From fear and loathing to passion. Now I even study the management reports atOnce! generates.

I’m still an art director. But atOnce! helped me become a better businessman!

Peachtree Software
1505 Pavilion Place
Norcross GA 30093
800 247-3224 or 404 564-5800

Please circle 134 on reader service card.
Radical Cosmetology

If you've hesitated about customizing your Mac interface because experts always talk about ResEdit as though it were nitroglycerine, now there's a way you can have some of the power without all of the danger.

By Michael Swaine

In past columns I've talked about customizing your desktop by changing the way windows are displayed, using color effectively, and altering system cursors and sounds. In the process, I mentioned several tools, sometimes falling back on Apple's resource editor ResEdit when nothing less deadly would do the job.

Now there's a utility called ClickChange that lets you manipulate all these things. ClickChange is sort of a one-stop desktop-make-over salon. Last month I talked about using ClickChange to modify system sounds. This month I'll discuss using it for everything else. I'll focus on some of its more advanced features and on how to extend it, assuming that you picked up on the details of its operation last month and that you can get an overall assessment of its quality and value from the review in this issue's Quick Clicks.

The Cursor of the Spider Woman

ClickChange is at its most impressive — and its most frivolous — in its handling of cursors. I can't think of any compelling practical reason to change the watch cursor, which is displayed when the system or an application is engaged in some time-consuming task, into an animated image of a car with helicopter blades twirling on its roof. But if that's what you want to do, you won't find a better tool for the job than ClickChange. And the cursor-handling capabilities do show ClickChange's extensibility at its best.

The Mac's System software distinguishes five types of cursors, normally seen as the arrow, watch, l-beam, plus, and cross system cursors. (Those who study Inside Macintosh know that the arrow is not a system cursor in the same sense that the other four are, but for our purposes, that's a distinction without a difference.) The system selects one of these cursors based on what's happening and where you've positioned the cursor on the screen. The watch cursor becomes active when a time-consuming action is taking place, for example, and the l-beam cursor becomes active when text input is possible at the point of the cursor. ClickChange can't create new categories of cursors, but it can let you substitute other cursors for any or all of these five.

ClickChange also provides three ways to extend this basic cursor-substitution ability: You can export cursors, import cursors, and create or edit cursors.

Exporting cursors is a handy feature. ClickChange comes with a collection of cursors among which you can choose, but if you keep all the cursors in ClickChange itself, the DA will use a lot of memory when you invoke it. The ability to export cursors means that you can keep ClickChange memory demands down and streamline your choices. It doesn't, unfortunately, mean that you can export cursors to applications such as HyperCard that display their own cursors, because ClickChange doesn't export to the right cursor format. But it does mean that you can put together your own libraries of cursors, and this becomes more useful when used in conjunction with importing.
ClickChange lets you import cursors from files you’ve created with the Export option, or from other applications. It can read cursor formats that it can’t write, so pretty much any cursor you find in an application can be imported into ClickChange and assigned as one of the five system cursors. You can even rearrange the assignments of the standard system cursors in this way, producing a Mac that displays a watch cursor over spreadsheet cells and a plus cursor when your system’s busy.

Well, no, you probably wouldn’t want to. But you could.

The cursor-editing capabilities are impressive. You can create your own cursors, archiving them to your own cursor libraries if you wish, or you can edit existing cursors or copies of them. You can name your cursors or change the names of existing ones. You can add color if your Mac supports it, as well as animation. You can control the speed and number of cells of animation, and you can turn animation on or off; you can also toggle color on or off.

You can set the individual bits of the cursor with a very nice bit-map editor and set the hot spot (the active pixel) and create a custom mask (the erased space on the screen under the cursor).

The color-changing capabilities of ClickChange combine the features of the Color and Kolor edevs. ClickChange lets you assign colors individually to elements of windows or select entire color schemes from those supplied. Or you can customize color elements and save your colorings as a new color scheme.

The other features of ClickChange take us out to the edge of the desktop. There are some bugs to contend with and some dangers if you use the importing features incorrectly. But they let you change the appearance of your desktop in significant ways and could actually be of some practical use. Three areas are involved: windows, scroll bars, and buttons.

You can’t edit any of these features as you can edit cursors, but you can turn some features on and off and select among the supplied objects or import objects from your own archive files or, maybe, from applications.

All you can do with buttons (push buttons, check boxes, and radio buttons) and with windows generally is to select among alternative versions, which differ from standard versions only in appearance. With scroll bars, however, you can select proportional elevators and/or double arrows and you can edit the scroll-bar pattern as well as choose among various scroll-bar appearances.

The Double Arrows option places right and left or up and down arrows at each end of each scroll bar, so that you can scroll back and forth in a document without moving the cursor much. The Proportional Elevators option causes the elevator (slider, indicator, thumb) in the scroll bar to grow or shrink to indicate the ratio of the visible portion of the document to the size of the entire document. The scroll-bar pattern is the part of the scroll bar you see where the arrows and elevator aren’t. You see the pattern, that is, when the entire document doesn’t show in the window — when the scroll bar is “grayed.” If you edit the pattern so that it doesn’t look gray anymore, this designation is only metaphorical. ClickChange’s scroll-bar-pattern editor has a lot of features for such a trivial purpose. It is, we can only hope, the last word in scroll-bar-pattern editors.

It is slightly misleading to characterize the different window, scroll-bar, and button types as differing merely in appearance. By placing some window elements in different locations or making them different sizes, these alternative versions create a different feel as well as appearance. The Smalltalk-like title bar that doesn’t extend all the way across the top of the window but sticks up like a file-folder tab has a different feel from the usual title bar, for example.

If it’s danger you seek, it can be found. In the mandatory mouskeeter category (don’t try this without Annette) is the importing capability for scroll bars, buttons, and windows. Because ClickChange stores window resources in a common resource format, you can import window types from other applications. I’ve turned all my windows into Microsoft Mail flying-envelope windows and then into HyperCard 2.0 windoids but found neither change to be an improvement on the boring old windows that Apple provides. Importing scroll bars and buttons from applications is also possible, but you’re much less likely to find scroll bars and buttons that ClickChange can use. And you stand a good chance of trashing your System file in trying, because when it comes to importing, ClickChange can be as deadly as ResEdit.

If you’re a programmer, you can easily create or modify your own button and scroll-bar resources to make them usable by ClickChange. If you aren’t, you’ll be safer if you limit your importing to cursors, sounds, and windows.
Working in front of a big screen can be as exhilarating as it used to be, if you own a Mobius display. Mobius One Page and Two Page displays come with built-in acceleration. So all your software runs faster — up to 600% faster than on your Mac SE. Mobius offers exciting, irresistibly priced products for every Macintosh. By selling directly to you, we deliver technology that's every bit as good as (or better than) Apple or Radius, for less than half the price. All Mobius displays give you compatibility with System 7. Outstanding Zenith quality. One year warranty with free replacement in 48 hours. 30-day money back guarantee. Unlimited toll-free phone support. Major credit cards accepted. To order or request our exciting free catalog, call: 800-669-0556
DeltaGraph™ ... Software therapy for a split personality

In the two different worlds of lab coats and three piece suits, there can be a single charting standard. DeltaGraph—the ultimate solution for both scientific and business charting needs. No matter what your job description or your personality type, DeltaGraph will transform your data into clear, dynamic, persuasive charts and graphs. giving you the power to effectively convey your information, whether it be newly discovered research or quarterly sales figures.

THE SCIENCE OF CHARTING
In the world of scientific research and precision engineering there can be no compromise when it comes to data driven graphics. DeltaGraph provides scientific users with an impressive array of charting tools.

- 25 mathematical, statistical and analysis functions
- X-Y Scatter and X-Y Line charts
- Double Y, logarithmic and log-log axis scale settings
- Five curve fitting types
- Five error bar formats
- Superscripts and subscripts
- True X-Y-Z coordinate charts and 3-D data modeling

These features and more have made DeltaGraph users exclaim "Thank you! This is an excellent and versatile tool for any engineer or scientist."

THE BUSINESS OF CHARTING
For the business or presentation personality type, DeltaGraph provides sophisticated charting power in an object-oriented drawing environment. You can import data from almost any source, and export chart objects in formats compatible with word processing, page layout, and even presentation programs. Plus:

- Warm link to MS® Excel 2.2 spreadsheets
- Import tab- and comma-delimited text, WKS, SYLK, Trapeze®, Excel 2.2 and CricketGraph™ data files
- Multiple charts on a page and overlays
- Custom chart templates
- Total Formatting Control, 8 drawing tools, and full Macintosh® color
- Export to PICT, EPS, and Adobe Illustrator® formats

CHART TYPES FOR ANY MENTALITY
DeltaGraph gives you 25 chart types, more than any other charting, presentation, or spreadsheet program.

Two-D charts include: bar, column, line, X-Y line, paired X-Y line, area, pie, scatter, paired scatter, stacked column, stacked bar, multiple pie, high-low, high-low-midrange, contour, step, polar, and table.

Plus, you get three-D charts such as: column, ribbon, area, scatter, scatterline, surface, and wireframe.

TRANSFORM YOURSELF... AND YOUR GRAPHS
DeltaGraph, award-winning charting therapy that soothes both the scientist and the business person, even if they live in the same body.

Cricket Graph $50 Upgrade!
Don't wait any longer! Make the move to upgrade your copy of Cricket Graph to DeltaGraph V. 1.5 for only $50. Send the first page of your Cricket Graph manual along with $50 (plus shipping and handling, CA residents add $3.38 sales tax) to: DeltaPoint Inc., 2 Harris Court, Suite B-1, Monterey, CA 93940. You'll receive the latest version of DeltaGraph, a FREE training guide especially designed for Cricket Graph users, and unlimited FREE technical support. For more information on this special offer or for corporate upgrades, call 800-367-4334. Offer expires 3-31-91, so ORDER NOW!

Call DeltaPoint™ 800-367-4334
The Ultimate Charting and Graphics Solution
Please circle 402 on reader service card.
THE EXPERT'S BR

85mm Dreams

If you've dreamed about transferring your traditionally produced photographs to the digital realm of the Mac, your bubble was probably popped in a hurry once you started pricing your options. But what if there were a relatively inexpensive way to do the same thing, using a device that no one in the Mac community even knew about? Get ready to start dragging your slides out of the closet.

By Thom Hogan

I've lusted after a Barneyscan ever since I saw a prototype a couple of years back (I own four camera bodies and take thousands of pictures each year — some of them are even good.) And the Barneyscan does an excellent job of converting 35mm slides into 24-bit-color graphic images.

Then last year I saw a Nikon scanner in action. If anything, it did an even better job of translating film into computer-manipulable bits. Wouldn't it be great if I could combine my semiprofessional photography habit with my day-to-day Mac use? Wouldn't it be great if I could put together a CD-ROM disc full of stock photos that Mac users could use without fee or special license? Wouldn't it be great if I didn't keep having these dreams that seem to involve $10,000 or more worth of equipment?

My dream was going to have to stay unfulfilled, or so my bank said. I couldn't afford a Barneyscan or a Nikon 35mm scanner (priced in the same league as a compact car, and my credit line wasn't exactly unencumbered — there were those four camera bodies to pay off, for example). And the option of taking my photos down to a service bureau wasn't exactly viable, either, because it would take time I didn't have, and the price per scan is usually quite stiff (after all, the bureau has to pay off the many thousands of dollars it's invested in equipment, doesn't it?). The money I would pay the local service bureau to scan enough slides to fill a CD-ROM disc would be enough to pay for the scanner itself.

So I resigned myself to having pleasant, albeit expensive, dreams — until I found the Tamron Fotovix, that is.

I came across the Fotovix quite by accident. Tamron (P. O. Box 388, 99 Seaview Blvd., Port Washington, NY 11050; [800] 827-8880 or [516] 484-8880) is one of the better-known Japanese photographic-equipment companies. Someone there apparently decided that photography aficionados desperately needed a way to convert their slides and negatives into video images that they could play on their TV (and, I suppose, record on their VCR). Just why Tamron's engineers thought this was a big unfulfilled fantasy, I don't know. Slide shows on videotape are not exactly the goal of any photographer I know.

What Tamron came up with was a small video camera mounted in what looks like a miniature copy stand or slide copier. The unit occupies about 4 x 6 inches and stands about 12 inches tall. Toward the top is a zoom lens with adjustments; at the bottom center is a backlit stage and holder for 35mm slides. Plug the thing in to a TV, turn it on, and insert a slide, and there it is on the TV. Not exactly something you've been waiting for, is it?

Nevertheless, the Fotovix is a cute gadget, and Tamron seems to be marketing it as just that: a cute gadget. A few professional photo shops sell it, and you can occasionally find it advertised in photography magazines, but has anyone heard of it in the Mac marketplace? No way, José. Besides, for the casual users that Tamron seems to be pushing the Fotovix to, the price is a little on the high side ($899). As
a result, the unit attracts little or no attention in the mass market.

But when I first saw a list of the specifications for the Fotovix, something clicked. Perhaps it was because I'd just finished playing with the Canon ZapShot (see my January column) when I saw the Fotovix ad. Perhaps it was because I'd been lusting after a Barneyscan for so long. Maybe the planets were auspiciously aligned. Whatever the reason, "Gee," I thought, "If this thing outputs NTSC video, why not plug it into my video digitizer and see what it does?"

So I ordered one (a review unit — I wasn't about to spend my own money on this thing until I saw if it worked, and I've already told you what my bank said about spending more money). The day it arrived, I plugged it in, stuck in a random slide, and grabbed the image with the Mac.

Five hours later, I had almost filled a Bernoulli cartridge (44 megabytes) with images. The next day, all I did was play with the Fotovix. The day after that, I got out all the photographs I've ever taken and started converting them into Macintosh images. I was hooked. Although the Fotovix certainly doesn't have the quality of the Barneyscan or Nikon scanners, it does a very respectable job and is so easy to use that it tempts you to convert just one more image.

A Closer Look

On the Fotovix III, the amateur model that I used, you get a 3x zoom lens with focus and aperture adjustments. The zoom lets you crop images. The aperture adjustment is more of a video-level adjustment than anything else. You need the focus knob because various types of film emulsions have slightly different heights and slide mounts come in different thicknesses. All three controls are right in front where you can get to them, and the zoom and aperture are controlled by smooth-operating levers. The lens is optimized for the close-up (macro) work it does.

Tamron also sells a professional model for $1,899. For some strange reason, it is named the Fotovix IIx (will the next model be called the IIx2?). The IIx comes with a 6x zoom for accommodating different-sized film formats and for better cropping control and supposedly has a higher-caliber lens to boot. I can't verify this, because I used the amateur model only. The pro model also sports a powered zoom (which doesn't seem to be of much value, although it does add to the price).

On the right side of the Fotovix are the power switch and two additional controls. A switch lets you scan negatives or slides (negatives become positive images with a flick of the switch!). A small joystick — and I mean small — lets you control the color balance (see Figure 1). This joystick, unfortunately, is the only weak point of the Fotovix design. First, there's no center indent to let you return to the no-color adjustment position. Second, because the joystick is so small, it's almost impossible to make subtle color adjustments with any precision.

From a cost standpoint, I can understand Tamron's decision to use the joystick to control color. Frankly, however, I would implore the company to junk that approach and use three sliding color controls (red, green, and blue), each with a center indent for neutral color. Tamron will probably argue that the joystick makes sense because you can see the effect as you move it, but I would counter with the assertion that it's impossible to repeat or even characterize the adjustments you make with the current Fotovix controls.

The backlit imaging platform, on the other hand, is the cleverest part of the Fotovix. You get separate slide and negative carriers, each of which holds five images. These carriers slide into the platform itself, and you move from image to image by sliding the carrier back and forth. The platform has adjustments for moving forward and backward and rotating. Thus, with only three motions — each of which is distinct from the other, by the way — you can position any slide or portion thereof under the lens. Both vertical and horizontal images are easily accommodated. If you have a lot of slides to convert, an auto-slide-feeder accessory is available.

OK, enough of the physical description. You want to know whether this thing works or not and, if so, how well. The short answers are yes and quite well, thank you.

Fotovix's final image quality is determined in part by your digitizer. I've used the modest-resolution digitizer built into the RasterOps 364 video board, so the images I've captured aren't as good as those I could create with a state-of-the-art digitizer. Nevertheless, I'm reasonably pleased. The biggest complaint I have with the setup I'm currently using is that the final image size I can capture is somewhat limited (the RasterOps 364 Framegrabber utility allows only two sizes of image capture, although you can crop either to create smaller images, if necessary). With a high-resolution digitizer, the
Let us take you one step further...

You took the first step toward getting the Macintosh information you need when you picked up this issue. Now, let us take you one step further with this great deal!

Sign on to MacUser and SAVE up to 50% and get a FREE GIFT.

It's 1001 HINTS & TIPS FOR THE MACINTOSH and it's bound to become a MacUser Classic! This new disk is packed with our best short-cuts, strategies and enhancements for the Macintosh. Not available in any store, 1001 HINTS & TIPS is a MUST if you're serious about making the most of your Mac.

YOUR FREE
when you join us as a paid subscriber.

One Year (12 issues) only $19.97. SAVE 44%!  
Two Years (24 issues) only $35.40. SAVE 50%!

SAVINGS BASED ON ANNUAL NEWSSTAND PRICE OF $35.40.

FOR FASTER SERVICE CALL: 1-800-627-2247

Step up to MacUser today!
Figure 1: The figure on the left shows a slide captured by Fotovix with all the controls set to normal. With a flick of the color-control joystick, however, the same slide becomes the sunset scene on the right.

Figure 2: The ultimate Australian tourist attraction: a koala. The original slide features much sharper detail in the hair, and the koala's back isn't as washed out as it appears in the Fotovix-captured version. This picture is probably right at the limits of contrast that the Fotovix can handle respectably. Likewise, the fine detail is lost in the translation to video. Fotovix would produce images of much higher quality than those you see accompanying this column.

Nevertheless, the image quality is reasonable. The unit uses a half-inch charge-coupled device to capture about 324,000 pixels of resolution. And if you were using the ComputerEyes monochrome digitizer, image quality would certainly be good enough to add black-and-white photography to your newsletter or report. One caveat: Focusing is critical. Make sure you really do focus every image you scan by zooming in, adjusting the focus, and then zooming back out. If you don't do this, the small depth of field of this unit will turn your nicely focused image into a slightly blurry mush. The translation from film to video sacrifices a bit of sharpness as it is, so proper focus is essential to usable results.

For critical color work, the Fotovix may or may not satisfy you. High-contrast images don't look as good as well-exposed, lower-contrast ones. The higher the contrast in your original — and Kodachrome slides tend to be very high contrast — the more you'll probably find yourself monkeying with the various controls of your digitizer software. I found myself automatically pulling down the contrast setting when imaging my slides, and I usually had to fiddle with the brightness, white-level, and black-level settings as well. Fortunately, the color rendition, although certainly not as close to perfection as what the
We're Redefining Ethernet for the Mac.

Not long ago, Ethernet for Macintosh networks meant two things: difficult and expensive. Now we're redefining Ethernet for the Mac with our DaynaPORT cards. We've added 10BASE-T support for easy installation and slashed our prices by $100 across the board! That's the best buy in anybody's book.

DaynaPORT brings the high performance of Ethernet to any Macintosh computer including the Macintosh LC, Macintosh IIx and the Classic. Our cards are designed to support most popular protocols such as DECnet, TCP/IP, OSI, A/UX 2.0 and NetWare. And we're getting them ready to support System 7.0, so that when it finally comes, nobody will have to wait for upgrades.

We wrote the book on MS-DOS connectivity, and now we have a thing or two to say about Ethernet. And a product or two that no one else can match. With Bus Master architecture, SONIC chip set design and full 32-bit bus width, our DaynaPORT cards are the hottest Ethernet technology around.

So forget old definitions of Ethernet. For the latest technology at the best prices, see Dayna Communications.

For more information call us at (801) 531-0203.

We Connect People And The Computers They Use.

Dayna and the Dayna Logo are registered trademarks. DaynaPORT is a trademark, "We Connect People And The Computers They Use." is a service mark of Dayna Communications, Inc. All other product names are the trademark or registered trademark of their respective holders. ©1991 Dayna Communications, Inc., 50 South Main Street, 5th Floor, Salt Lake City, Utah 84114 Corporate offices: (801) 531-0500, Customer Service: (801) 972-2000

Please circle 122 on reader service card.
Barneyscan might provide, is usually adequate. Thus, I found myself leaving the color controls alone for most of my images.

Don't get me wrong, however. *Time* magazine isn't going to use the Fotovix to digitize its next cover. The Barneyscan and Nikon scanners have the high-end professional marketplace to themselves, as well they should. (And I still dream of owning one.) But if you have a modest need for color photographs from time to time, and in less than full-page size, the Fotovix will probably suit you just fine.

Anyway, you can judge the quality for yourself. While on a recent trip to the Great Barrier Reef, I shot a thousand or so slides. The pictures that accompany this article come from that batch and haven't been touched up or doctored in any way; I simply grabbed them at 640 x 480 resolution and had the *MacUser* art department place them onto the page as is. I've tried to pick images that illustrate both the good and the bad in the Fotovix's imaging capabilities. Minor problems can often be corrected with programs such as Adobe's Photoshop or Letraset's ImageStudio. And remember, a better digitizer would give you better results.

Tamron's documentation leaves a lot to be desired. One thing that should have been noted, which I discovered only by trial and error, is that high ambient light levels wash out the colors in images. The backlit screen on the Fotovix lights at a very modest level, and sunlight or other light falling on the platform has a tendency to overwhelm the backlight. Because the backlight is balanced for the video pickup, the ambient light not only lowers the contrast of the photo being imaged but often changes color renditions as well. Tamron could have added a little black curtain around the platform to help keep out extraneous light. As soon as I return the evaluation unit and purchase my own Fotovix, I intend to add Velcro fasteners at the top of the unit and make my own black curtain to hang from them. The Velcro will make it easy to remove the curtain while adjusting the image position and to put it back on while I'm digitizing the image.

As you can probably tell, my complaints are pretty picky. Indeed, the things I'd change on the Fotovix would make it less of a consumer-oriented product and more of a professional-user-type product. The image quality you can judge for yourself, but I'm satisfied with the results so far and hope to add a higher-resolution digitizer in the near future.

---

**If your statistical software is limiting your vision, who knows what you're missing?**

Most statistics software makes you look at your data through rose-colored glasses. With procedures so rigid, you're blinded to the odd exception or hidden relationship. But now there's Data Desk for the Macintosh. Created by Cornell Professor Paul Velleman, Data Desk is the only software that is true to the vision of Exploratory Data Analysis. Data Desk lets you view your data from new perspectives, without any preconceived notions. So you find out what you need to know—not just what your software lets you.

---

**Data Desk**

THE POWER TO EXPLORE

Please circle 148 on reader service card.
Broadcast-quality video is finally coming to the Macintosh.

Forget everything you've heard about Macintosh® video. With Intelligent Resources' Video Explorer® video will never be the same! We've invented a totally new kind of video card for the Macintosh, with incredible real-time video processing capabilities. The Video Explorer is a multi-synchronous card that supports all major broadcast video and computer graphic timing standards. On it you'll find a state-of-the-art custom chip set, one of the largest and most powerful ever produced for personal computers.

Since the Video Explorer is a programmable 32-bit digital video engine, there's almost no end to the broadcast-quality effects you'll be able to achieve. You'll have full control of video processing: frame by frame, line by line, and pixel by pixel. You'll be able to perform fades, wipes, dissolves, and digital video effects.

You can key on chrominance and luminance signals, combine multiple live video signals, and even overlay anti-aliased titles and graphics on live video.

The Video Explorer can simultaneously manipulate video signals from a variety of sources, both live and computer generated. By genlocking to a common sync signal, a Video Explorer can accept video from an external source as well as from internal sources cascaded through our digital video bus. This downstream capability allows linking of video bus-compatible cards for even more sophisticated special effects.

Soon, the power of this new video technology will be unleashed. Join us as the serious fun begins!

Intelligent Resources, 1626 Colonial Parkway, Inverness, Illinois 60067. Phone (708) 705-9388 or Fax (708) 705-9410.

INTELLIGENT RESOURCES
with PowerDraw, accepted worldwide as the professional 2D CAD standard for the Macintosh. Fast. Intuitive. Elegant.

For free brochure, call Engineered Software. 1-919-299-4843.
Please circle 44 on reader service card.

A Photo Opportunity

Which brings me back to the reason I sought out the Fotovix in the first place. You've seen some of my photos (I do mostly nature photography, but I also have a fair collection of other types of shots). How many of you MacUser readers would be interested in a CD-ROM disc of hundreds of stock photographic images for $49.95? Although I'd retain copyright to the images, I'd grant you the right to use them in any desktop-publishing, multimedia, or art project you might be working on. If you're interested in such a product, drop me a line at Macreations, 329 Horizon Way, Pacifica, CA 94044.

If enough MacUser readers contact me to let me cover the cost of producing the CD-ROM discs, I'll do it and let you know how to get your copy. Obviously, I'm not out to make a profit on this project. Instead, I'm trying to encourage users to enliven their work with good graphics and also (I hope) to prove to other organizations that there is a demand for this sort of disc. I don't see any reason why a disc of digitized stock shots should cost $300 or more — the resolution isn't good enough to supplant offerings of the professional stock agencies.

As longtime readers of my columns may remember, I'm a fan of the idea behind CD-ROM but I'm still quite chagrined at the reality of the marketplace. I'd love to replace my bookshelves of reference works with CD-ROM discs, and I'd love to have a small library of stock images with which I can jazz up my work. This project combines something I like doing — photography — with something I want to see happen — low-cost reference and library works on CD-ROM disc.

Meanwhile, for those of you who have a library of 35mm negatives and slides, take a close look at the Fotovix. It's reasonably priced and works as advertised. Too bad Tamron didn't think of us Macintosh users when it designed the product — it wouldn't have taken a photohound computer columnist to discover it.

Now, in case the Tamron engineers are still looking for things to do: Take the Fotovix, build a digitizer into the unit, add software control of the critical factors (color adjustment, for example), and . . . wait a minute, if you Tamron folks are reading this, why don't you give me a call? Maybe we can work something out that will give you an even better product and will minimize my Barneyscan dreams. Just a thought.
HIT THE ROAD, MAC.

In a shakedown of removable storage devices, one drive quickly rises to the top. The new 44MB Bernoulli® Transportable. A drive that delivers reliable hard-disk-like performance day in and day out. In the office or on the road.

Bernoulli’s patented design draws a flexible disk up to the read/write head. Which, unlike hard disks, makes Bernoulli virtually head-crash free. Should the drive encounter a jolt or a dust particle, the disk falls harmlessly away from the head, making Bernoulli the most reliable removable system available. Period.

The numbers tell the story. Bernoulli drives have an unbeatable MTBF of 60,000 hours. And Bernoulli’s 44MB disks can take 1,000Gs of shock force (or an 8-foot drop). We back that up with an unprecedented Gold Standard 5-year media life limited warranty.

The Transportable’s performance puts you in the fast lane, too. A high transfer rate, with an intelligent buffer and user-configurable cache, gives Bernoulli exceptional real-life performance.

If you’d rather go cordless, there’s a battery-powered version, which, like the Transportable fits neatly under a Mac SE. And now, Bernoulli takes your dollar the extra mile with dramatically reduced prices (up to 20 percent) that affect the entire Bernoulli family, including the Dual.

Which all adds up to one thing: Bernoulli’s closest competition isn’t close at all.

So call 1-800-777-6101 for free Bernoulli literature. Because no matter what road you travel, Bernoulli is the only system that can take it. Over the long haul.

INTRODUCING THE RUGGED, RELIABLE, REMOVABLE BERNOULLI TRANSPORTABLE.

The Iomega logo and Bernoulli are registered trademarks, and Bernoulli Moons Security For Your Data is a trademark of Iomega Corporation. All other company names are registered trademarks of their respective companies.

Please circle 114 on reader service card.
The only other name you need to know.

Microtech International.

Along with Apple, we've listened to your demands for new products. That's why we continue to develop products that keep pace with the latest technology, including the new Macintosh Classic, LC and IIci. For these new computers, we have developed upgrade solutions that allow dozens of economical memory and storage options with strict adherence to Apple specifications.

Quality upgrades with more value.

Upgrade your new Mac with Microtech products that fit your needs. Add muscle with a new, high speed Europa™ internal Classic drive of 20, 50, or 100MB, or a Europa external drive of 20, 40, 80 or 100MB. The Europa Series is the perfect upgrade solution — built for economy without sacrificing quality.

Pump up the performance of your Mac with one of our new I0™ memory boards. Our 1MB board offers the flexibility of SIMM expansion. And if System 7.0 is in your future, our unique 3MB solution is a must.

For the convenience and portability of removable media, our R50, utilizing the reliable Ricoh mechanism, offers speed, flexibility and unlimited storage capacity.

The Microtech name means quality.

For over 5 years, Microtech International has been setting the precedence in quality, service and support. Because we know what quality means to you — a product you can depend on, service you can rely on. Microtech products are backed by the longest warranties in the industry, and our service and support team, accessible toll-free, are winners of Macworld Magazine Service Hero Awards. Microtech also has an outstanding record for repairs in 48 hours or less, and our MicroLink BBS is available 24 hours a day.

So for quality, value, service and support in new Macintosh products, there really is only one other name you need to know... Microtech International.

1-800-325-1895

International inquiries call: 203-468-6223 (FAX 203-467-8124)

Please circle 127 on reader service card.
The Magnificent 7.0

When System 7.0 ships, will your application bomb? Not if you follow these simple steps right now. Here's how to make sure you're System 7.0-friendly.

By Kurt W. G. Matthies and Thom Hogan

There's a lot of excitement in anticipation of the release of Apple's System 7.0. This new version, touted as a giant leap for Mackind, promises to revolutionize how we compute. We can't say when you'll finally see the magnificent 7.0, although the official line is "sometime in 1991," but when you do, wouldn't it be nice if your application ran under it?

If you've read some of the information about System 7.0 that has been published in MacUser during the past several months, you're probably aware of some of the nifty new features in this release: interapplication communication, virtual memory, outline fonts, and an improved Finder interface. As a reader with a technical bent, you probably also know about the more esoteric details of this release, such as built-in database support and 1-gigabyte addressing.

This is all great stuff, and we wish Apple the best of luck in getting this beast out soon, but at the same time, we're apprehensive about the effects of such a major change in System software. The precedent that's been set by the PC world fuels our insecurity.

If you're a developer of PC applications, you must first target your host environment — whether you're writing for DOS, Windows, or OS/2 — and then adjust your program to accommodate the special features of your selection. Only a handful of high-end developers can afford the overhead of maintaining three separate versions of a program that will run under all systems. As a result, PC users find themselves forced to choose their software based on what operating system it runs under.

We'd hate to see Mac applications go the way of PC ones. But for the next few years, until System 7.0 gains widespread acceptance among the majority of Mac users, we foresee a user population that consists of version 6.0 as well as version 7.0 users. If you want your application to be available to all Mac users and therefore capable of running in both environments, you'll have to ensure that your code is System 7.0-compatible.

In your zeal to make your application System 7.0-compatible, however, don't make the mistake of making it System 7.0-dependent. The dependent program requires System 7.0, which is a bad idea because it assumes too much about the environment in which your application will be running. Compatible programs, on the other hand, reflect the best of both worlds: although they support the features of the new System, they don't necessarily rely on those features' being there.

Sounding for 7.0

The first step toward making your application compatible is to make sure it can determine which System version it is running under. Apple used to tell us to call SysEnviron to determine this. SysEnviron also returns other assorted information about the machine, such as whether it supports color or has a floating-point coprocessor. The code shown in Example 1 demonstrates how to use SysEnviron to get the System's version...
POWBJ PllJMMING

Example 1: Testing for System Version

```c
short
getSystemVersion ()
{
    SysEnvRec sysEnv;
    short version;
    version = 0;
    if (!SysEnvirons (1, &sysEnv))
        version = sysEnv.systemVersion >> 8;
    return (version);
}
```

Example 2: Using System 7.0's Gestalt Manager

```c
Boolean gestaltAvail,
OSErr err,
long result;

gestaltAvail = TrapAvailable (SALAD);  // Check for Gestalt
has32bitVideo = hasStereo = false;
if (gestaltAvail)
    { if (!((err = Gestalt (gestaltQuickdrawVersion, &result)))
            has32bitVideo = result & gestalt32BitQD;
        else
            { hasStereo = false;
            if (!((err = Gestalt (gestaltSoundAttr, &result)))
                hasStereo = result & gestaltStereoMixing;
            else
                { // Do error stuff
            }
        }
    } else
        { // Do error stuff
    }
```

number. SysEnvirons will still be supported in System 7.0, so you can use this method to determine whether or not your application is running under System 7.0. However, Apple is already recommending that programmers abandon SysEnvirons and use its successor, Gestalt, instead.

**It's a Gestalt**

The Gestalt Manager, a more powerful utility that has the ability to test for specific environmental features, is shipping in later releases of System 6.x (6.0.4 and later) and will be available in System 7.0. Gestalt gives you more information about your current operating environment, and it will eventually supplant SysEnvirons. But if you want to be compatible with machines running under System software prior to version 6.0.4, you'll have to continue using SysEnvirons to find the System type.

Apple-certified developers have been receiving documentation on new features such as the Gestalt Manager for some time now. If you're not certified, you'll have to wait for Addison-Wesley to publish *Inside Macintosh: Volume VI*, which will be published at about the same time as System 7.0 finally ships. Here you'll find the Gestalt Manager's documentation, selectors, and result codes. In the meantime, here's a brief preview of how the Gestalt Manager works.

When you use the Gestalt routine to query the System about environment attributes, you pass it two things: a selector token, which tells the routine what information you're interested in, and the address of a long result, which Gestalt fills before it returns. For example, say you've got a multimedia application and you're interested in the sound and video capabilities supported in hardware. The calls to Gestalt would be as shown in Example 2.

**Paradigm Lost**

The watchword of System 7.0 compatibility is 32-bit clean. (What we say here also applies to getting your applications to run with A/UX, Apple's implementation of UNIX.) This "cleanliness" refers to the way that an application treats all 32 bits of an address. In previous versions of the System, only the lower 24 bits of a 32-bit address were significant. In System 7.0, a new 32-bit Memory Manager is in place that can take advantage of a full 32-bit address.

Why did Apple originally write System software that used only 75 percent of the available address bits? To understand why, we need to look to the paradigm of computer engineering in the '80s, when a 24-bit addressable range was more than enough memory for any microcomputer.

At the core of all the early Macs is the Motorola 68000. This processor, although in possession of a 32-bit program-counter register, is limited to a 24-bit address space: It ignores the upper 8 bits of an address. Starting to sound familiar?

You should realize that in 1980, a 24-bit address space, which corresponds to a 16-megabyte addressable range of memory, seemed unlimited to system designers. After all, this addressable range matched that of an IBM 370 mainframe. As technology advanced, the limitations soon became apparent and the ceiling was raised—the 68020 and 68030 both have true 32-bit addressing. Unfortunately, the damage had already been done: The Mac team had designed the 68000 addressing limitation smack-dab into the Memory Manager.

Restricting an address to 24 bits would have little effect on our applications today if it were not for another decision that was made long ago. Someone in the original Mac group had a bright idea about reusing the high bytes of each address.

You have to understand the plight of systems programmers, the engineers who make their living writing operating-system software. They are forever space-constrained. Their code must fit in some small area of ROM, with little or no room for overrun. No wonder they tend to be stingy.

As part of their never-ending efforts to write "tight" code, systems programmers tend to take clever advantage of free bits...
Products for programmers. Especially designed for POWER USERS this page features advertisements of the products and tools programmers and developers demand.

So before you dig into the Thom Hogan and Kurt Matthies monthly installment of programming tips and tutorials, look over the Programmers page for the latest tools available to you.

For advertising information phone 1-800-825-4237.

Prograph's pictorial object-oriented language and environment lets you build stand-alone applications without using any textual code, and create user interfaces as fast as you can draw them.

Prograph 2.0 provides:
- Graphic Editor/Interpreter
- Powerful OOP language
- WYSIWYG interface builder
- 680x0 Compiler
- Mac Toolbox support
- Importation of C code

"...A revolutionary new way of programming..."
MacUser
March 1990

"If your aim is to learn about programming, you can't afford to overlook it."
MacUser
Sept. 1990

"...A great way to learn about object-oriented programming...indeed, a great way to program the Macintosh."
MacTutor, March 1990

Available through mail order or directly from TGS Systems for $395 plus $5 shipping.

1127 Barrington St., Suite 19
Halifax, NS B3H 2P8 CANADA
(800) 565-1978 or (902) 429-5642

CIRCLE 316 ON READER SERVICE CARD
here and there as flags, placeholders, or temporary data storage. That’s what happened in the Macintosh’s Memory Manager. Someone chose to take advantage of the unused high byte in a handle. In the Macintosh’s 24-bit Memory Manager, the high byte in every handle contains the corresponding relocatable block’s status information.

You might call this a gutsy decision in light of the fact that Apple knew that one day it would have to support full 32-bit addressing. But remember, in a 128K Mac, every byte counted. The saving grace is that as a hedge toward future enhancement, Apple supplied a set of Memory Manager routines — HLock, HUnlock, HPurge, and HNoPurge — for setting and clearing the status bits.

Now, Apple’s been telling us for years not to change an element of a data structure directly if there’s a System call that will do so for us. This is a fundamental principle that you should follow to maintain compatibility with future System versions. Most developers “got the message” and had the good sense to use HLock to lock a handle, but a few opportunistic developers saw a chance to save some processor cycles by eliminating the overhead of a System call — they set or cleared these bits in the handle directly. As a result, their applications are not 32-bit clean.

Here’s the bottom line on 32-bit cleanliness: If you already use these Memory Manager routines, you’re home free. On the other hand, if you’ve saved a few machine cycles by setting or clearing these bits directly, then you’ve got some work to do.

CDEF and WDEF

Using HLock and its related routines is not the last word in 32-bit Memory Manager compatibility, though. A similar problem exists in the interface to custom definition procedures. If your application contains either a control-definition function (a code resource of type CDEF) or a window-definition function (a code resource of type WDEF), then there are still a few more minor modifications that you’ll need to make.

Prior to System 7.0, there was really no way for a CDEF to be 32-bit clean. The Control Manager expects your CDEF to clear the high byte of a region handle when the CDEF receives the calcCRgns message. Under 32-bit Memory Manager rules, you can’t clear the upper byte of an address without corrupting the address.

The problem with WDEF arises because in earlier System software, the Window Manager uses the high byte of the WDEF handle to store the window-variant code. This situation is also remedied in System 7.0.

Making the WDEF compatible with System 7.0 is easy. First, you have a problem only if your WDEF supports variations. If it does so, remember that the variant’s not stored in the handle anymore. Don’t worry where it’s stored: The system routine GetWVariant can return the value, and GetWVariant has...
Adapt to Changing Environments With Microtek's Color/Gray Scanner.

At last, a scanner that adapts to your changing needs. The Microtek MSF-300Z Color/Gray scanner reproduces everything from 24 bit color to 8 bit gray-scale to black and white line art. All at 300 dpi. Making it the one image capturing device that's ideal for desktop publishing, multimedia projects, presentations, even pre-press work.

And at just $2,695, it's ideal for limited budgets, too. Especially when you consider it includes some of today's most sophisticated color and gray-scale image editing software. What's more, you can work in the operating environment of choice. Whether it's with the MSF-300Z for your IBM PC or PS/2, or the MSF-300ZS for the Macintosh.

Call 800-654-4160 or in California, 213-321-2121 for all the details. And get the one scanner that adapts to whatever you're trying to capture.
Epson introduces advance in Postscript.
The new Epson EPL-7500 for Macintosh.

All it took was a little RISC.

Introducing the Epson* EPL-7500 laser printer. One of the first true Adobe* PostScript* laser printers designed around a lightning-fast RISC processor.

The result is significantly faster output.

It is also significantly better.

Thanks to true Adobe PostScript—not a clone—the EPL-7500 is able to produce razor-sharp text in 35 scalable fonts, plus equally impeccable graphics. Blacks are blacker and lines are finer, courtesy of the printer’s unique MicroArt Printing technology.

All of which makes the EPL-7500 extremely well-suited for the most demanding desktop publishing applications.

The EPL-7500 handles paper as well as it handles text and graphics. A 250-sheet tray comes standard, a second is optional. Also standard are AppleTalk*, parallel and serial interfaces, allowing the printer to work easily in both Macintosh* and PC environments.

With the EPL-7500, the engineers of Epson have succeeded in raising the standards of laser printing for Macintosh, without raising the price.

But rather than take our word for it, compare for yourself. Chances are, you will come to the same conclusion.

Very, very rapidly.

*Engineered For The Way You Work*
Fixing the CDEF requires a little more work on your part. You have to support two new messages, `calcCntlRgn` and `calcThumbRgn`. Here’s where you have to make sure that you’re System 7.0-compatible, not dependent. Your CDEF still needs to support the old `calcCRgns` message. System 7.0 won’t send this message — only System 6.0 and its predecessors can — so your CDEF is still free to clear the upper byte of the handle when it receives `calcCRgns`. When System 7.0 is running in 32-bit mode, it will send either of the two new messages. You still calculate the appropriate regions for these new messages, but you don’t clear the upper byte of the handle when you return it.

**Strip tease**

What if you’re running in 24-bit mode and want to compare the values of two master pointers? In 24-bit mode, the Memory Manager changes flags in the upper byte of a master pointer, so your program should use only the lower 24 bits of the pointers during the comparison. But in 32-bit mode, all the address bits are significant, so you’ll want to compare all 32 bits.

The solution for this situation is to call the Memory Manager routine `StripAddress` on the pointers before comparing them. The `StripAddress` routine returns a pointer’s significant value, based on the current Memory Manager mode. For example, when passed a pointer when the Macintosh is in 24-bit mode, `StripAddress` masks the upper byte in the returned address. But in 32-bit mode, `StripAddress` returns the address unchanged.

You will rarely need to use `StripAddress`. Don’t call it every time you use an address — that would choke your application. Use it only when you need to compare two master pointers (a practice of dubious merit) or in the uncommon instance in which your application switches the machine from 24-bit to 32-bit mode.

If you follow the techniques outlined in this column, then you’ve met System 7.0 halfway. Your application may not support any of the new features in the new release, but it won’t embarrass you by bombing either. Once your application’s in this state, you can confidently call it System 7.0-friendly.

Your final step in bringing your application from friendly to compatible is to support those features that are the hallmark of System 7.0. Unfortunately, we’ve run out of space, so we’ll have to continue this discussion next month. Fortunately, however, we have “virtual-column space” on MacUser’s on-line service, Zmac. This month and next, you’ll find some example code fragments on Zmac that demonstrate System 7.0 compatibility issues. If you’re not a Zmac subscriber, you can get a disk containing these examples from Kurt. Please send a check for $15 to Kurt W. G. Mathies, 1150 Hancock Drive, Boulder, CO 80303.
Introducing Pivot for the Macintosh IIsi and IICI. Now, for little more than the typical display—more specifically, an Apple 13"—you can own the Pivot. Or should we say the plug and play Pivot? Because here is the first Pivot that needs no cards, no boards. Nothing. You just plug it into any Mac with built-in video, like you would a Fender guitar into a monster amp, and go. Then, with the help of some incredible software, you’ll be able to pivot your display to see a whole page of text at once or all twelve months of a spreadsheet, instead of merely six. It is, in its most simple sense, that one dream product you can actually own. Which leads us to this—our number: 1 (800) 227·2795.

Please circle 141 on reader service card.

While some amazing breakthroughs still remain far from the reach of the many, the Pivot does not.
“Ehman Monitors Are Built To Please The Most Demanding User. Me.”

When the Ehman name goes on one of our monitors you can be sure it’s the highest quality. That’s because it carries my name. We’ve become one of the largest manufacturers of Macintosh peripherals in the industry because quality has always been a top priority. And we’ve priced our monitors so that they’re affordable to nearly every user. Without taking shortcuts.

Ehman monitors feature exceptional resolution, front mounted controls, and are now available for the Classic, Plus and si models. Our two-page monitor has true WYSIWYG resolution with a flicker-free refresh rate higher than most of our more expensive competitors, and includes Stepping Out II software for the Mac II and the SE/30 models.

The price on our Ehman monochrome monitors includes the card, a tilt/swivel base, a full one year warranty, and of course, our standard 30 day money-back guarantee.

Compare prices, compare quality, and then look for the Ehman name. You can rest assured it’s your best buy; you have my name on it.

Call 1-800-257-1666, Fax 1-307-789-4656

Please circle 189 on reader service card.
Do you have an undocumented Macintosh tip you're willing to share? MacUser pays $25 for every tip used, and the Tip of the Month earns $100. Send your tip, together with your name, address, and phone number, to Tip Sheet, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

You can also contribute tips electronically via Zmac, the on-line service for MacUser. Send your tips to Gregory Wasson at 72511.36. Be sure to include your full name and mailing address along with the text of the tip.

Compiled by Gregory Wasson

ResEdit

If you dislike those INIT startup icons goose-stepping across your startup screen and the programmers didn’t see fit to give you the option of disabling the icons, there is a simple solution: You can change the icon ID number, using an icon editor such as Icon Designer or a resource editor such as ResEdit, thereby eliminating the startup icon without affecting the INIT itself.

Use a consistent pattern when you change the numbers so that you can restore them later if you need to. For example, change ID number 128 to 12800 or change ID number -4023 to +4023.

The patterns you use don’t matter — just be consistent. After you’ve changed the ID numbers, your startup screen will be untrouged.

Rob Sprecher
Cleveland, OH

Digitized-sound resources are fun but are also often very large and expendable. If you’re running short of disk space or if you’re looking for ways to reduce telecommunications time, you might want to use ResEdit to locate the snd resources on a copy of the application or stack (see Figure 1). Delete the resource, save the program, and make sure the program still works. The About box or startup screen might be less entertaining, but the program will be lots leaner.

Dave Valulis
Scotts Valley, CA

Word 4.0

I’ve seen several solutions published for making Word 4.0 data files easier to manage — a recent one even advocated using Microsoft Excel to organize the information. An easier and more straightforward solution is to keep data in a Word 4.0 table.

From scratch, simply type your merge field names on a single line, separating them with tabs. Select the line by pointing in the left area of the window and clicking once. Now, from the Document menu, select Insert Table, and accept the defaults presented to you. Your data is now in an easy-to-manage grid, one that changes height as you enter data.

To enter data, click on the last cell in the row and press Return — a new row is started, and you can start entering your merge data.

If you don’t like the column widths, you can change them: Click on the Ruler icon in the ruler, and T markers appear; shift these markers around until the table suits you. You can also change the page setup to landscape instead of portrait, because only the characters in your table — not their format — will be merged.

If you’re merging from a database such as one produced in FileMaker, the process is even easier: Select the entire document you’ve exported from your database (Command-click in the selection bar or press Command-Option-M), and choose Insert Table from the Document menu. FileMaker can output data in the exact format Word needs to produce a merge document, and the Table feature organizes the information so that you can see what you have without having to wade around in all those defaulted tabs.

Matthew J. McCaffrey
Haverhill, NH

I’m sure I’m not the only person who uses Word 4.0 and a NEC daisywheel printer. Anyone else who does is probably finding that the 12th line of text on a page often prints over
Figure 1: You can make applications and data files leaner and faster by removing unnecessary sound resources. This 4th Dimension database file was trimmed by 100K by removal of a single snd resource with ResEdi 2.0.

Figure 2: Word 4.0's character styles aren't limited to characters. You can create this attractive little box by adding outline and shadow styles to text that's been copied to the Clipboard as a graphic and then pasted into a document.

Figure 3: 4th Dimension users can speed up calling a layout from within the procedure editor by highlighting the names of the file and layout and pressing Command-L.

Procedures: addsoftwareproc

One useful aspect of Word's style-sheet feature is its ability to assign a space before and/or after a paragraph to a style. A space before and after in a style definition lets you maintain consistent spacing between elements such as body text and section titles throughout a document.

If you assign Space Before to a style, however, and a paragraph with that style begins at the top of a page, Word adds the extra space at the top of the page, leaving a gap. As a result, the top margin for that page appears to be shifted down, making it inconsistent with the other pages. Unfortunately, the only way to avoid this unwanted result requires manual labor:

1. Place the cursor in the paragraph with the unwanted space.
2. With the Paragraph command, change Space Before to 0 points.
3. Use Command-Option-D to copy the selection to the Clipboard as a graphic.
4. Click on the graphic to select it, and box it in by choosing the Outline style from the Format menu (Command-Shift-D). You can also add shadow or boldface format to the outline style for extra emphasis (see Figure 2).

The secret here is that the style commands don't work just with text — which is what most people assume they also work with graphics.

If the boxed text is on a line with other text, it will sit higher, because the bottom of the box sits even with the baseline of the text on that line. To correct this, select the graphic, choose the Character command from the Format menu (Command-D), select subscript, and offset the text as needed (the larger the font size, the greater the offset required).

Rich Murphy
Oak Harbor, WA

You can use PostScript code to shade a cell in a Word 4.0 table by typing:

```
75 setgray
wp$box fill
```

and pressing Enter. Then select the text, and format it with the PostScript style by pressing the Shift key and selecting Define All Styles from the Format menu. You can replace the number 75 with whatever number you choose. Make sure that you have deselected Print Hidden Text in the Print dialog box.

Alison Moore-Smith
Orem, UT
CLAIMS VS. ACCLAIMS

A lot of manufacturers say they have the best trackball, but only the Kensington Turbo Mouse® has the awards to prove it. MacUser gave it the coveted Five Mice. And the readers of Macworld magazine voted it “Best Input Device” — not just once but *four years in a row.*

What makes Turbo Mouse outshine the rest? Superior optical hardware and unique software are the difference.

A light click sends the signal quietly and instantly. One button transmits a normal mouse command. The other locks the button in the down position for extended selection and graphic applications. You decide which button performs what function.

Press both buttons simultaneously, and our time-saving chording feature executes one of seven useful commands such as “save,” “print,” “quit,” or “undo.”

Navigating the screen is easy. A comfortable ball position makes the cursor easy to move. And a smooth ball movement means no jumping or sticking.

What's more, Turbo Mouse has unique software that lets you adjust both acceleration and double-click speed to exactly match the way you work. Move the ball slowly and the cursor moves pixel-by-pixel. Move it fast and it speeds across even the biggest screen.

The next time you read another claim for a trackball, remember the one that has earned all the acclaims. Turbo Mouse.


Please circle 387 on reader service card.
Panorama 1.5A
I read with interest the tip from David D. Good on page 272 of the November '90 issue. His tip works, but there's an even better way to create a database with more than 256 fields in our Panorama program. In fact, there are two better ways.

You can put cells onto a form by using Auto Cell Layout from the Arrange menu. That dialog box uses the Apple List Manager and is good for about 500 items. The scrolling window updates much faster than the pop-up menu, and you can select one or more of the cells you want.

Or, you can create an auxiliary database that duplicates cells beyond the 256-field limit. The first item in the auxiliary database is the first item beyond the main database's pop-up menu (in other words, item number 257). You can then simply copy and paste these cells from the auxiliary database to the main database.

Both of these methods will give you cells beyond the 256-field limit before the pop-up menu with 256 items can even draw itself.

Paul W. Chance
ProVue Development
Huntington Beach, CA

Start with Type. End up with Style!

With TypeStyler on your Macintosh, you can do amazing things with display type that once were only possible with custom illustration and expensive typesetting facilities.

Bend, twist, stretch or rotate. Call on dozens of dazzling styling effects: Fades, gradient and starburst fills, shadows and patterns, inlines and outlines, circular text and more.

It's powerful, yes. But it's not overpowering. TypeStyler is amazingly easy to learn and use.

And it's fully compatible with popular DTP applications such as Aldus PageMaker and Adobe Illustrator, plus it comes with 10 AGFA Compugraphic typefaces. In addition, you can work with thousands of other commercially available fonts, including Adobe! All for under $200.

So get TypeStyler. And turn type into style.

Broderbund

SEE YOUR LOCAL RETAILER OR CALL (800) 521-6263 TO ORDER

Designing the Future...
MicroStation

From the world's leading supplier of computer-aided design solutions comes MicroStation, the first production CAD package for the Apple Macintosh.

MicroStation is a powerful 2D/3D CAD system incorporating a full implementation of the Macintosh user interface to give you the standard look and feel of Macintosh software. Easy to learn and easy to use.

MicroStation lets you share common data simultaneously within a network of PCs, Macintoshes, and UNIX workstations.

MicroStation offers a wide range of third-party applications and a sophisticated platform for developing your own applications.

When productivity is a requirement, let MicroStation give you the advantage — power, sophistication, and ease of use, plus worldwide product support. The promise of the future... today!

For a free MicroStation Mac demo or further information on MicroStation and related products: in the U.S., call 800-345-4856; in Alabama only, call 800-345-0218; in Canada, call 416-625-2081; in other countries outside the U.S., contact an Intergraph sales office.

INTERGRAPH
**4th Dimension**

When you're programming procedures in 4th Dimension, it's sometimes useful to call up a layout you've referenced in a procedure. Here's a shortcut that bypasses going through menus.

While you're in the procedure editor, drag to highlight the filename and the layout name mentioned in a procedure (see Figure 3). Then press Command-L. 4D will automatically open the highlighted layout.

Douglas von Roeder
Colorado Springs, CO

**Norton Utilities**

When you're using The Norton Utilities for the Mac's Fast Find DA, Command-T gives you access to a dialog box that allows you to search by type or creator (see Figure 4)—a useful feature for power users that's not mentioned in the manual.

Mark Millard
Sacramento, CA

**QuarkXPress**

I've found that version 3.0 of QuarkXPress won't boot if you have your keyboard configured with MacQwerty, from Paragon Concepts, in the Dvorak layout.

To get QuarkXPress 3.0 to work with MacQwerty’s Dvorak keyboard, go to the Control Panel, choose Keyboard, and select U.S. (this works only if you have installed MacQwerty). Close the Control Panel, and launch QuarkXPress. Go back to the Control Panel, choose Keyboard, and select Dvorak. You can now type away in QuarkXPress without sacrificing the sanity provided by the Dvorak keyboard layout.

Rob Haiber
Poughquag, NY

**On Location**

Using On Location is a dandy way to keep track of what's on your hard disk, and it's even dandier for programmers. For example, if you have megabytes of sample source code scattered throughout thousands of files, you can use OnLocation to fully index these files.

When you need an example of how to use any function, just call up On Location and search for all the references to the function from the source-code collection. This also lets you view the text in each sample source-code file and cut and paste the sample into your own program. It's fast and a great way to make your programming more efficient.

Mark Millard
Sacramento, CA

**PageMaker**

When using tabs with dot leaders in PageMaker (3.0 and 4.0), the dot leaders take on the text format of the character to the left of the tab. Therefore, if you use a Zapf Dingbats character just before the leader, the dots become little pencil icons.

It isn't possible to select the dots and change their typeface format separately. To avoid this problem, press Option-spacebar just before the tab. Then select this special nonbreaking space character and format it so that the dots appear as desired (see Figure 5).

Doug Smith
Boise, ID

---

Have 12 monthly issues of the ultimate resource for Macintosh users delivered right to your door at an unbelievably low price.

- One year (12 issues) for $19.97. Save 44%.
- Two years (24 issues) for $35.40. Save 50%.

Plus, with your paid order you'll receive a very special bonus! It's our exciting pop-up, power-tip resource—1,001 Hints & Tips Disk for the Macintosh—FREE.

Call toll-free to place your order.

1-800-627-2247

Savings based on annual newsstand price of $35.40. Add $8 per year for postage to Canada and all other countries outside the U.S., U.S. currency only. Please allow 30 to 60 days for delivery of first issue. Your disk will be shipped upon payment.
The QMS-PS 2220 lets you tell the whole story

Sometimes an 8.5" x 11" page can only tell half the story. Now QMS brings you enhanced performance and superior print quality in an Adobe® PostScript® laser printer with 11" x 17" capability.

Because the QMS-PS® 2220 can print pages up to and including a standard 11" x 17" spread, it works not only for the designers in your company, but will also handle the most demanding jobs of everyone else. With this QMS® printer you can create everything from annual reports to giant spreadsheets, charts and engineering graphics.

The QMS-PS 2220 is a real workhorse. Features such as 22 page-per-minute output (11 ppm for 11" x 17"), a 16 MHz 68020 processor, 4 MB of RAM, HP-GL® and HPPCL® emulations, 39 resident typefaces and advanced paper handling make this one of the best all-round PostScript printers on the market.

Isn't it time you got the whole PostScript printing story? For more information, call 1-800-631-2692. In Canada call (514) 333-5940. For OEM/VAR information, call 1-800-535-8896.

QMS, Inc., One Magnum Pass, Mobile, AL 36618

© 1990 QMS, Inc. The following are trademarks or registered trademarks of their respective companies: QMS, the QMS logo and QMS-PS of QMS, Inc.; Adobe, PostScript and the PostScript logo of Adobe Systems, Incorporated; HP-GL and HPPCL of Hewlett-Packard Company.

Please circle 143 on reader service card.
Any resemblance to other Macintosh utilities is pure coincidence.

If that sounds like an outrageous statement, it sure is.
But then, this is one outrageous set of utilities.
In fact, comparing the Norton Utilities* for the Macintosh® to anybody else's utilities for the Macintosh is, well, kind of embarrassing.
Because when it comes to fixing your disk problems, rescuing your data and daily getting the utmost from your Mac, nobody else even comes close.

Why you need a Doctor in the house.
To see what we mean, see what happens when you call up our revolutionary Norton Disk Doctor®.
Which is what you'll do whenever you're having trouble doing things like booting your system, recognizing or reading disks, opening, closing or trashing folders, locating icons or launching applications.
The Disk Doctor automatically diagnoses and repairs the 45 most common—and dangerous—problems your disk can confront you with.
Including a whole bunch of things the other guys can't even detect, let alone repair.

We save your trash.
Of course, any time a human being uses a computer—yes, even a Mac—there's a risk of losing data.
Which is why, seven years ago, Peter Norton Computing invented the legendary UnErase®.
Like the rest of the tools in this box,
UnErase has been designed expressly for the Mac, to recover more kinds of trashed files, more quickly and with less effort on your part than any other program.

You can UnErase by File Type. By Text Search. Or use Quick UnErase to scan your fully loaded hard drive in as little as five seconds.

Whether your drive is fully loaded or nearly empty, Speed Disk® is —here we go again—the quickest, easiest and safest way to dramatically accelerate disk access.
And unlike other programs, Speed Disk won't lose your data even if your Mac loses power.

What a find.
Of course, you don't have to lose your data to want to get at it as quickly as possible.
That's something you want to do every day, every time you open a file.
So you'll be interested to know that Fast Find locates and opens files so quickly, you may never use the Mac's standard Find File accessory again.

SYMANTEC®
Legal Disclaimer

Andy: Before we get on with this month's Cornucopia O' Questions, a clarification. I may have oversimplified things last month (February '91, page 315) — purely in the interests of clarity, I assure you — when I said that you have the "absolute right" to resell software you've grown sick of.

Although this is true for all practical purposes, in the World of the Law, it just isn't so. To avoid giving you some rights that the Software Cadre would rather you didn't have, they came up with a high-scoring Legal Concept: Instead of selling you the software itself, they're selling you a license to use the software; technically, the disks still belong to the corporation that spawned them.

The Concept and the limited rights the corporation gives you as the licensee are explained fully in the licensing agreement that accompanies almost all software. You can usually find it printed on the sealed envelope containing your "(oops...I mean "their") disks. The Agreement is supposed to be a binding legal contract that you "sign" by ripping open the envelope.

I said that those agreements may not be enforceable, and that's true. Maybe the agreement doesn't allow you to make a backup copy of the software (which the copyright law specifically allows you to do). Maybe it doesn't give you a way to say "no" to the agreement and send the unopened envelope back for a refund. Or maybe somewhere in the manual, the company thanks you "for purchasing this software" (i.e., the software itself). These are all loopholes that high-powered attorneys can exploit to try to render a licensing agreement invalid.

But only a real legal weenie would care about all this. I've called another dozen software companies since last month, and I still haven't found anyone who gives a flying Belgium if you sell your software or not. If you are a legal weenie, check out Software Protection: Practical and Legal Steps to Protect and Market Computer Programs by — doesn't this sound like the name of a lawyer — G. Gervaise Davis III, Esq. (New York: Van Nostrand Reinhold Co., 1985). It's a thorough and well-written guide.

Virus Medicine

Q. What is a virus, how do you get one, and can you get one by downloading files from a BBS?

Albert Pearson
Des Plaines, IL

Bob: A virus is a piece of software that infects applications or files. When you use an infected application or file, the virus spreads to your System Folder or other software. Viruses spread from Mac to Mac through the sharing of infected applications or infected disks. Currently more than ten strains affect the Mac (see Figure 1). Viruses usually aren't transmitted to your System Folder or software unless you open the infected file in the infected application or disk. Some strains (such as WDEF and CDEF) are more virulent, however — the moment you insert an infected floppy, the virus infects all unlocked and mounted disks.

Although it's possible to get infected by a file that you've downloaded, the commercial on-line services — such as CompuServe, GEnie, America Online, and Zmac — are careful not to allow infected files into their download libraries. Private bulletin boards, however, might not be as cautious.

* . . . But Were Afraid to Ask

Q. I'm confused about the Undo command. All my Mac programs have it, but it doesn't always work. Sometimes (usually after I've "Done" something stupid, of course) it says "Can't Undo." Sometimes it tells me what I'm "Undoing," and sometimes it doesn't. Huh?

U.S. Rep. Tom Campbell
(R-Calif.)

Andy: The Undo command acts so screwy because it isn't a "standard" feature. Apple made up all kinds of rules for how a Mac program should behave: Thou shalt use menus, thou shalt put stuff into windows, thou shalt allow the user to Undo things, and so on. Whenever programmers violate these User Interface Guidelines, Apple executives pile into their Mercedes-Benzes and go over and whack them in the knees with baseball bats, thus ensuring a Consistent User Interface.

To further help programmers follow all these rules, Apple wrote all the menu-drawing code, the window-drawing code, and the button-making code itself and burned these routines into the Mac's ROM. Features such as Cut, Copy, and Paste all work the same way because they're all done with the same built-in code; the programmer just has to use that built-in routine.

Undo is different. Because it isn't burned in, all programmers have to write their own special Undo-ing code for every program they write! So some programs have these slick Ninja routines that can Undo everything, while others, well, orally evacuate raw chicken embryos.
Figure 1: Disinfectant kills viruses dead, and it’s free. This Monty Python-inspired About box lists the viruses (right) that the latest version can eliminate.

If you’re at risk — you use disks that have been used in another Mac or download files from questionable sources — you need virus protection. Don’t wait until after you’ve become infected — get it now.

Almost all the available antiviral products check your disks for existing infections, repair infected files (or tell you which files are infected so you can replace them from locked master disks), and install an INIT that prevents future infection by alerting you if you’ve inserted an infected disk or launched an infected file.

The three commercial virus-detection products I’ve tried — SAM, Virex, and Rival — are all extremely effective. I’ve never become infected while using any of them, although I’ve been alerted more times than I care to remember. The best thing about these commercial antiviral products is that for a small fee, you can have upgrades automatically sent to you whenever a new virus is discovered.

For those who have a modem and don’t want to buy an antiviral program, Disinfectant is the best noncommercial product around. It’s freeware — a labor of love by John Norstad (Academic Computing and Network Services, Northwestern University, 2129 Sheridan Road, Evanston, IL 60208). You can download a copy from Zmac or other online services or send John a blank, formatted floppy disk with return postage. Bear in mind that because new viruses are discovered regularly, you’ll have to download the latest version of Disinfectant each time a new one crops up. Still, Disinfectant is strong medicine, and the price — free — is right.

Andy: Well, Bob, my virus mind-set is a little different. Personally, I think that anyone who actively worries about viruses (as opposed to simply being aware of their threat) is nuts. I worry more about a grand piano being dropped on my head. There’s too much worry about these things; just last week, I saw a new book on The Virus Problem, written by a guy who thinks that any program you didn’t actually write yourself must be a beehive of viral activity!

The thing is, unless you’re in a high-risk group (more on this in a sec), viral infection just isn’t all that likely. And even if you do become infected, in most cases, you can completely annihilate the infection in about 30 seconds, with no loss of data.

I’ll even go so far as to say that Disinfectant is all you really need to combat The Virus Problem. The application detects and removes all known viruses, and the INIT prevents further infection by all known viruses. To top it off, its documentation is probably the best
When you're waiting to print, you and your Mac can put in some heavy downtime. Especially if you share a printer. But here's a wait loss program that really works.

SuperLaserSpool™ gives you your Mac back in seconds and handles all the printing in the background.

Along with processing documents, sending them to the printer and downloading fonts, SuperLaserSpool gives you extra control with the exclusive LaserQueue™ desk accessory. You can preview documents. Change the order they print in. Reroute them to other printers. Or delete them altogether. It even tells you when documents are finished printing.

SuperLaserSpool works with virtually all Macintosh applications and stand-alone or networked ImageWriter™, LaserWriter™, HP DeskWriter™ and PostScript-compatible printers using standard Apple drivers. All you do is load it and forget it.

Order SuperLaserSpool now, and—for a limited time—get a free copy of File Director™, the ultimate file management program valued at $129. Just call the toll-free number below. And prepare to lose some wait.

1-800-873-4384 EXT. 145
Fifth Generation Systems, Inc. 10049 N. Reiger Road Baton Rouge LA 70809
Technical Support: (504) 298-7283

Please circle 197 on reader service card.
Safety in Numbers

Safety in numbers is our business—and yours. Your data is your most important resource. That's why we offer the latest ultra-high capacity digital, helical scan, and read after write technologies.

JetStream and DATStream conform to industry standards for 8mm and 4mm tape, assuring compatibility. With a storage capacity of 2.5 Gigabytes (that's a pile of floppies 30 feet tall), the JetStream handles towering storage needs. And the 1.3 gigabyte DATStream is close behind.

The JetStream is fast, (MacWorld™ speed title holder two years running), and its reliability is unrivaled. Our bundled NetStream™ network backup software lets all users share one tape drive. At less than a penny per megabyte, PCPC provides speed, reliability, and the most cost-effective data safety you can buy. As the long-time leader in backup technology, PCPC will be with you as your needs expand, making PCPC...the safe choice.

Personal Computer Peripherals Corporation
4710 Eisenhower Blvd., Building A-4
Tampa, FL 33634
800-622-2888
813-884-3092

Please circle 36 on reader service card.

common-sense guide to The Virus Problem available. What more do you need? Some folks worry that Disinfectant does nothing to protect them from new, unknown nastiness, but I don't think this is of great concern. New versions of Disinfectant spread across the country a hundred times faster than new viruses do. I mean, come on — Disinfectant can even eradicate Frankie, a European virus that infects only Atari-based Mac clones!

Commercial antiviral programs such as SAM have some nifty extra features, such as automatically scanning all floppies for viruses whenever they're inserted into a drive, but they're generally just frosting on the cake. Me, I'd rather blow that 70 bucks on some games, but if you want to spend it on a commercial utility, I don't think that's an inherently boneheaded idea.

Now about those high-risk situations. Anyplace where folks you don't know bring in disks from God-knows-where and work on a common hard drive is a veritable Disneyland for viruses. Scan your disks carefully with an antiviral program after exposing your disks to such environments — college computer labs, DTP bureaus, bus-terminal snack bars, and so on. If you rent equipment, be sure to scan or reformat the computer's hard drive before using it with your own volumes.

An even riskier situation is a network with shared volumes. If a central AppleShare volume becomes infected, every hard drive of every Mac on the network can become infected. Here the commercial packages have a jump on Disinfectant; utilities such as SAM can be set up so that no diskette can be mounted unless it's been scanned for viruses.

Head Games

Q. I'd really like to know the best way to clean a floppy-disk drive and how often it should be done. Queries to Apple and Sony have yielded the usual “Call your dealer,” and, “Well, what I do is...”

Rob S. Wilks
Loveland, OH

Andy: Sorry to let you down, Robert, but all I can do is tell you what I do!

Background: The read/write heads of your floppy drive can be a real cause of trouble. Dirt and dust from the environment and your floppies themselves tend to accumulate on them, and if the heads get too cruddy, you won't be able to read and write effectively, causing your Mac to report endless disk errors (“This isn't a Mac disk, Bub — care to format it?”). The more Everest-like mounds of dirt can actually gouge the surface of your floppies, permanently destroying your data. So it's important to give the heads a cleaning every once in a while.

To clean the heads, just buy a head-cleaning disk. It looks like a standard disk, but instead of magnetic material, it contains a circular cleaning pad. You put a few drops of cleaning fluid onto the pad and pop it into the drive. The Mac munches on it for a while, spinning the pad against the read/write heads. Once the Mac realizes it isn't a Mac disk, it spits it back out.

You shouldn't be too gun ho about head cleaning, though. The cleaning pad is much more abrasive than a regular floppy, and if you embark on a daily or even weekly cleaning scheme, you may wind up scratching the heads before long. How often should you do it? My service manuals say “every 150 hours of operation” — real helpful, eh?

Here's my regimen: I clean the heads whenever my Mac reports a disk error and I have no clue why. When a drive suddenly decides that a formerly healthy diskette is unreadable, it's a fair bet that the heads just need cleaning. Then, even if your diskette really was
Power Up For The '90s.
Unwrap the full productivity potential of your Macintosh with Technology Works memory upgrade kits. Now you can run the new memory-hungry power programs, make disk access and menu selections faster, harness the multitasking convenience of MultiFinder, and be ready to take advantage of the new Macintosh System 7.

Best Prices; Dependable Quality.
We offer the best prices because all our memory modules are manufactured and sold direct from our facility in Austin, Texas. We use only top quality components and state-of-the-art surface-mount technology. Rigorous testing, inspection, and process control ensures performance for the life of your computer!

Upgrade Your Macintosh With Technology Works' Low-Price, Easy-To-Install Memory Modules.

- Lifetime Warranty • Free Installation Kits
- Corporate & University P.O.s Accepted
- All Major Credit Cards Accepted
- Overnight Delivery Available
- Volume Discounts Available

Technology That Works. Guaranteed.
Because we build them better, we back our products with the most comprehensive service program in the industry, including our unconditional 30-day money-back guarantee, lifetime product performance warranty, and same-day product replacement policy.

Easy Installation; Toll-Free Support. Your purchase comes complete with installation kit, instructions, and the most responsive support in the business. Direct. Toll-free. So treat your Macintosh to productivity-enhancing modules from Technology Works, the leading seller of add-on memory for Macintosh.

(800) 688-7466 Ext. 1111
PO FAX: (512) 794-8520
4030 Braker Lane West, Austin, Texas 78759 (512) 794-8533
HELP FOLDER

messed up, at least you 'd know
your heads were clean. J us! try
not to get in the habit ofcleaning
more than once a month or so.
I 've also hea rd that by
pressing the drapery attach­
ment of your vacuum cleaner
against the drive slot , you'll
suck any dust and hair out of
th e me chanism . Proba bly
won ' t hurt, and it certainly
wouldn't be the weirdesr thing
people have done with vacuum
cleaners.
Bob: I called a couple of
Apple dealers myself. The first
one described head-cleaning
disks as " the kiss ofdeath" and
claimed he'd never recom­
mend using one, because the
tolerances on a floppy drive
are so critical that the cleaning
di sk can easily cause problems.
The second one said, "The best
method is to take the drive apart
and clean it with cotton swabs
and alcohol. If you have to use

one of the cleaning disks, don't
use it very often - no more
than once eve ry couple of
months. Or, for less than $50,
bring it in and have it cleaned
by a trained technician."
So there you have it - an­
other nonanswer. I don ' t know
if the cleaning kits are oraren 't
dangerous, but I'd rather be
safe than sorry.
Finally, although I was a
little squeamish about sticking
a vacuum cleaner up to my
disk drive (quite frankly, I
thought the idea sucked), my
friendly Apple dealer (name
withheld,just in case your drive
gets sucked through the slot)
assures me that the suction cre­
ated by your average household
vacuum cleaner isn ' t strong
enough to damage a floppy
drive and might indeed clean
out some dust.
You learn something new
every day.

Word 4.0
Postscript Style

Q, I've attempted to use
PostScript commands to sup­
press the test page that the
Lase rWrite r IINT produces
when it's first turned on.
My Apple dealer gave me a
set of two commands, which
he claimed would slop test­
page printout. Following his
instructions, I proceeded to do
the following:
While in Microsoft Word
4.0, I created a document that
contained nothing but the lines
in Example 1.
I formatted all these charac­
ters as hidden text. Then I
printed the document to the
LaserWriter.

No page was emitted, be­
cause there was nothing but
hidden text. So fa r so good.
Next I turned the printer off,
waited a minute, and then
turned it on again. No test page
was printed. However, when I
next issued the Print command
to print a document, an alert
box appeared, saying that the
pnnter would not respond. Im­
mediately thereafter, a test page
was emitted. After I issued a
second Print command, my
document was printed suc­
cessfully. I've u·ied this sev­
eral times with the same result.
Roger Wm. Wicke
Hot Springs, MT
Bob: I think 1see what went
wrong. Your code is correct,

IS:fl 11 !iltji
serverdict begin 0 exitserver
statusdict begin false setdostartpage

How the right brain sees MacToo~:
Ifyou drag onefile too ma11y a11d
emply Jbe lrasb, 011rfile recovery
tools make ii a s11ap /-0 gel files back.

Fragmentedfiles slow dow11
your disk. MaClbols Optimizer
puts loge/her tbepieces and
speeds 11p file access.

Encryptfinan cial dala,
employee records, and other
sensitive infonnalion i11 a
fomwl nobody can crack.
Excepl)'OU.

Make exact copies vf floppiesfas/. MaC!bols
lakes/11/I advantage of )'Our computers
memory lo reduce disk swapping and lets }'OU
make as many copies asyo11 like.

lb11 111011/dn '/drive witbOlll a seal be//-do11 't operateyour

Forgot where you p111 afile?
MaC!bols willfi11d it by 11ame or le.Tl
in seconds and even lei yo11 view ii
lo make Stire ii s /beright one.

Wilb MaClbols daily backups
are as q11ick a11d painless as
taking )'Ollr vi/amins. Back
up )'OUr whole disk orjust
/be files orfolders yo11 wa111.

Mac UJilbout one either. MaC!bols copies critical volume
information daily (or more ojlen) /-0 protect against bard
disk crashes a11d accidental inilializalio11.

Centrd Point Software1t.r;TM


but you need to format the text with the PostScript style instead of Hidden Text. To do this, select the text and then type PostScript in the style box in the lower left corner of the ruler (see Figure 2). Perhaps the easiest way to kill the test page is to pull the paper tray out just a little before you turn the printer on. If you reinsert the paper tray after the printer warms up, it will be ready to print, without the inconvenience and paper waste of a test page.

Andy: If you ever want to turn the test page back on, just change the false in your second command to true. There are also some shareware and commercial utilities that switch the test page on and off, most notably CE Software's Widgets program. Incidentally, you may want to check out Apple's LaserWriter Reference and Adobe's PostScript Language Reference Manual. They contain other PostScript commands and conditions for manipulating LaserWriter features.

Changing LaserWriter Defaults

Q. Is it possible to modify the LaserWriter file, say using ResEdit, to change the default settings of the radio buttons in the Print dialog box? I'm using LaserWriter driver 6.0, and I would like the default print mode to be Black & White instead of Color/Grayscale.

Philip Broussard
Washington, DC

Andy: First, make a backup copy of the LaserWriter file. That way, if you somehow mess up with ResEdit and set fire to the file, your tuchas is covered. Launch ResEdit, and open the LaserWriter driver. Launch straight for the PDEF resource with ID = 4. Set out on a search for the series of bytes 377C001700047801 and replace that series with 377C001800047801 (see Figure 3). Save your changes, and you're done—from now on, the default setting will be Black & White.

This technique ought to work with all 6.x versions of the LaserWriter driver. My thanks to Paul Cozza for the search string.

Bob: By the way, there's a new version of ResEdit out (2.062 at press time) that's much cooler than the 1.x series. It features an icon-based interface and much less intimidating editors for most resources. You should be able to find a copy in most of the usual places—CompuServe, GEnie, America Online, and Connect.
“Symmetry is a leading developer of Macintosh applications software. We have advertised in various publications, but inbound calls from MacUser ran at a ratio of 4 to 1 over other marketing efforts.

“Plus, we’re getting to the right readers. Approximately 65 to 70% of the MacUser calls are from users in professional environments. There are so many products on the market, buyers have to rely on reviews and lab tests to make business decisions. And MacUser is the tool that helps them do their job.

“We’re a company with staying power, and the way to communicate that has been to increase our advertising and our product profile. And in return, MacUser has increased our business.”

MacUser keeps Symmetry in balance.

Whose RAM?

Q. I’ve been told that it’s better to use genuine Apple SIMMs in the Iffs. Is there really any difference between Apple and third-party SIMMs for the Iffs?
S. Mitchell
Tyler, TX

Bob: To get both sides of the story, I queried a third-party SIMM maker (Technology Works) and Apple. Mike Frost at Technology Works replied, “Hogwash. Third-party SIMMs are better — they’re less expensive, and most vendors have a better warranty than Apple’s. Apple doesn’t even make its own SIMMs; it buys them on the open market from a variety of sources.”

That was no surprise — I’d expect a third-party vendor to claim that his RAM was better. But the Apple spokesperson confirmed it by saying, “There is no technical reason why our DRAM is any better than third-party DRAM. We’ve published the specs for the SIMMs, and they’re turning up all over the place.” So save yourself a few bucks, and get your RAM from a reputable third-party supplier. I have Technology Works SIMMs in my Iffs — they work great, and they have a lifetime warranty.

SIMMs, Fans, and Delays

Q. I recently installed a Dove MacSnap 2-megabyte upgrade on my Mac Plus. Installation instructions were provided, and the procedure was quite simple and straightforward. My concern is that it now takes about two or three times as long for the smiling Mac icon to appear on the screen and for the computer to start loading the System software from my hard disk.

The problem has gotten worse since I installed an additional 2 megabytes of RAM, bringing my total to 4 megabytes. In fact, I timed the delay from the moment I turn on the Mac to the moment the smiling icon appears — it took about 33 seconds. Is something
wrong? Before I installed extra RAM, it took only a few seconds for the smile to appear. Also, I’m concerned about heat being generated by these SIMMs. Do they generate extra heat? If they do, should I install a fan?

Mazen Ansari
Monterey, CA

Bob: The delay you’re experiencing is entirely normal. When you start up any Mac, it performs a check of all the installed memory. The more memory you’ve installed, the longer the memory check takes. Dove says that the amount of additional heat generated by the RAM you added to your Plus is negligible; you don’t need a fan.

Andy: I’m a little more wary. The power supply of the Plus is infamously wonky; average life expectancy (according to an informal poll) is roughly three years. If you have a properly calibrated power supply, the extra SIMMs probably won’t harm anything.

Unfortunately, “proper calibration” is somewhat Grail-like; I’ve seen figures that say that the voltages can be off by as much as 20 percent! In these cases, 4 megabytes of RAM might be the silicon that breaks the power supply’s back (because of additional heat or additional drain).

My prejudiced opinion is that any Plus with 4 megabytes of RAM or any kind of daughterboard (such as a portrait-display card) should have a fan. Fans go for about 60 bucks, which isn’t so bad when you consider that a power-supply transplant can set you back a couple hundred.

Hopelessly Crashed?
Q. Last May you suggested using the programmer’s switch only when the Mac is “hopelessly crashed.” How do I know if it’s hopeless? Or is it a case of “if you have to ask . . . .”
Douglas Wells
Vienna, IL

Bob: Well, Douglas, if you have to ask . . . . Actually, that’s a good question. The most obvious way is when you see a dialog box such as the one in Figure 4. That is most definitely hopeless. Another way is when nothing happens when you type or move the mouse. Still another is when the screen starts to shimmer and display static. If any of these occur, press the Interrupt switch (check your user manual to see where it is on your computer) and type SM 0 A9F4 <return> G 0

If it worked, which it does at least half the time, you’ll be returned to the Finder, where you can select Restart from the Special menu, giving your Mac a chance to shut the file system down properly and minimizing the risk of damage to disks or files.

If it doesn’t work, you’re no worse off than before. Just reset your Mac as you normally would — turn the power off and on, or use the Reset switch.

As long as you use the Reset or Interrupt switches only when your Mac is hopelessly crashed, it is as safe as turning your Mac off and on, and possibly safer.

Andy: That code’s a new one to me; I’ll have to jot it down. Another interrupt parachute is to type G FINDER <return>, which, like Bob’s code, works sometimes. I don’t know which one works better, but at least mine’s easier to remember.
Quality. No Compromises.
Specialists in high-end Macintosh system solutions. If you need high performance, high capacity storage & backup, video displays, memory and more, Third Wave is the source.

UltraCombo, Vertical, Combo Dual 45R, Full Height

Half Height, 45R, Tape

First Class Storage Subsystems

- **Quantum**
  - Internal
  - Standard External
  - Premium External
  - 40 10ms (12ms*) 339 439 469
  - 52 17ms (LPS) 399 499 529
  - 80 18ms (12ms*) 509 609 639
  - 105 18ms (12ms*) 569 669 699
  - 107 17ms (LPS) 619 719 749
  - 120 <15ms 669 769 799
  - 170 <15ms 799 899 929
  - 210 <15ms 969 1069 1099

- **Seagate MacWren (CDD/IMPRIMIS)**
  - 173 18ms
  - 300 16.5ms
  - 330 11ms Runner
  - 425 16ms 1/2 Ht.
  - 600 16.5ms
  - 650 15.5ms
  - 1000 15ms

- **Syquest, Tape, DAT, Optical**
  - 45R (Syquest) 599 629
  - 45DR (Dual Syquest) 1199
  - 60T (Teac) w/ Retrospect 599
  - 150T (Teac) w/Retrospect 699
  - DAT drive™ 1.3GB WangDAT, w/ Retrospect 2049
  - OptiDisk 650™ (Sony) w/ cart. & Retrospect Call
  - 2.3GB 8mm Tape (Exabyte) w/ cart. & Retrospect Call

**Six Years of Support & Service**

Third Wave is in its sixth year of serving the Macintosh community. We strive to provide the best technical support possible. We are authorized resellers of every product we sell, including Apple, RasterOps, Radius, SuperMac, etc. We ship Federal Express for the best shipping, too.

**Bundled Drive Software**

Included software and features: disk management software with partitioning, password protection, test features, bad block management, Mounter desk accessory, removable drive INIT, and more. The most complete formatting utility available for the Mac. Fontina™, the ultimate font management utility from Eastgate Systems ($69.95 value). Other included software: complete Virus utilities, 12mb of public domain and shareware, 10mb slide show of 8/24 bit images created with StrataVision 3d, our own HyperDrive, HyperCard utility, and much more. No one gives you more software than Third Wave.

800-284-0486

**SIMMs & Memory**

- Mac SIMMs (1, 4mb) Call
- IIF SIMMs (1, 4mb) Call
- NTX SIMMs Call
- Portable 1, 2, 3mb Call

Memory Third Wave utilizes the latest surface mount manufacturing technology to bring you economically priced SIMMs and memory products. Since we have complete control over the manufacturing process, you can count on our quality. Unlike other suppliers, we are manufacturers, not just box stuffers.

**Performance Add-ons**

- DayStar FastCache 111 299
- DayStar Accelerators Call
- 68651 PMMU w/Virtual 189

We sell many performance products but don’t have room to list them all. Please call for more information.

**Video & Monitors**

- Seiko Trinitron 14" 589
- Sony 1304 14" 699
- Ikegami Trinitron 19" 2299

Authorized Resellers of: Radius, RasterOps, and SuperMac resellers

**Why Third Wave?**

Third Wave uses only the highest quality, fastest, most reliable fixed drive mechanisms on the market. Some of our competitors ship unformatted drives or ship inferior user manuals. Third Wave, on the other hand, has strict drive test procedures and every drive is formatted and includes over 20mb of software. And when drives fail we provide one-day turnaround.

From our economically priced Standard enclosures to the largest capacity drive in our Premium enclosure, Third Wave offers the most complete line of drives for the Mac. Premium enclosures offer virtual silent fans, easy terminator access, and high quality metal chassis construction. Other features include international power supplies, zero footprint design, and good looks. You get what you pay for when you buy a storage system from Third Wave Computing.

**Performance Backup Systems**

Tape backup systems from 60mb to 2.3GB capacity. Award-winning Retrospect software is the heart of all our systems, offering the highest performance (from 3mb/min. to 14mb/min.) and most features of any backup software on the market. Network backup using Retrospect Remote also available.

**Best Removable & Combo Systems**

No one has a more complete selection of removable and combo storage solutions than Third Wave. Our Syquest removable is available in the economical Standard enclosure, the Premium enclosure, or as a dual Syquest drive system. Combo drives range from the 40mb Quantum with a Syquest or tape drive, all the way up to 1GB fixed drives with DAT or Optical drives. Combo drives are space-saving, money-saving options for the discriminating buyer who wants no compromises.

Third Wave Computing

1826-B Kramer Lane, Austin, Texas 78758 • 512-832-8282 FAX: 512-832-1533

Major Credit Cards, Govt., University, and Corp. FOS Accepted

Please circle 101 on reader service card.
## THIS MONTH'S SPECIALS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microtek 300ZS</td>
<td>$1,679</td>
</tr>
<tr>
<td>QMS-PS®410</td>
<td>$2,049</td>
</tr>
<tr>
<td>Quantum 170 Internal</td>
<td>$699</td>
</tr>
<tr>
<td>Qume ScriptTEN</td>
<td>$1,699</td>
</tr>
<tr>
<td>RasterOps ColorBoard 264*</td>
<td>$389</td>
</tr>
<tr>
<td>RasterOps ColorBoard 364*</td>
<td>$879</td>
</tr>
<tr>
<td>Radius 19&quot; Two Page Display</td>
<td>$1,299</td>
</tr>
<tr>
<td>SIMMS</td>
<td>$45</td>
</tr>
<tr>
<td>SyQuest Cartridges</td>
<td>$65</td>
</tr>
<tr>
<td>SyQuest Removable Drive</td>
<td>$489</td>
</tr>
<tr>
<td>Ti Microlaser PS 17</td>
<td>$1,599</td>
</tr>
<tr>
<td>Ti Microlaser PS 35</td>
<td>$1,799</td>
</tr>
</tbody>
</table>

### ACCELERATORS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DayStar Digital Fast Cache</td>
<td>$269</td>
</tr>
<tr>
<td>Radius Accelerator 16 for +, SE</td>
<td>$549</td>
</tr>
<tr>
<td>Radius Accelerator 25 for SE</td>
<td>$899</td>
</tr>
</tbody>
</table>

### FAX MODEMS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abaton Interfax Modem 24/96</td>
<td>$299</td>
</tr>
<tr>
<td>Dove 24/96 Fax Modem</td>
<td>$289</td>
</tr>
</tbody>
</table>

### HARD DISK DRIVES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imprimis MacWren 300</td>
<td>$1,299/$1,399</td>
</tr>
<tr>
<td>MacWren 300 Runner</td>
<td>$1,479/$1,579</td>
</tr>
<tr>
<td>MacWren 600</td>
<td>$1,749/$1,849</td>
</tr>
<tr>
<td>MacWren 1/2 Gig</td>
<td>$3,099/$3,199</td>
</tr>
<tr>
<td>Quantum TWO YEAR WARRANTY</td>
<td></td>
</tr>
<tr>
<td>Quantum 40</td>
<td>$328/$399</td>
</tr>
<tr>
<td>Quantum 90</td>
<td>$458/$539</td>
</tr>
<tr>
<td>Quantum 105</td>
<td>$499/$599</td>
</tr>
<tr>
<td>Quantum 120</td>
<td>$639/$699</td>
</tr>
<tr>
<td>Quantum 170</td>
<td>$699/$799</td>
</tr>
<tr>
<td>Quantum 210</td>
<td>$849/$959</td>
</tr>
</tbody>
</table>

### OPTICAL HARD DRIVES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnavox 14&quot; Color Monitor</td>
<td>$429</td>
</tr>
<tr>
<td>NEC Mac Sync 14&quot; Color Monitor</td>
<td>$435</td>
</tr>
<tr>
<td>Seiko 14&quot; Color Monitor</td>
<td>$589</td>
</tr>
<tr>
<td>Sony 1304 14&quot; Color Monitor</td>
<td>$675</td>
</tr>
</tbody>
</table>

### MONITORS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnavox TWO YEAR WARRANTY</td>
<td></td>
</tr>
<tr>
<td>14&quot; Color Monitor</td>
<td>$429</td>
</tr>
<tr>
<td>NEC Mac Sync 14&quot; Color Monitor</td>
<td>$435</td>
</tr>
<tr>
<td>Seiko 14&quot; Color Monitor</td>
<td>$589</td>
</tr>
<tr>
<td>Sony 1304 14&quot; Color Monitor</td>
<td>$675</td>
</tr>
</tbody>
</table>

### MEMORY

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMM SALE $45 FREE Installation Manual Included</td>
<td></td>
</tr>
</tbody>
</table>

### REMOVABLE DISK DRIVES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyQuest 42 Removable $449</td>
<td></td>
</tr>
<tr>
<td>cartridge not included Cartridges $65</td>
<td></td>
</tr>
</tbody>
</table>

### SCANNERS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microtek 300GS</td>
<td>$1,249</td>
</tr>
<tr>
<td>300ZS</td>
<td>$1,679</td>
</tr>
</tbody>
</table>

### UPS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Power Systems</td>
<td></td>
</tr>
<tr>
<td>Safe 250</td>
<td>$189</td>
</tr>
<tr>
<td>Safe 400S</td>
<td>$399</td>
</tr>
</tbody>
</table>

*While supplies last, this requires nubus adapter.

---

**Contact Information**

1-800-888-8779
24 Hour Fax Line 602-897-1921
4747 East Elliot Road, #29-461 • Phoenix, AZ 85044

All prices subject to change without notice. All products subject to availability.

Please circle 192 on reader service card.
Contact the professionals at MacTel Technology. We handle only the best in Macintosh hardware, systems and peripherals. Names like Apple, Nikon, Radius, RasterOps, Daystar, PLI, Sharp and our own, top-quality Index brand.

We provide services such as international sales, service and banking; competitive system quotes; our own research and manufacturing facility; and qualified, reliable technical support (before and after the sale.) It's no wonder if the vast majority of our business is repeat business.
**INDEX Hard Drives**

**conomy series**: bundled with formatting and testing software, all cables to plug-N-Go

- **Internal**
  - 40 Mb 12 ms: $279
  - 60 Mb 12 ms: $299
  - 80 Mb 12 ms: $429
  - 105 Mb 12 ms: $459
  - 170 Mb 12 ms: $799

- **External**
  - 30 Mb 12 ms: $969
  - 50 Mb 12 ms: $1099

**Quantum 3.5" ProDrive**

- 40 Mb 12 ms: $279
- 60 Mb 12 ms: $299
- 80 Mb 12 ms: $429
- 105 Mb 12 ms: $459
- 170 Mb 12 ms: $799

**Imprimis - Wren (Seagate)**

- 5.25" Professional Harddrives
  - 10 Mb 12 ms: $1099
  - 20 Mb 12 ms: $1499
  - 30 Mb 12 ms: $1699
  - 50 Mb 12 ms: $2499
  - 100 Mb 12 ms: $3799

**VisionPro Monitor Systems**

**When purchasing Systems, compare the options and features.**

- VisionPro Color Graphic cards are manufactured under license for Macintosh Technology and support Macintosh graphical needs now and in the future.

**Video Graphic Systems**

A. **8 Bit Business System.**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>VisionPro VideoCard, 10&quot; 2000</th>
<th>3.5&quot; 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Mb</td>
<td>$1999</td>
<td>$2199</td>
</tr>
<tr>
<td>16 Mb</td>
<td>$3799</td>
<td>$4199</td>
</tr>
<tr>
<td>32 Mb</td>
<td>$7999</td>
<td>$8599</td>
</tr>
</tbody>
</table>

B. **8 Bit SystemPro 20".**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>VisionPro VideoCard, 10&quot; 2000</th>
<th>3.5&quot; 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Mb</td>
<td>$2999</td>
<td>$3499</td>
</tr>
<tr>
<td>16 Mb</td>
<td>$5799</td>
<td>$6299</td>
</tr>
<tr>
<td>32 Mb</td>
<td>$12999</td>
<td>$13999</td>
</tr>
</tbody>
</table>

C. **8 Bit SystemPro 19".**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>VisionPro VideoCard, 19&quot; 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Mb</td>
<td>$3299</td>
</tr>
<tr>
<td>16 Mb</td>
<td>$5999</td>
</tr>
</tbody>
</table>

**Monitors**

- Selko 14" Trinitron CM 1445
- Hitachi 14" NVX Super
- Hitachi 14" NVX Super

**Video Interface/cards**

- 8-Bit Vision ST B13 for 13" or 14" Monitor...
- 24-Bit Vision ST B2413 for 13" or 14" Monitor...

**Macintosh CPU's and Systems**

- Mac Classic (fully loaded)
- Mac II (with mouse & 8 Mb SWM's)
- Mac IIc (with mouse & 8 Mb SWM's)
- Mac IIcx (with mouse & 8 Mb SWM's)
- Mac IIfx (with mouse & 8 Mb SWM's)
- Mac IIcx II INT, NIX & Personal LaserWriter
- Also fax for quote on complete Apple Macintosh producline

**Ordering Information**

- A MUST FOR IMPORTANT SERVERS.
- No exchanges to Visa or MasterCard. You card will not be charged until your order is ready to ship. International orders still a fax for delivery.
- European drop-in service available. For international orders, add 10% of invoice price for freight. Please allow 10 days for delivery.
- A MUST FOR IMPORTANT SERVERS.

**Hardware**

- **Applied Engineering**
  - 1.4 Mb Superfloppy Mac DiscDrive...
  - QuadralINK...
- **DayStar Digital**
  - Fast CACHE...
  - PowerCache 40...
  - PowerCache 50...
  - call for exchange prices...
- **Mactel Networking Products**
  - 10 Mb 12 ms $1199...
  - 20 Mb 12 ms $1899...
- **Syquest Technology**
  - Syquest SQ 400 Cartridges...
- **MacTel Extended Keyboards**
  - English...
  - German...
- **Microtek Scanners**
  - NSF 300 GS...
  - NSF 400 GS...
  - NSF 400 GS...
- **RasterOps**
  - Call for Pricing...

**Texas Instruments**

- MicroLaser Ps-17...
- MicroLaser Ps-35...

**MacTel Carries hundreds of Macintosh peripherals (not listed) and the entire Macintosh line.**

- Call or Fax for a complete catalog.
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARGUS IMAGEWRITER CASE</td>
<td>60.00</td>
</tr>
<tr>
<td>HP PAINTWRITER</td>
<td>1999.00</td>
</tr>
<tr>
<td>HP SCANJET PLUS</td>
<td>1425.00</td>
</tr>
<tr>
<td>IKEYGAMI-8 BIT SYSTEM</td>
<td>2695.00</td>
</tr>
<tr>
<td>INTERFA C MODEM 24/96</td>
<td>239.00</td>
</tr>
<tr>
<td>LABELWRITER</td>
<td>199.00</td>
</tr>
<tr>
<td>LITTLE MOUSE</td>
<td>70.00</td>
</tr>
<tr>
<td>MACRECORDER</td>
<td>150.00</td>
</tr>
<tr>
<td>MACSYNC MONITOR</td>
<td>499.00</td>
</tr>
<tr>
<td>MACTRAC PLUS</td>
<td>65.00</td>
</tr>
<tr>
<td>MACTRAC ADB</td>
<td>75.00</td>
</tr>
<tr>
<td>MACTRAC 3D</td>
<td>240.00</td>
</tr>
<tr>
<td>MICROTEX MSF-300GS</td>
<td>1399.00</td>
</tr>
<tr>
<td>MICROTEX MSF-3002S</td>
<td>1799.00</td>
</tr>
<tr>
<td>MICROTEX MSF-400GS</td>
<td>2599.00</td>
</tr>
<tr>
<td>NEC COLORFORM POSTSCRIPT</td>
<td>6199.00</td>
</tr>
<tr>
<td>NEC CD-R 2 KIT</td>
<td>775.00</td>
</tr>
<tr>
<td>NEC SILENTWIRE 2 MODEL A</td>
<td>1799.00</td>
</tr>
<tr>
<td>NEC SILENTWIRE 2 MODEL B</td>
<td>2799.00</td>
</tr>
<tr>
<td>NEWGEN TURBO PS300</td>
<td>3250.00</td>
</tr>
<tr>
<td>NEWGEN TURBO PS350</td>
<td>3399.00</td>
</tr>
<tr>
<td>NEWGEN TURBO PS400</td>
<td>3899.00</td>
</tr>
<tr>
<td>NEWGEN TURBO PS450</td>
<td>5200.00</td>
</tr>
<tr>
<td>ORCHID AXI FAX MODEM 24/95</td>
<td>399.00</td>
</tr>
<tr>
<td>HP DESKWRITER</td>
<td>659.00</td>
</tr>
<tr>
<td>HP PAINTJET</td>
<td>699.00</td>
</tr>
<tr>
<td>TARGUS IMAGEWRITER CASE</td>
<td>60.00</td>
</tr>
<tr>
<td>TURBO MOUSE</td>
<td>109.00</td>
</tr>
<tr>
<td>CLEARVUE II SYSTEM</td>
<td>199.00</td>
</tr>
<tr>
<td>CLEARVUE 4</td>
<td>1499.00</td>
</tr>
<tr>
<td>COLORBOARD 264</td>
<td>525.00</td>
</tr>
<tr>
<td>COLORBOARD 264-SE/30</td>
<td>599.00</td>
</tr>
<tr>
<td>COLORBOARD 364</td>
<td>1399.00</td>
</tr>
<tr>
<td>DAYSTAR 256 I/O 320 I/O proc</td>
<td>1599.00</td>
</tr>
<tr>
<td>DAYSTAR 400 I/O 320 I/O</td>
<td>1799.00</td>
</tr>
<tr>
<td>DAYSTAR 400'300 I/O proc</td>
<td>2159.00</td>
</tr>
<tr>
<td>DAYSTAR 500 I/O 300 I/O proc</td>
<td>2599.00</td>
</tr>
<tr>
<td>DAYSTAR FAST CACHE</td>
<td>299.00</td>
</tr>
<tr>
<td>DICONIX JET PRINTER</td>
<td>459.00</td>
</tr>
<tr>
<td>DOYFAX 2496 EXTERNAL</td>
<td>239.00</td>
</tr>
<tr>
<td>E-MACH 211 I/Q MACII</td>
<td>2499.00</td>
</tr>
<tr>
<td>E-MACH TIC/CARD/STAND</td>
<td>2296.00</td>
</tr>
<tr>
<td>ETHERPORT II, MACII</td>
<td>339.00</td>
</tr>
<tr>
<td>GRAFLEX</td>
<td>79.00</td>
</tr>
<tr>
<td>HOWTEX PERSONAL COLOR PRINTER</td>
<td>2298.00</td>
</tr>
<tr>
<td>HP DESKWRITER</td>
<td>659.00</td>
</tr>
<tr>
<td>OM S COLORSRCRPT 100 MODEL 10</td>
<td>2799.00</td>
</tr>
<tr>
<td>OM S PS810 TURBO PRINTER</td>
<td>2999.00</td>
</tr>
<tr>
<td>OM S PS810 3MB PRINTER</td>
<td>4599.00</td>
</tr>
<tr>
<td>OM S PS810 LASER PRINTER</td>
<td>2999.00</td>
</tr>
<tr>
<td>OM S PS820 LASER PRINTER</td>
<td>4899.00</td>
</tr>
<tr>
<td>OM S PS820 TURBO PRINTER</td>
<td>4899.00</td>
</tr>
<tr>
<td>QUICKTEL 2400 BAUD</td>
<td>120.00</td>
</tr>
<tr>
<td>QUICKTEL 4600 BAUD SENDFAX</td>
<td>499.00</td>
</tr>
<tr>
<td>QUME CRYSTAL PRINT EXPRESS</td>
<td>1799.00</td>
</tr>
<tr>
<td>QUME CRYSTAL PRINT PUBLISHER II</td>
<td>2550.00</td>
</tr>
<tr>
<td>SCAMMAN</td>
<td>339.00</td>
</tr>
<tr>
<td>SEKOSA 2000 PRINTER</td>
<td>215.00</td>
</tr>
<tr>
<td>SIGMA L-VIEW MULTIMEDE</td>
<td>1410.00</td>
</tr>
<tr>
<td>SIGMA PAGESVIEWS 15', SE30</td>
<td>899.00</td>
</tr>
<tr>
<td>SIGMA SILVERVIEW 21', MONO</td>
<td>1499.00</td>
</tr>
<tr>
<td>SIGMA SILVERVIEW GREYSCALE, MAC C1799</td>
<td>699.00</td>
</tr>
<tr>
<td>SONY 1902</td>
<td>535.00</td>
</tr>
<tr>
<td>SONY 1904</td>
<td>599.00</td>
</tr>
<tr>
<td>TOSHIBA CD ROM</td>
<td>699.00</td>
</tr>
<tr>
<td>TYPETTY</td>
<td>499.00</td>
</tr>
<tr>
<td>UMAX COLOR SCANNER</td>
<td>1500.00</td>
</tr>
<tr>
<td>ADOBE TYPE FACES</td>
<td>CALL</td>
</tr>
<tr>
<td>ADOBE PHOTOSHOP</td>
<td>CALL</td>
</tr>
<tr>
<td>CANVAS V2.0</td>
<td>179.00</td>
</tr>
</tbody>
</table>

**QuarkXpress 3.0**

- Easy to Learn and Use
- Precise Typographical Controls
- Professional Color Support
- Advanced Text-Handling
- Superior Picture-Handling Features
- Page Composition Flexibility
- 300 Dots per inch resolution
- Supports AppleTalk and Serial

**Now Only $699**

**Adobe Illustrator 3.0**

- The page creation and layout solution!
- Features include Technical Illustration, FreeHand Sketching, Automatic Scanned Image-Tracking, Blending Tools and more. New Text-Handling tool allows direct, on-screen entering and manipulation of text. The new Graphics tool lets you create, manipulate and customize presentation quality charts and other graphics.
- Includes FREE copy of Adobe Type Manager.

**$499**

**MICROPHONE II**

- New version of top-selling telecom software.
- Build graphic front ends to remote services and corporate mainframes.

**$219**

**9600 BAUD MODEM**

- From Practical Peripherals
- Full Duplex
- V.42bis Error Correction
- MNP 5 Data Compression System Guarantee

**$499**
1. Toll-free Customer Service.
2. Qualified personnel will help you find the right products.
3. Our Corporate Sales Office welcomes Educational, Corporate and Aerospace Purchase Orders.

CRICKET DRAW V1.1 ........................................ 185.00
CRICKET GRAPH V1.3 .................................. 120.00
DESIGN CAD 2D/3D .................................. 339.00
FONTOPHILE ........................................ 245.00
FREEHAND 2.0 ........................................... 325.00
MACROMIND DIRECTOR ................................ 420.00
MINDCADD ............................................ 599.00
OMNIDRAFT .......................................... 65.00
OMNIPAGE V2.0 ..................................... 510.00
OMNIPROOF ............................................. 99.00
OMNISELL ............................................. 85.00
PAGEMAKER 4.0 ...................................... 499.00
PHOTOGRAPH ........................................... 325.00
PIXEL PAINT PROF. .................................. 375.00
SUPERPAINT V2.0 .................................... 125.00
TYPESTYLER ........................................... 110.00

BUSINESS/PRODUCTIVITY
4TH DIMENSION ....................................... 469.00
At ONCE .............................................. 275.00
EXCEL V 2.2 .......................................... 249.00
FOXBASE+ MAC SINGLE .............................. 285.00
MACTOOL ............................................. 295.00
POWERPOINT V2.0 .................................. 125.00
QUICKEN ............................................. 159.00

PROGRAMMING/UTILITIES
FREE MEMORY PRINT ................................. 216.00
MACLINK PLUS ....................................... 110.00
MACPRINT ........................................... 90.00
MACSHELL ............................................. 90.00
MACSPRINT ......................................... 105.00
MACSYSTEM ......................................... 199.00
MAINTENANCE 2 ...................................... 199.00
MACPAK ............................................... 105.00
SUPERPAINT V2.0 .................................... 125.00
ULTRASPRINT MAC .................................. 112.00

$159
5-USERS
$220
10-USERS
PREMIUM BRAND-NAME PRODUCTS AND A NEW, AFFORDABLE OPTION: REALTECH™

"I only sell names you can trust: RasterOps, Ikegami, Microtek, Texas Instruments, Seiko, Sharp, and others. And now there's RealTech™ (my "house brand") ...premium quality at an affordable price.

I PERSONALLY GUARANTEE you'll be pleased with the power, performance, and competitive price of RealTech products. They're:

- 40-60% LESS than the comparable Apple product. (Designed to Apple specifications, and compatible with all Apple equipment.)
- Backed by a ONE-YEAR WARRANTY with an optional two-year add-on.
- Backed by my personal guarantee and return shipping policy: Try your RealTech product for 30 days. If you’re not absolutely satisfied, give me a call. I’ll gladly refund the purchase price...and I’ll even pay the return shipping costs."

RealTech Dual Page 21" Display  No more squinting and scrolling! Seeing two pages at once will save you hours of time. The latest in flicker-free monochrome technology provides true WYSIWYG! 21" landscape display with 1152 x 870 resolution, 72 dpi. Vertical refresh rate of 75 Hz, full gray scale capability, and flat CRT (P4 phosphorus, polished screen). One-year warranty.

RealTech Full Page Display  At this price, you can't afford not to have one of these incredible eyesavers! Quality, flicker-free images at a price that lets you experience the convenience of large-screen viewing.

- 15" portrait display
- 870 x 640 resolution, 80 dpi
- Vertical refresh rate of 74 Hz
- Full gray scale capability
- Flat CRT, P4 phosphorus, polished screen
- One-year warranty

<table>
<thead>
<tr>
<th>CPU</th>
<th>Monitor</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac SE</td>
<td>Mono</td>
<td>$995</td>
</tr>
<tr>
<td>Mac II, Ilcx, Ilci, Ilx, Ilfx, SE30</td>
<td>GS 256</td>
<td>$1479</td>
</tr>
<tr>
<td>Mac Ilci</td>
<td>Mono</td>
<td>$1059</td>
</tr>
<tr>
<td>Mac Portable</td>
<td>Mono</td>
<td>$1249</td>
</tr>
</tbody>
</table>

Powerful, affordable laser printing...from TI’s compact microLaser PostScript printers.

- 300 dpi with HP LaserJet Series II emulation standard. 1.5 Mb RAM upgradable to 4.5 Mb RAM.
- Optional accessories: 2nd paper tray, separate envelope tray!

$2749
XL PS 17

TI microLaser™ XL PS 17
16 pgs/min.; 35 resident fonts; 25,000 pgs./mo. duty cycle
$1695
PS 17

TI microLaser™ PS 17
6 pgs./min.; 17 resident fonts; 3,000 pgs./mo. duty cycle
$579
Our buying power gives you your buying power!

$619
Seiko 14" Trinitron

Amazing color. High-resolution Trinitron tube makes it possible to view 16 million shades of color!
- 640 x 480 resolution
- 14" display, 72 dpi
- integrated tilt & swivel base
43% brighter than the leading competitor!

$1619
RasterOps ClearVue/GS (Grayscale Monitor)

Unmatched image quality! Flicker-free images in 256 shades of gray for accurate proofing. Includes Virtual Desktop and Pan/Zoom features for maximum productivity!
- 1024 x 768 resolution
- 19" display, 72 dpi
- paper-white phosphor
- integrated tilt & swivel base
- 75 Hz vertical refresh rate
Zoom in to check details!

An incredible price for the latest technology in large-screen color viewing!

Ikegami 19" Trinitron Color Systems!
New generation Trinitron technology... superior to other Trinitrons currently available. Ikegami—the market leader in grayscale monitors—introduces the undisputed champ in color reproduction. Each system comes with an integrated tilt/swivel stand, and auto and manual degaussing. Full antiglare coating, 75 Hz vertical refresh rate, and flicker-free images reduce eye strain and improve user comfort. Coupled with a high resolution 1024 x 768 video card, this combination is the top-of the-line color solution available today.

RasterOps

ClearVue (Mac II) .................................................. 1149
ClearVue SE w/16MHz 68000 Accelerator .......................... 1379
ColorBoard 208 .................................................. 359
ColorBoard 264 II .............................................. 539
ColorBoard 264 SE030 ......................................... 649
ColorBoard SE024 ................................................ 949
SE0 24-bit 14" Trinitron ........................................ 1269
FrameGrabber (NTSC) ........................................... 729
14" Trinitron 24-bit ............................................. 1159
16" Trinitron 8L .................................................. 3795
19" Trinitron 8L .................................................. 3950
19" Trinitron 24L ................................................ 4990
Pro Video 32 ..................................................... 1439

FREE CONSULTATION to help you answer these 3 questions and determine the ideal combination of hardware for your exact needs.
1. What combination of CPU, HD, monitor & video card best fits your needs?
2. How much RAM will be enough?
3. 8-bit vs. 24-bit, which is for me?

MONITORS w/Cards
Magnavox 14" w/8-bit ........................................... 918
NEC Macsync 14" w/8-bit .................................... 869
Sony Trinitron 1304 14" w/8-bit ................................ 1095

Other monitors available! Please call.
### Guaranated: If you don't like it

**Systems**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac Classic</td>
<td>2.5 Mb RAM, 40 Mb Hard Drive, Apple Keyboard</td>
<td>$1385</td>
</tr>
<tr>
<td>Mac II GS Dual-Page</td>
<td>8 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard</td>
<td>$12,995</td>
</tr>
<tr>
<td>Mac IIc GS Dual-Page</td>
<td>8 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard</td>
<td>$6699</td>
</tr>
<tr>
<td>Mac IIc 19” Trinitron</td>
<td>8 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard</td>
<td>$8219</td>
</tr>
<tr>
<td>Mac IIc 19” Trinitron</td>
<td>8 Mb RAM, 105 Mb Quantum, Mac 101 Keyboard</td>
<td>$8769</td>
</tr>
<tr>
<td>Mac IIc 21” B&amp;W Dual-Page</td>
<td>4 Mb RAM, 170 Mb Hard Drive, Mac 101 Keyboard</td>
<td>$8949</td>
</tr>
<tr>
<td>Mac II 21” B&amp;W Dual-Page</td>
<td>4 Mb RAM, 170 Mb Hard Drive, Datadesk Switchboard</td>
<td>$6699</td>
</tr>
<tr>
<td>Mac SE/30 System</td>
<td>105 Mb Quantum, Datadesk Switchboard, MicroTek 300ZS 24-bit Color Scanner</td>
<td>$3859</td>
</tr>
<tr>
<td>Mac IIfx with 8Mb RAM</td>
<td>8 Mb RAM, RasterOps Video Card, 24-bit Color Monitor, Datadesk Switchboard</td>
<td>$24,895</td>
</tr>
</tbody>
</table>

- **Classic**: 4 Mb RAM, 40 Mb Hard Drive...
- **Mac II GS**: 4 Mb RAM, 105 Mb Hard Drive...
- **Mac SE/30**: 5 Mb RAM, 105 Mb Quantum...
- **Mac IIc**: 8 Mb RAM, 105 Mb Quantum...
- **Mac IIfx**: 8 Mb RAM, RasterOps Video Card...

Our dedicated, highly-trained service technicians are some of the finest in the country.

We specialize in high-end graphics systems.

Mac IIfx with 8Mb RAM, RasterOps Video Card, Trinitron 19” Color Monitor, RasterOps Video Accelerator with 4 Mb RAM, 650 Mb Internal Hard Drive, Datadesk Mac 101 Keyboard, MicroTek 300ZS 24-bit Color Scanner, QMS ColorScript 100 Thermal Color Printer with 8 Mb RAM

**Guaranteed**: If you don't like it
RealTech 24-Bit Color Scanner
(includes Adobe Photoshop LE)

Versatile, full-featured desktop flatbed scanner can handle color, gray-scale, line art and text at a price/performance level superior to any other color scanner. Uses a single light source, for scanning without vertical color offset. 300x300 dpi resolution (in increments of 3 dpi). Scales 1% to 100%.

- 16.8 million colors, 256 shades of gray
- Scanning speed 80 seconds (letter size)

**$1599**

Affordable options to enhance your system.

<table>
<thead>
<tr>
<th>SCANNERS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Microtek MS II</td>
<td>1129</td>
</tr>
<tr>
<td>Microtek MS 300GS (256GS)</td>
<td>1329</td>
</tr>
<tr>
<td>Microtek MS 300ZS</td>
<td>1895</td>
</tr>
<tr>
<td>Microtek Transparency Conv.</td>
<td>.......1895</td>
</tr>
<tr>
<td>XRS Transparency Scanner</td>
<td>3950</td>
</tr>
<tr>
<td>ScanMan M32</td>
<td>369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACC &amp; OTHER PERIPHERALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurta 12 x 12 Tablet</td>
<td>399</td>
</tr>
<tr>
<td>Kurta 17 x 12 Tablet</td>
<td>659</td>
</tr>
<tr>
<td>MacFlip (80 diskettes)</td>
<td>18</td>
</tr>
<tr>
<td>Mac 101 Keyboard</td>
<td>149</td>
</tr>
<tr>
<td>Switchboard</td>
<td>195</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERIPHERAL LAND</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.44 Mb Floppy</td>
<td>329</td>
</tr>
<tr>
<td>Infinity Turbo 40</td>
<td>799</td>
</tr>
<tr>
<td>Infinity Dual Turbo 40</td>
<td>1850</td>
</tr>
<tr>
<td>PL 200 Int.</td>
<td>1463</td>
</tr>
<tr>
<td>PL 250 Int.</td>
<td>1763</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CDC HARD DRIVES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Int 325 Mb</td>
<td>1749</td>
</tr>
<tr>
<td>Int 330 Mb (Wren Runner)</td>
<td>2150</td>
</tr>
<tr>
<td>Int 650 Mb</td>
<td>2295</td>
</tr>
<tr>
<td>Ext 325 Mb</td>
<td>1899</td>
</tr>
<tr>
<td>Ext 650 Mb</td>
<td>2295</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TARGUS PREMIUM CASES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IW II Case</td>
<td>49</td>
</tr>
<tr>
<td>Mac Plus Case</td>
<td>59</td>
</tr>
<tr>
<td>SE Extended KB Case</td>
<td>75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REALTECH HARD DRIVES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable drives at a reasonable price. We exclusively use Quantum mechanisms for maximum performance. Backed by a 2-year warranty, Internal Hard Drives 40Q</td>
<td>369</td>
</tr>
<tr>
<td></td>
<td>80Q</td>
</tr>
<tr>
<td></td>
<td>105Q</td>
</tr>
<tr>
<td></td>
<td>170Q</td>
</tr>
<tr>
<td>External Hard Drives</td>
<td></td>
</tr>
<tr>
<td>40Q</td>
<td>479</td>
</tr>
<tr>
<td>80Q</td>
<td>639</td>
</tr>
<tr>
<td>105Q</td>
<td>699</td>
</tr>
<tr>
<td>170Q</td>
<td>999</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZOOM MODEMS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All with software included:</td>
<td></td>
</tr>
<tr>
<td>Zoom 2400</td>
<td>99</td>
</tr>
<tr>
<td>Zoom 2400 w/sendfax</td>
<td>119</td>
</tr>
<tr>
<td>Zoom V.42 bis</td>
<td>179</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EVEREX</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAC 60T (Tape Back-up)</td>
<td>665</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DAYSTAR ACCELERATORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac II, Mac IIx</td>
<td></td>
</tr>
<tr>
<td>25 Mhz</td>
<td>1095</td>
</tr>
<tr>
<td>40 Mhz</td>
<td>1619</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>2195</td>
</tr>
<tr>
<td>Mac IIx (w/Ship &amp; Install)</td>
<td>1739</td>
</tr>
<tr>
<td>25 Mhz</td>
<td>2249</td>
</tr>
<tr>
<td>40 Mhz</td>
<td>2795</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>2795</td>
</tr>
<tr>
<td>Mac Iic</td>
<td></td>
</tr>
<tr>
<td>40 Mhz</td>
<td>1169</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>2195</td>
</tr>
<tr>
<td>Fast Cache Iic</td>
<td>279</td>
</tr>
<tr>
<td>RAM Powercard</td>
<td>729</td>
</tr>
<tr>
<td>1 Megabyte SIMMS</td>
<td>Call</td>
</tr>
<tr>
<td>4 Megabyte SIMMS</td>
<td>Call</td>
</tr>
</tbody>
</table>

| EMAC 150T Tape Back-up | $865   |

6 REASONS TO ORDER FROM US (besides saving money!)

1. 30-day money back guarantee on all hardware (except for special-order items). No ifs, ands, or buts!
2. Toll-free tech support when you need advice or want to order.
3. Pay when shipped... We charge your credit card only when your order is shipped—not when you place the order.
4. Overnight delivery when you need it.
5. Business leasing available.
6. Installation & training anywhere in the U.S.

"WE'RE NOT HAPPY (unless you are!)

We want you to become a repeat customer. So we give you discount mail-order prices...superior service & selection...an unbeatable hassle-free warranty...toll-free tech support...and an unsurpassed return policy. What's more, we do it all with a smile...because that's what you deserve.

Several members of our management team (l to r): Barbara, Jim, Lew, Real.

WE'LL BUY IT BACK!

Please circle 162 on reader service card.
To make your Mac more affordable, we offer leasing plans to fit your budget. To make your Mac more cost-effective, we offer custom system configurations, so every bundled system is just the way you want it.

FREE! A $31.99 value with every new system.

- FINANCING
- CUSTOM SYSTEM CONFIGURATIONS
- TOLL-FREE TECHNICAL SUPPORT
- 30-DAY MONEY-BACK GUARANTEE* ONE YEAR WARRANTY
- ONE TO FIVE YEAR LEASING
- NO SURCHARGE ON VISA/MC/AMEX/DISCOVER

**We Guarantee the Lowest Prices on Mac Systems**

**MAC II fx**
- 4MB RAM, 170 MB Quantum
- RasterOps 19” Color Monitor, 8-bit Color, Datadesk Switchboard
- $11,499
  - $259/mo.

**MAC IIci**
- 8MB RAM, 170 MB Quantum
- NEC 14” MacSync, RasterOps 264
- 24-bit Color, Keytronic 105 Keyboard
- $6,129
  - $138/mo.

**MAC SE/30**
- 4MB RAM, 40 MB Quantum
- Keytronic 105 Keyboard
- $3,125
  - $70/mo.

**MAC Ilsi**
- 5MB RAM, 105 MB Quantum
- Apple RGB 13” Color Monitor, 8-bit Color, Keytronic 105 Keyboard
- $4,249
  - $95/mo.

**MAC Classic**
- Classic 2MB RAM, 40 MB Hard Drive, FDHD, Classic Keyboard
- $1,259

**PRINTERS**
- OMS PS-410/810
- ColorScript 100
- MicroTek 300ZS (w/ ColorStudio)
- MicroTek 300GS
- MicroTek 400GS
- Aladdin Scan/Color
- MicroTek 300GS (24-bit color with Color Mac Kit)
- $2,999

**MONITORS**
- NEC MacSync 14”
- RasterOps 264/364 ColorCard
- RasterOps BL 19” w/ 8-bit color
- RasterOps 24L 19” w/ 24-bit color
- ImageWriter II Clone
- Qume Crystal Print Publisher II
- Dume Crystal Print Express
- TI MicroLaser PS 17/35
- Hitachi 14 MVX 14” Hi-Res Monitor
- Sony 1304 14” Color Monitor
- $1364

**SCANNERS**
- MicroTek 300ZS (w/ ColorStudio)
- MicroTek 300GS
- MicroTek 400GS
- Aladdin Scan/Color
- MicroTek 300GS (24-bit color with Color Mac Kit)
- $2,999

**HARD DRIVES**
- PROSERIES
- QUANTUM
- 40 MB
- 105 MB
- 210 MB
- 16 MB
- Special Apple 40 MB Internal
- DAYSTAR Fast ache 1140
- Fast ache 40 Mhz
- Fast ache 50 Mhz
- $1599/$1999

**THE CORK 30™**
- Upgrades your 512KE, Plus, or SE to a Iici, Totally Mac compatible.
- $6,129
  - $138/mo.

**MAC Ilsi**
- 2MB RAM, 40 MB HardDrive, Apple RGB 12” Color Monitor, Keytronic 105 Extended Keyboard
- $3,290
  - $75/mo.

**MAC IIcfx**
- 40 MB RAM, 105 MB Quantum, 8-bit Color, Keytronic 105 Keyboard
- $5,499
  - $125/mo.

Texas Residents Add 8%. All products shipped UPS unless otherwise specified. *All products returned are subject to a substantial restocking fee. Returns must be in original condition and package. Seti must not be opened on software products. No returns on opened software. No returns on damaged equipment. Returns will not be accepted without Return Merchandise Authorization number. All prices subject to change without notice.
THIS IS A SMALL SAMPLE OF WHAT WE STOCK - CALL!

WE ONLY CARRY THE VERY LATEST VARIETY OF PRODUCTS
DHL OVERNIGHT DELIVERY - 24-HOUR FAX LINE: 203-380-0197

Check Our Low Prices. Most Of Our Prices Are
The Lowest In This Magazine. If We Don't
Already Have The Lowest Price, We Will Try
To Match And Beat Any Advertised Price! *

BUSINESS

4th Dimension ...458
Access PC 1.0 ...60
Accountant Inc.
Professional 1.0 ...50
Addres Book Plus 2.0 ...60
Ac1a Advaniagc 1.02 ...60
Address Book Plus 2.0 ...50

Check Out Our Low Prices. Most Of Our Prices Are
The Lowest In This Magazine. If We Don't
Already Have The Lowest Price, We Will Try
To Match And Beat Any Advertised Price! *

POLICIES

1. VISA, MASTERCARD or DISCOVER accepted. No surcharges. Your card is not charged until we ship.

2. If your order is a partial order, there's no second shipment charge.

3. All items are subject to availability.

4. No sales tax charged for out-of-state orders.

5. COD maximum $5,000, cash or personal check, COD orders over $250 require a UPS Blue Label unless UPS Ground delivery next day.

6. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

7. COD orders subject to availability.

8. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

9. COD orders subject to availability.

10. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

11. COD orders subject to availability.

12. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

13. COD orders subject to availability.

14. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

15. COD orders subject to availability.

16. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

17. COD orders subject to availability.

18. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

19. COD orders subject to availability.

20. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

21. COD orders subject to availability.

22. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

23. COD orders subject to availability.

24. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

25. COD orders subject to availability.

26. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

27. COD orders subject to availability.

28. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

29. COD orders subject to availability.

30. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

31. COD orders subject to availability.

32. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

33. COD orders subject to availability.

34. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

35. COD orders subject to availability.

36. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

37. COD orders subject to availability.

38. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

39. COD orders subject to availability.

40. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

41. COD orders subject to availability.

42. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

43. COD orders subject to availability.

44. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

45. COD orders subject to availability.

46. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

47. COD orders subject to availability.

48. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

49. COD orders subject to availability.

50. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

51. COD orders subject to availability.

52. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

53. COD orders subject to availability.

54. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

55. COD orders subject to availability.

56. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

57. COD orders subject to availability.

58. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

59. COD orders subject to availability.

60. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

61. COD orders subject to availability.

62. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

63. COD orders subject to availability.

64. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

65. COD orders subject to availability.

66. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

67. COD orders subject to availability.

68. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

69. COD orders subject to availability.

70. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

71. COD orders subject to availability.

72. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

73. COD orders subject to availability.

74. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

75. COD orders subject to availability.

76. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

77. COD orders subject to availability.

78. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

79. COD orders subject to availability.

80. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

81. COD orders subject to availability.

82. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

83. COD orders subject to availability.

84. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

85. COD orders subject to availability.

86. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

87. COD orders subject to availability.

88. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

89. COD orders subject to availability.

90. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

91. COD orders subject to availability.

92. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

93. COD orders subject to availability.

94. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

95. COD orders subject to availability.

96. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

97. COD orders subject to availability.

98. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

99. COD orders subject to availability.

100. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

101. COD orders subject to availability.

102. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

103. COD orders subject to availability.

104. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

105. COD orders subject to availability.

106. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

107. COD orders subject to availability.

108. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

109. COD orders subject to availability.

110. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

111. COD orders subject to availability.

112. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

113. COD orders subject to availability.

114. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

115. COD orders subject to availability.

116. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

117. COD orders subject to availability.

118. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

119. COD orders subject to availability.

120. COD orders over $250 require a UPS Blue Label unless UPS Ground delivery.

DISCOUNTS BY MAIL. Circle the items in our ad you want, send the ad in with the coupon below and receive $1.00 off each item! (subject to the conditions below)

If Ordering At The Last Minute, Our Air Express Service Can Rush Your Software/Hardware To You.

Discounts By Mail Department
Macsavings, 60 P Access Road, Suite #101, Stratford, CT 06497
TO BE ELIGIBLE FOR THE $1.00 PER ITEM DISCOUNT YOU MUST:

1. Fill out all items.
2. Send in our ad with the items you desire circled.

Name
Address (include company name)
City State Zip
Phone No., at above address
Check form of payment.

VISA MasterCard DISCOVER D.D.D.D.

D.D.D.D. Personal Check Certified Check Money Order

Card No._Exp. Date

Personal and company checks should show the bank's cashier's, teller's, or money order check, or money order (except D.O.D.).

Discounts By Post. Must be in hand by 10:00 EST Monday morning. Please circle the items you desire with the ad in your hand and mail to:

Macsavings, 60 P Access Road, Suite #101, Stratford, CT 06497
TO BE ELIGIBLE FOR THE $1.00 PER ITEM DISCOUNT YOU MUST:

1. Fill out all items.
2. Send in our ad with the items you desire circled.

Name
Address (include company name)
City State Zip
Phone No., at above address
Check form of payment.

VISA MasterCard DISCOVER D.D.D.D.

D.D.D.D. Personal Check Certified Check Money Order

Card No._Exp. Date

Please circle 46 on reader service card.
## MacUser Directory

### RS# | ADVERTISER | PAGE
--- | --- | ---
61 | Abaton | 35
128 | Abbott Systems, Inc. | 4
375 | Abra MacSoftware | 317
30 | ACIUS, Inc. | 15
84 | Add On America | 316
89 | Advance Business Centers | 214
102 | AEC Management Systems, Inc. | 214
183 | Ableware Systems, Inc. | 99
N/A | Ailus | 127
N/A | Alliance Peripheral Systems | 314-315
71 | ALSofT, Inc. | 199
394 | Delphi, Inc. | 92
418 | Animals | 63
90 | Articulate Systems | 37
37 | Art of the Card | 24
N/A | Bottom Line Distribution | 287
N/A | Broderbund Software | 256
105 | Cambridge Group | 10
72 | Casady & Greene, Inc. | 78
104 | Casady & Greene, Inc. | 78
117 | CDA Computer Sales | 212-213
121 | Central Point Software | 256-259
N/A | CheckFree | 23
400 | Chin phen, Inc. | 12
82 | ChipSoft | 100-201
N/A | Claris | 153-155
N/A | Claris | 153-155
120 | CompuServe | 229
133 | Computer Associates/Bedford | 164
22 | CoStar Corporation | 21
23 | CoStar Corporation | 21
376 | Curtis Manufacturing | 38
N/A | Custom Applications, Inc. | 38
138 | Dantz Development | 240
146 | DataVis | 205
125 | Dayna | 205
159 | Daystar Digital | 248
160 | Daystar Digital | 248
161 | Daystar Digital | 248
185 | Deriba Software | 17
121 | Diskette Connection | 294
34 | Dow Jones News/Retrieval | 280
211 | Dr. Mac | 143-131
369 | Dubit-Dick | 58
170 | Dynaware USA, Inc. | 129
152 | E-Mac | 151
168 | Eastman Kodak | 129
184 | Elwell | 21
188 | Emtum | 235
154 | EMAC | 42
44 | Engineered Software | 242
N/A | Epson | 125-251
178 | Farallon | 96
197 | Fifth Generation | 265
157 | Fifth Generation | 32
195 | GCC Technologies | 61
96 | GCC Technologies | 59
18 | GD Technologies, Inc. | 242
13 | Generic Software | 192
90 | Good Day | 248
138 | Global Village Communications | 198
15 | Golden Triangle | 318
197 | Hard Drive International | 256-297
373 | Hard Drive International | 256-297
N/A | Hewlett-Packard | 72-73
N/A | Hewlett-Packard | 72-73
N/A | Hewlett-Packard | 72-73
N/A | Image Tech Graphics, Inc. | 199
155 | Insignia Software, Inc. | 196
79 | IDS LaserJet Technology | 186-187
135 | Intel | 125
81 | Intergraph | 259
363 | International Business Software | 56
141 | IOMEGA | 243
145 | Jasmine Technologies | 114-115
385 | Kensington Micros | 257
387 | Kensington Micros | 257
414 | La Cie | 93
141 | La Cie | 93
415 | Laser/MAX Systems | 127
360 | Lifeset Software | 14
116 | Lotus | 145

### MacUser Directory

### RS# | ADVERTISER | PAGE
--- | --- | ---
394 | Mac and More | 252
N/A | MacAverage | 216-220
77 | MacCenter | 300
N/A | MacConnection | 76-76
379 | MacDepot | 277-277
110 | MacFriends | 232
111 | MacFriends | 236
113 | MacFriends | 238
108 | MacFriends | 328
109 | MacFriends | 359
51 | MacLand | 288-289
132 | MacProducts USA | 255-258
25 | MacroMind | 42-42
N/A | Mac's Place | 302-310
46 | MacSaving | 283
39 | MacTel Corporation | 274-275
16 | MacTown | 294
152 | MacWarehouse | 169-177
N/A | Mace | 48-56
45 | MECA Software, Inc. | 57
144 | Microsoft Corporation | 160-173
33 | MicroNet Technologies, Inc. | 147
N/A | Microsoft | 72
177 | MicroTech International | 144
190 | Microsoft Lab, Inc. | 107
138 | Microsoft Systems | 156-157
138 | Microsoft Systems | 156-157
69 | Mohitous Technologies, Inc. | 223
134 | Monitor Websites | 133
43 | New Technology | 164
26 | New Software | 163
140 | Jetta Corporation | 245
144 | Jetta Corporation | 245
6 | On Technology | 50
357 | Outback Computer Systems | 317
60 | Oracle | 34
11 | Orange Micro | 58
19 | Orange Micro | 131
N/A | Pacific Data Products | 225
65 | Paccotec, Inc. | 139
59 | Passport | 64
36 | PCF | 136
36 | Peachtree Software | 139
137 | Peripherals Division | 183
15 | Platypus, Inc. | 141
31 | Preffered Computing | 233
174 | Prodigy Products, Inc. | 65
281 | QMS | 281
406 | Quark, Inc. | 185
141 | Radius | 253
56 | Reference Service | 31
29 | RockWare, Inc. | 316
286 | Software | 253
130 | Software | 253
187 | Sigma Designs | 78
53 | Silicon Beach | 165
144 | Software/BLDC | 69
8-9 | Software | 69
184 | Software/BLDC | 8-9
182 | Software That Fits | 278-281
139 | Synapsis | 36-37
26 | Synapsis | 277
40 | Synapsis | 38
40 | Synapsis/Peter Norton | 262
131 | Symmetry Corporation | 22
45 | SYNX | 33
87 | T/Model | 34
156 | Technology Works | 267
47 | Tektronix | 220-228
243 | Texas Instruments | 113
173 | Texas MacStuf | 282
101 | Third Wave Computing | 272
223 | Timeworks, Inc. | 223
41 | Total Systems | 30
124 | Tri-Data Systems, Inc. | 163
192 | U.S. Computer Merchants | 273
300 | Venture Technologies | 319
20 | Vacom, Inc. | 140
N/A | Warehouse 54 | 301
361 | Zedcor | 96

### Ad Index

**National**
- Robert J. Nolan, Associate Publisher (415) 378-5539
- Lee J. Unisak, Advertising Sales Manager (415) 378-5592
- Ken Riske, Advertising Coordinator (415) 378-5506
- Kathryn Humbert, Classified Advertising Director (212) 503-5113

**East**
- North East (MA, ME, NH, RI, VT, CT, east Canada)
  - Cambridge, Dist. Manager
  - 4 Cambridge Center, Third Floor
  - Cambridge, MA 02142
  - (617) 437-2336
- Nancy Orman, Account Representative (415) 378-5677
- Mid-Atlantic/Southeast (NY, NJ, PA, DE, MD, DC, VA, WV, NC, GA, FL)
  - Angie M. Turco, Jr., District Manager, Origin. Code
  - 120 W. 40th St.
  - New York, NY 10018
  - (212) 593-5419
- Mimi Shank, Account Representative (415) 378-5687
- Central (WI, MI, OH, MI, IA, ND, SD, AL, MS, TN, MI, OK, KS, IL, KY, LA, RE, AR, TX, central Canada)
  - Stephen Sture, District Manager, 3990 Sherry Lane
  - Dallas, TX 75225
  - (214) 691-6934
- Leslie Hutchison, District Manager 9505 Towne Lane, 10th Floor
  - Foster City, CA 94404
  - (415) 378-5689

**West**
- Northwest (CA) (San Francisco and north), NV, AK, OR, H, MT, WA, ID, Canada (British Columbia, Alberta, and Saskatchewan)
  - Catherine Dennis, District Manager
  - 9505 Towne Lane, 10th Floor
  - Foster City, CA 94404
  - (415) 378-5681
- Leslie Hutchison, Account Representative (415) 378-5689
- Arlene Meierfeld, Senior Account Representative (415) 378-5551

**Southwest** (CA) (San Luis Obispo county and south), AZ, NM, UT, NV, CO
- Catherine Dennis, District Manager
  - 3302 Windon Blvd., Los Angeles, CA 90010
  - (213) 587-2108
- Lisa Redfield, Senior Account Representative (415) 378-5535

**Ziff-Davis MacNETWORK**

**Advertising Sales:**
- MacUser and MacWEEK in combination.
- David J. Ezequiel, Director (415) 378-5601
- Peter Woodfield, Advertising Director (212) 503-3755
1. Please indicate which of the following programs you currently use in your company or organization:

- [ ] Mac Plus
- [ ] IBM PC
- [ ] Mac SE
- [ ] Other
- [ ] Mac II

2. For how many micro computers do you buy products?

- [ ] 1-4
- [ ] 5-49
- [ ] 50+

3. Your primary job function is:

- [ ] Administrative/General Management
- [ ] MIS/DP, Communications Systems, Programming
- [ ] Engineering/R&D
- [ ] Financial Accounting
- [ ] Marketing/Sales
- [ ] Computer Dealer/VAR

4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization?

**SOFTWARE**
- [ ] Accounting
- [ ] Spreadsheets
- [ ] Financial Planners
- [ ] Project Managers
- [ ] Word Processors
- [ ] Database Managers
- [ ] Graphics
- [ ] CAD/CAM
- [ ] Communications

**HARDWARE**
- [ ] Monitors
- [ ] Printers/Plotters
- [ ] Monitors
- [ ] Disk Tape Back-up
- [ ] Add-in Boards
- [ ] Communications

5. Are you involved in the purchasing of microcomputer equipment at your company?

- [ ] Yes
- [ ] No

6. If so, what function do you serve in the buying process?

- [ ] Evaluation/Specification
- [ ] Recommendation
- [ ] Buyer/Purchaser

---

**PLEASE PRINT CLEARLY**

Name: ____________________________

Phone: (_________—_________—_________)

Company: _________________________

Title: _____________________________

Address: _________________________

City: _____________________________ State: ______ Zip: ______

---

4. Please send me a one-year subscription to MacUser for $19.97. Offer valid in U.S. only.
HOW TO STAY ON TOP OF WHAT'S IN THE MAC MARKET

USE THIS CARD TO OBTAIN FREE INFORMATION ABOUT MACINTOSH PRODUCTS AND SERVICES IN THIS ISSUE

(SEE OTHER SIDE)

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO 433 RIVERTON NJ
POSTAGE WILL BE PAID BY ADDRESSEE

MacUser
PO BOX 1688
RIVERTON NJ 08077-9688

MacUser
PO BOX 1688
RIVERTON NJ 08077-9688
To pick this up for $1,715 just pick this up.

We've got it all.
Hardware, software, and systems. From Apple, RasterOps and Microsoft, just to name a few. In fact, we have over 6,900 items for all your computer needs. Quantity discounts. And prices that leave the other guys guessing.

At the lowest prices.
Just thumb through this magazine until something catches your eye. Then call us for a price on the same item. Even after you add the cost of your phone call at $2/minute you'll still get the lowest price anywhere.

It's no risk. Guaranteed.
On top of our lowest price, best selection offer, we've got a guarantee that will settle the deal. A generous 90 day return on most hardware and software*. So, if it's not just what you need, send it back. You'll get a refund, no questions asked.

So call us.
Just say go. We have $160 million of inventory in 16 warehouses world-wide. So we can ship your order immediately. Call us anytime Monday through Saturday, 8 a.m. to 10 p.m. (CST) to order, or even if you're just curious. You'll find out that getting the best price on hardware, software and peripherals from people that really know Macintosh, is as easy as picking up the phone.

Payment: Visa, Mastercard, Discover (no surcharge), checks, and COD's. $6.00 maximum on COD's. Tax: Texas residents only add 9% sales tax. Prices and terms subject to change and availability. International: 9% surcharge on international orders.

Mail In: Orders accepted with a $10 surcharge. Terms: You are not charged until your order is shipped. Phone charges cannot be refunded. Shipping: minimum $5—UPS Ground, Blue/Red Federal Express, Emery, Airborne. Returns must be in original condition and package. Seal must not be opened on software. Returns may be subject to a restocking fee. Ask for details when ordering. Bottom Line Distribution cannot be responsible for errors in typography or photography.
America's Largest Macintosh Hardware Source

Prices effective through March 1991

Laser Printer Sale

ScripTEN PostScriptr Laser Printer
$1,799
- 10 Pages per minute
- 11 Font Families (35 typefaces)
- 3 megs of RAM
- Solid Blacks for graphics
- Letter, Legal and transparencies

CrystalPrint Publisher I Laser Printer
$1,899
- 8 Pages per minute
- 11 Font Families (39 typefaces)
- 3 megs of RAM
- Solid Blacks for graphics
- Letter, Legal and transparencies

CrystalPrint Publisher II Laser Printer
$2,395
- 8 Pages per minute
- 11 Font Families (39 typefaces)
- 3 megs of RAM
- Adobe type one support
- Solid Blacks for graphics
- Letter, Legal and transparencies

PS17 Microlaser PostScriptr Laser Printer
$1,599
- 1.5 Megabytes of RAM
- 6 pages per minute
- 17 typefaces
- Letter, Legal, and transparencies
- AppleTalk Interface Included!

PS35 Microlaser PostScriptr Laser Printer
$1,799
- 1.5 Megabytes of RAM
- 6 pages per minute
- 35 typefaces
- Letter, Legal, and transparencies
- AppleTalk Interface Included!

QMS-PS® 410 PostScript Laser Printer
$2,049
- 2 Megabytes of RAM
- 4 pages per minute
- Letter, legal, envelopes, and transparencies
- Auto switching between Macintosh and IBM.

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional $5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express.

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.
The Reasons You Should Buy From MacLand...

1. Price—Because of our multi-million dollar buying power, we purchase large volumes of quality hardware at low prices and pass the savings on to our customers.

2. Delivery—We offer Same Day Shipping on all in stock items if we receive your order by 3 pm Mountain Standard Time. ALL credit card orders are shipped by FEDERAL EXPRESS STANDARD AIR service which means you get your merchandise fast!

3. Technical Support—MacLand has the best technical support, period. We provide you with technical support BEFORE AND AFTER your purchase. Best of all, to assure you the highest quality, our trained technicians test ALL hard disk drives for quality and viruses before we ship them to you.

Hard Disk Drives

Quantum drives have a 2 year warranty!

<table>
<thead>
<tr>
<th>Quantum</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum 40 19ms</td>
<td>$329</td>
<td>$399</td>
</tr>
<tr>
<td>Quantum 80 19ms</td>
<td>$459</td>
<td>$539</td>
</tr>
<tr>
<td>Quantum 105 19ms</td>
<td>$499</td>
<td>$599</td>
</tr>
<tr>
<td>Quantum 120 15ms</td>
<td>$639</td>
<td>$699</td>
</tr>
<tr>
<td>Quantum 170 15ms</td>
<td>$699</td>
<td>$799</td>
</tr>
<tr>
<td>Quantum 210 15ms</td>
<td>$849</td>
<td>$959</td>
</tr>
</tbody>
</table>

Imprimis

<table>
<thead>
<tr>
<th>Imprimis</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imprimis MacWren 300 16ms</td>
<td>$1,299</td>
<td>$1,399</td>
</tr>
<tr>
<td>Imprimis MacWren Runner 330 10.7ms</td>
<td>$1,479</td>
<td>$1,579</td>
</tr>
<tr>
<td>Imprimis MacWren 600 16ms</td>
<td>$1,749</td>
<td>$1,849</td>
</tr>
<tr>
<td>Imprimis MacWren 1.2 Gigabyte 16ms</td>
<td>$3,099</td>
<td>$3,199</td>
</tr>
</tbody>
</table>

SyQuest

42 Megabyte Removable Hard Disk Drives $449

Cartridge not included

SyQuest Removable Cartridges $68

Will fit ANY 44 Removable Hard Disk Drive

Cartridge 10 Pak now only $660

30 DAY MONEY BACK GUARANTEE ON ALL IMPRIMIS, QUANTUM AND SYQUEST HARD DISK DRIVES

For Ordering and Technical Support Call 1-800-333-3353 (FAX #602-345-2217)
**New for Mac Ilisi and Ilci**

**Full Page GrayScale Monitor**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PageView GS</td>
<td>$699</td>
</tr>
</tbody>
</table>

**Portrait Monitors**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PageView SE</td>
<td>$899</td>
</tr>
<tr>
<td>PageView SE/30</td>
<td>$899</td>
</tr>
<tr>
<td>PageView II</td>
<td>$899</td>
</tr>
</tbody>
</table>

**19" Two Page Displays**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-View 19&quot; Multimode</td>
<td>$1,395</td>
</tr>
</tbody>
</table>

---

**Fax Modems**

- **Abaton 24/96**  $299
- **Dove 24/96**    $279

---

**Monitors**

- **NEC MacSync 14"**  $439
- **Sony 1304 14"**   $689
- **Magnavox 14"**    $439
- **Seiko 14"**       $589

**MacPlus, Classic & Ilci Compatible!**

---

**Fax Modems**

- **Abaton 24/96**  $299
- **Dove 24/96**    $279

---

**Now Available**

- **Samsung 15"** Full Page Display with Video Interface  
  - **Mac Plus, SE, SE/30, and entire Mac II Family**  $485
  - **Mac Ilisi with nubus adapter**  $579

---

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional $5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express. Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.
**Accelerators**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Mhz</td>
<td>PowerCard 030 II</td>
<td>$1,089</td>
</tr>
<tr>
<td>25 Mhz</td>
<td>PowerCard 030 IIx</td>
<td>$1,089</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>PowerCard 030 II</td>
<td>$2,179</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>PowerCard 030 IIx</td>
<td>$2,179</td>
</tr>
<tr>
<td>25 Mhz</td>
<td>PowerCard 030 llx</td>
<td>$1,459</td>
</tr>
<tr>
<td>25 Mhz</td>
<td>PowerCard 030 llcx</td>
<td>$1,459</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>PowerCard 030 llx</td>
<td>$2,549</td>
</tr>
<tr>
<td>50 Mhz</td>
<td>PowerCard 030 llcx</td>
<td>$2,549</td>
</tr>
</tbody>
</table>

**CD ROM**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC</td>
<td>Portable CD w/Interface</td>
<td>$479</td>
</tr>
</tbody>
</table>

**Networking Solutions**

**EtherNet Cards**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asante</td>
<td>Maccon SE30E</td>
<td>$339</td>
</tr>
<tr>
<td></td>
<td>Maccon SE30E 64</td>
<td>$379</td>
</tr>
<tr>
<td></td>
<td>Maccon SEE</td>
<td>$269</td>
</tr>
<tr>
<td></td>
<td>Maccon SE ET</td>
<td>$279</td>
</tr>
<tr>
<td></td>
<td>Maccon II ET</td>
<td>$339</td>
</tr>
<tr>
<td></td>
<td>Maccon II ET 64</td>
<td>$379</td>
</tr>
<tr>
<td>Farallon</td>
<td>Ethernet Card Mac II</td>
<td>$399</td>
</tr>
<tr>
<td></td>
<td>Ethernet Card SE30</td>
<td>$399</td>
</tr>
</tbody>
</table>

**Controllers**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farallon</td>
<td>StarController EN Series 300</td>
<td>$819</td>
</tr>
<tr>
<td></td>
<td>StarController EN Series 500</td>
<td>$1,575</td>
</tr>
<tr>
<td>Nuvotech</td>
<td>TurboStar</td>
<td>$1,040</td>
</tr>
<tr>
<td>Shiva</td>
<td>Ethergate</td>
<td>$1,679</td>
</tr>
<tr>
<td></td>
<td>Fastpath 4 Gateway</td>
<td>$1,899</td>
</tr>
</tbody>
</table>

**Uninterruptable Power Supplies**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Power Systems</td>
<td>Safe 250</td>
<td>$189</td>
</tr>
<tr>
<td></td>
<td>Safe 400S</td>
<td>$369</td>
</tr>
</tbody>
</table>

**Input Devices**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB Track Ball</td>
<td>$65</td>
<td></td>
</tr>
<tr>
<td>Little Mouse ADB</td>
<td>$70</td>
<td></td>
</tr>
<tr>
<td>Little Mouse Plus</td>
<td>$70</td>
<td></td>
</tr>
<tr>
<td>PageBrush Mouse/Scanner</td>
<td>Call</td>
<td></td>
</tr>
</tbody>
</table>

**Upgrade your Mac's Memory**

**SIMM SALE $45**

FREE! Included with your Simm order is our 22 page, step by step easy installation guide.

For Ordering and Technical Support Call 1-800-333-3353 (FAX #602-345-2217)

4685 South Ash Avenue, Suite H-5, Tempe, Arizona 85282 (602) 820-5802

Please circle 51 on reader service card.
**FREE SHIPPING IN THE CONTINENTAL U.S!**

**NATIONAL**

1-800-MAC-0052

INTERNATIONAL

1-813-886-9534

FAX 813-881-0634

9am-9pm e.s.t.

**HUNDREDS OF MACS SERVED.**
**CALL US. WE WILL SAVE YOU MONEY.**

---

**MAC CPU’S**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC CLASSIC</td>
<td>CALL</td>
</tr>
<tr>
<td>MAC II si 2MEG, 40MB</td>
<td>$2575</td>
</tr>
<tr>
<td>MAC II si 5MEG, 80MB</td>
<td>$3139</td>
</tr>
<tr>
<td>SE30 1MEG, 40MB</td>
<td>$2970</td>
</tr>
<tr>
<td>SE30 4MEG, 80MB</td>
<td>$3595</td>
</tr>
<tr>
<td>MAC IIci 4MEG CPU</td>
<td>$3850</td>
</tr>
<tr>
<td>MAC IIci 4MEG 80MB</td>
<td>$4310</td>
</tr>
<tr>
<td>MAC IIfx 4MEG</td>
<td>$5699</td>
</tr>
<tr>
<td>MAC IIfx 4MEG, 210MB</td>
<td>$6599</td>
</tr>
<tr>
<td>PORTABLE 1MEG 40MB</td>
<td>CALL</td>
</tr>
</tbody>
</table>

---

**FOR CUSTOM CONFIGURATIONS CALL MAC AND MORE.**
**OUR TECHNICIANS WILL UPGRADE YOU TO YOUR SPECIFIC NEEDS**

---

**PRINTERS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONAL LASERWRITER NT with toner</td>
<td>$2175</td>
</tr>
<tr>
<td>LASERWRITER NT with toner</td>
<td>$2975</td>
</tr>
<tr>
<td>LASERWRITER NTX with toner</td>
<td>$3899</td>
</tr>
<tr>
<td>IMAGEWRITER II</td>
<td>$410</td>
</tr>
</tbody>
</table>

---

**MONITORS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLE 13”RGB</td>
<td>CALL</td>
</tr>
<tr>
<td>APPLE 12”RGB</td>
<td>$399</td>
</tr>
<tr>
<td>APPLE 8.24 COLOR CARD</td>
<td>$535</td>
</tr>
<tr>
<td>RASTEROPS</td>
<td>CALL</td>
</tr>
<tr>
<td>RADIUS</td>
<td>CALL</td>
</tr>
<tr>
<td>HI RES MONOCHROME</td>
<td>$225</td>
</tr>
</tbody>
</table>

---

**Internal DRIVES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETC 40 QUANTUM</td>
<td>$299</td>
</tr>
<tr>
<td>ETC 52 QUANTUM</td>
<td>$315</td>
</tr>
<tr>
<td>ETC 80 QUANTUM</td>
<td>$435</td>
</tr>
<tr>
<td>ETC 105 QUANTUM</td>
<td>$499</td>
</tr>
<tr>
<td>ETC 170 QUANTUM</td>
<td>$740</td>
</tr>
<tr>
<td>ETC 210 QUANTUM</td>
<td>$799</td>
</tr>
</tbody>
</table>

---

**External DRIVES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETC 40 QUANTUM</td>
<td>$369</td>
</tr>
<tr>
<td>ETC 80 QUANTUM</td>
<td>$510</td>
</tr>
<tr>
<td>ETC 105 QUANTUM</td>
<td>$545</td>
</tr>
<tr>
<td>ETC 170 QUANTUM</td>
<td>$815</td>
</tr>
<tr>
<td>ETC 210 QUANTUM</td>
<td>$899</td>
</tr>
</tbody>
</table>

---

**Terms and Conditions:** Mac & MORE gladly accepts VISA, MasterCard, American Express, C.O.D., and authorized Corporate Purchase Orders.

**Mac & MORE Warranty:** We warranty all products for 1 year. Satisfaction Guaranteed.

All Prices subject to change without notice.

---

HP DESKWRITER W/ APPLETALK $669

NEW QUANTUM REMOVABLE DRIVE: CALL!

SYQUEST REMOVABLE W/ CARTRIDGE $499

EXTRA CARTRIDGES $69

CLASSIC INTERNAL KITS

4MEG, 52MB $450

4MEG, 105MB $650

PhoneNET CONNECTORS IN STOCK 17.95

Si NUBus ADAPTER CARDS $199.

Please circle 364 on reader service card.
Affordable Macintosh Systems

Special on MAC Ilisi
Macintosh Ilsi CPU, 5mb RAM, 105mb hard drive, 1.44mb FDD, Apple Standard Keyboard, NEC 14" MacSync HC.
You Pay $3,689

MAC Classic System
Macintosh Classic, 4mb RAM, 105mb hard drive, 1.44mb FDD, Apple Classic Keyboard, Classic Monochrome built-in display.
You Pay $1,679

Mac IIfx System
Macintosh IIfx CPU, Apple 40 hard drive, 4mb RAM, MacPro Extended Keyboard, 8 bit color, NEC 14" MacSync HC.
You Pay $7,409

Mac Ile System
Macintosh Ile CPU, Apple 40 hard drive, 5mb RAM, MacPro Extended Keyboard, 8 bit color, NEC 14" MacSync HC.
You Pay $4,995

Mac Ile System
Macintosh ILce CPU, Apple 40 hard drive, 5mb RAM, MacPro Extended Keyboard, 8 bit color, NEC 14" MacSync HC.
You Pay $2,389

HARDWARE EXPRESS • 1-800-622-7123 • 1-800-MACS-123

Screen Solutions that Make Sense...

Display Solutions
RasterOps 264 .................. call
RasterOps 264/SE30 ............ $559
RasterOps 31/2930 .............. $359
RasterOps 24/199 System ....... $4125
Ikegami 20" Trinitron .......... $2089
8L 20" card for Ikegami ......... $1349
Seiko 14" CM-1445 Color ....... $559
MacSync 14" Color Monitor .... $415

Sale on Mac Printers
QMS 410 Laser .................. $1999
TI MicroLaser/PS35 ............. $1899
TI MicroLaser/PS35 $1739  
QMS ColorScript 100 ............ $7389
Apple ImageWriter II ........... $425
Express Phone Net Connector $18
Hewlett Packard Printers 
Call
Over 3,000 other products  
Call

PRICE BUSTERS
Call for Availability
Toshiba 3200XT CD ROM ........ $499
With Free 600mb Public Domain ROM
Sequen 45mb Cartridges ........ $77
MicroTek 3002s ................ $1699
Kensington TurboMouse ........ $107
Hayes Ultra9600 ............... $829
E-Machines T16/8bit ............ $2053
Kodak Color/4 Printer ........... $1029

We carry over 3,000 hardware products for the Macintosh. If you don’t see it here, call us for a price.

To Place your Order, Call Toll-Free
1-800-327-7234

Prefered Computing

To Place your Order, Call Toll-Free
1-800-327-7234

Applied Engineering
DataLink/Mac (MacID) ............. $181
w/MNP-S or Send/Fax .......... $212
w/MNP and Send Fax ........... $259
DL/Mac Portable 
(w/MNP-S & Send Fax) ......... $181
QuadraLink (MacID) ............. $181
3.5" 800k drive ................. $259
3.5" 1.44 meg SuperDrive ....... $189
Mac IIx/IIc ext. drive cable ..... $19
MacII Classic 0k ............... $75
1 meg ................................ $129
3 meg ................................ $269

Altysys
Fontographer ...................... $299
Metamorphosis .................. $99

Aldus
PageMaker 4.0 .................... $499

MacRam Portable 1-8 Meg 
by Applied Engineering
Expand your Mac Portable up to 9 
meg total memory! MacRam Portable 
expands in 1 meg increments using 
true Static RAMs. Draws only 3-4 ma. in 
Sleep mode, 40-60 ma. in use. 
1 meg ................................ $355
2 meg ................................ $667
3-8 meg ......................... $Call

For the Best price on Macintosh Products, Technical 
Support, or Customer Service, please call: 
1-214/484-5464

MacUser March 1991 293
HARD DRIVES

There's nothing remarkable about finding great quality, prices and service. Unless you're buying your hard drive somewhere else.

- 48 hr. burn in
- Name brands
- Multiple case options
- Formatted drives
- Free test software
- Full line of storage options
- Fast drives – 11msec & up
- Toll-free assistance
- Factory support
- Instant replacement policy
- Knowledgeable salespeople
- Huge inventory
- Application engineering
- Same day shipping

Maxtor External Half Height

- 40MB 17msec: $369
- 80MB 17msec: $519
- 200MB 15msec: $849
- 340MB 13msec: $1,489

Maxtor External Full Height

- 150MB 14msec: $959
- 360MB 16.5msec: $1,429
- 616MB 16.5msec: $1,769
- 675MB 16.5msec: $2,049

External Syquest Removable Media Hard Drive

- 44MB 25msec cartridges: $72

External Tape Backup With Software & Tape

- 60MB: $519
- 120MB: $599

Maxtor Tahiti External Read/Write Optical

- 1 GByte cartridges: $249

March Special

Maxtor Internal Classic Kits

- 40MB 17msec: $349
- 80MB 17msec: $449

1-800-338-4273

4657 MacArthur Lane
Boulder, CO 80303

Please circle 16 on reader service card.
They’re all HARD WORKING

- Super fast 14ms to 28ms access time.
- No less than 30,000 hours Mean Time Between Failure.
- Compatible with Mac II, IIx, IIc, SE, SE/30, Plus & fx.
- Quality drives from Quantum, Micropolis, Imprimis, Toshiba, Fujitsu and Seagate. Your choice.

And HARD CORE

- Steel case for low heat and added support.
- Whisper-quiet fan for a quiet work environment.
- Power surge protection.
- 24 hour burn-in testing.
- 50-pin connectors for daisy-chaining.

You might say our drives are HARD TO BEAT

- Designed and engineered by the storage experts at Hard Drives International.
- Hundreds of thousands of satisfied customers.
- Lifetime Toll-free technical support.
- 30-day "Worry-Free" Guarantee.
- 1 & 2 Year Replacement Policies.

At prices that are HARD TO BELIEVE

- We buy quality components in huge volume and pass the savings to you!

Now, Isn’t it easy to see why POWERDrives are HARD TO RESIST?

800-733-DISK

<table>
<thead>
<tr>
<th>Mbytes</th>
<th>Mechanism</th>
<th>Access</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Seagate</td>
<td>28ms</td>
<td>$249</td>
<td>$295</td>
</tr>
<tr>
<td>30</td>
<td>Seagate</td>
<td>28ms</td>
<td>$269</td>
<td>$319</td>
</tr>
<tr>
<td>40</td>
<td>Quantum</td>
<td>19</td>
<td>$299</td>
<td>$359</td>
</tr>
<tr>
<td>45</td>
<td>Seagate</td>
<td>28ms</td>
<td>$299</td>
<td>$359</td>
</tr>
<tr>
<td>60</td>
<td>Seagate</td>
<td>28ms</td>
<td>NA</td>
<td>$389</td>
</tr>
<tr>
<td>80</td>
<td>Seagate</td>
<td>28ms</td>
<td>NA</td>
<td>$439</td>
</tr>
<tr>
<td>80</td>
<td>Quantum*</td>
<td>19</td>
<td>$469</td>
<td>$529</td>
</tr>
<tr>
<td>105</td>
<td>Quantum*</td>
<td>19</td>
<td>$499</td>
<td>$559</td>
</tr>
<tr>
<td>105</td>
<td>Toshiba</td>
<td>20</td>
<td>$499</td>
<td>$549</td>
</tr>
<tr>
<td>200</td>
<td>Maxtor</td>
<td>15</td>
<td>$929</td>
<td>$979</td>
</tr>
<tr>
<td>210</td>
<td>Quantum*</td>
<td>16</td>
<td>$849</td>
<td>$899</td>
</tr>
<tr>
<td>320(Mb)</td>
<td>Micropolis</td>
<td>14</td>
<td>NA</td>
<td>$1449</td>
</tr>
<tr>
<td>320(Mb)</td>
<td>Imprimis</td>
<td>16</td>
<td>NA</td>
<td>$1449</td>
</tr>
<tr>
<td>600(Mb)</td>
<td>Imprimis</td>
<td>16</td>
<td>NA</td>
<td>$1899</td>
</tr>
<tr>
<td>660(Mb)</td>
<td>Micropolis</td>
<td>16</td>
<td>NA</td>
<td>$2099</td>
</tr>
<tr>
<td>1050(Mb)</td>
<td>Imprimis</td>
<td>16</td>
<td>NA</td>
<td>$2999</td>
</tr>
<tr>
<td>1050(Mb)</td>
<td>Micropolis</td>
<td>14</td>
<td>NA</td>
<td>$3299</td>
</tr>
<tr>
<td>Removable SyQuest</td>
<td>$575</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CD/ROM $599
External optical storage unit. $900ms access time. Uses Toshiba or Chicon mechanism-your choice.

Memory Upgrades
4Mb* 1Mb* $299 $46
(48-80ns) (18-80ns)
Complete memory kits for your Mac II, IIx, IIc, SE, SE/30, Plus, Classic & IIs.

150Mb Teac Tape Backup $599
External unit with Teac tapes. Includes "Express Tape" by NYWolfe. Extra Tape Only $49

*2 Year Replacement Policy
### Scanners

- **MagicScan 256** 8-bit 300 DPI grayscale scanner with ImageStudio Software: $1099
- **Microtek 300ZS** 300 DPI single pass color scanner with Colorstudio Imagestudio: $1699

### System Specials

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac Classic</td>
<td>$849</td>
<td>36 month lease for $30</td>
</tr>
<tr>
<td>Mac Classic 2/40</td>
<td>$1299</td>
<td>36 month lease for $44</td>
</tr>
<tr>
<td>NEW! Mac LC</td>
<td>$2749</td>
<td>36 month lease for $52</td>
</tr>
<tr>
<td>Mac Ilt 5/80</td>
<td>$3999</td>
<td>36 month lease for $115</td>
</tr>
<tr>
<td>Mac Ilt</td>
<td>$4399</td>
<td>36 month lease for $140</td>
</tr>
<tr>
<td>Mac Ilx</td>
<td>$6299</td>
<td>36 month lease for $210</td>
</tr>
</tbody>
</table>

### RailGun ‘030’ Accelerator

- With new accelerated SCSI access!
- We can give your original Mac new speed and performance with our Magic RailGun ‘030’ Accelerator for the Plus, SE, & Classic.
- NEW! 030 Classic & 040 SE upgraded.
- 16 MHz RailGun for the Plus, SE, Classic: $499
- 25 MHz RailGun for the Plus, SE, Classic: $799
- 33 MHz RailGun for the Plus, SE Classic: $1199
- Afterburner accelerated math coprocessor: $49
- 16 MHz 68881/68882 coprocessor: $69/$99

### Magic 45 Removable

- Portable, fast, & affordable removable media.
- Syquest mechanism. Mac & DOS compatible.
- 2 year warranty.
- 45 MB removable drive: $529
- Syquest cartridge: $69 per drive

### Video Solutions

- **MagelView 19” B&W with card**: $899
- **MagelView 19” B&W Plus version with card**: $999
- **Magic 5-bit color card**: $269/$359
- **RasterOps 24/36 24-bit color card**: $399/$899
- **Magic 19” 8-bit color card for II**: $49

### HARDWARE

#### Accelerators

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MasterCard 32/64</td>
<td>$1600</td>
</tr>
<tr>
<td>PowerCard 68000/68040</td>
<td>$1650/1750</td>
</tr>
<tr>
<td>PowerCard 68030/68040</td>
<td>$2000/2200</td>
</tr>
</tbody>
</table>

#### Scanners

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MagicScan 256</td>
<td>$849</td>
</tr>
<tr>
<td>Microtek 300ZS</td>
<td>$1699</td>
</tr>
</tbody>
</table>

#### System Specials

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac Classic</td>
<td>$849</td>
</tr>
<tr>
<td>Mac Classic 2/40</td>
<td>$1299</td>
</tr>
<tr>
<td>NEW! Mac LC</td>
<td>$2749</td>
</tr>
<tr>
<td>Mac Ilt 5/80</td>
<td>$3999</td>
</tr>
<tr>
<td>Mac Ilt</td>
<td>$4399</td>
</tr>
<tr>
<td>Mac Ilx</td>
<td>$6299</td>
</tr>
</tbody>
</table>

#### RailGun ‘030’ Accelerator

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 MHz RailGun for the Plus, SE, Classic</td>
<td>$499</td>
</tr>
<tr>
<td>25 MHz RailGun for the Plus, SE, Classic</td>
<td>$799</td>
</tr>
<tr>
<td>33 MHz RailGun for the Plus, SE Classic</td>
<td>$1199</td>
</tr>
<tr>
<td>Afterburner accelerated math coprocessor</td>
<td>$49</td>
</tr>
<tr>
<td>16 MHz 68881/68882 coprocessor</td>
<td>$69/$99</td>
</tr>
</tbody>
</table>

#### Magic 45 Removable

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 MB removable drive</td>
<td>$529</td>
</tr>
<tr>
<td>Syquest cartridge</td>
<td>$69 per drive</td>
</tr>
</tbody>
</table>

#### Video Solutions

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MagelView 19” B&amp;W with card</td>
<td>$899</td>
</tr>
<tr>
<td>MagelView 19” B&amp;W Plus version with card</td>
<td>$999</td>
</tr>
<tr>
<td>Magic 5-bit color card</td>
<td>$269/$359</td>
</tr>
<tr>
<td>RasterOps 24/36 24-bit color card</td>
<td>$399/$899</td>
</tr>
<tr>
<td>Magic 19” 8-bit color card for II</td>
<td>$49</td>
</tr>
</tbody>
</table>

### Display/Video Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>15” Monitor</td>
<td>$699</td>
</tr>
<tr>
<td>16” Monitor</td>
<td>$899</td>
</tr>
<tr>
<td>17” Monitor</td>
<td>$1299</td>
</tr>
<tr>
<td>20” Monitor</td>
<td>$1699</td>
</tr>
<tr>
<td>24” Monitor</td>
<td>$2999</td>
</tr>
</tbody>
</table>

### Practical Peripherals

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9600 baud V.22 bis MNP-5</td>
<td>$499</td>
</tr>
</tbody>
</table>

### Display/Video Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>15” Monitor</td>
<td>$699</td>
</tr>
<tr>
<td>16” Monitor</td>
<td>$899</td>
</tr>
<tr>
<td>17” Monitor</td>
<td>$1299</td>
</tr>
<tr>
<td>20” Monitor</td>
<td>$1699</td>
</tr>
<tr>
<td>24” Monitor</td>
<td>$2999</td>
</tr>
</tbody>
</table>

### Display/Video Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>15” Monitor</td>
<td>$699</td>
</tr>
<tr>
<td>16” Monitor</td>
<td>$899</td>
</tr>
<tr>
<td>17” Monitor</td>
<td>$1299</td>
</tr>
<tr>
<td>20” Monitor</td>
<td>$1699</td>
</tr>
<tr>
<td>24” Monitor</td>
<td>$2999</td>
</tr>
</tbody>
</table>
Modems, Networking, Printers, Scanners
Video Solutions, and Much Much More...

Backup Solutions
Magic Tape Drives include Retrospect software. New faster archiving Network support, archive control, and unattended backups.

- MagicTape 60..................$679
- MagicTape 150.................$699
- MagicTape 525................$729
- MagicTape 1.3 gb/4 gb........$1895/$2895

1 MB SIMMs
$44*

70, 80 ns, lifetime guarantee
1 MB fx SIMMs..........$47
4 MB SIMMs...........$225
4 MB fx SIMMs........$225
3 MB Portable RAM....$899
Portable RAM 1 MB ....call
4 MB Classic upgrade....$199

128k-512k Mac. Update the ROMs and the floppy drive, add a SCSI port, or expand your Mac's memory.

Magic Fax Modems
Two year warranty. 100% Hayes & Group 3 compatible
2400/4800 Send/Fax/Modem...$99
2400/9600 Send/Fax/Modem...$119
2400/9600 Send & Receive...$179

57450

Magic Modems
Magic Modems include a two year warranty and are all 100% Hayes compatible.
2400/1200/3000 baud. Auto answer/dial............$75

V.42 bis MNP-5 Modem
2400 baud- send and receive up to 9600 baud. LAFM & MNP error correction, asynchronous operation, auto adaptive equalization. Two year warranty.

1-800-MAC-DISK
Please circle 132 on reader service card.
The Nation's Largest & Fastest Growing TI microLaser Dealer!!!

**TI microLaser PS35** $1695
MacUser #1 Personal Printer (4.5 Mice)

**TI microLaser XL** $3195
16 Pages per Minute, SCSI Port & ATM!

**TI microLaser PS17** $1395
All TI microLaser prices include AppleTalk! (microLaser prices limited to quantity on hand)

**TI memory upgrades** Call!
We will not be undersold on microLasers!

We stock all TI microLaser add-ons:
toner, envelope feeders, second paper drawers, legal and letter size paper trays

**DayStar Fast Cache IIci** $275
**DayStar 40 MHz PowerCache IIci** $895
**$1000 Trade-In on Fast Cache IIci Cards!!**
**DayStar 25 MHz PowerCard** $995

**DayStar 33, 40 & 50 MHz PowerCard** Call!
Total Systems SE 16 MHz 030 $395
Total Systems SE 20 MHz 030 $755
Total Systems SE 25 MHz 030 $995
Total Systems SE Gemini 33 MHz 030 $1185

**DATA MODEMS**

**Challenger VP2400** $69
**Challenger VP2400 V.42 bis** $195
MacUser #1 2400 BPS Modem (4.5 Mice)

**Hayes V-Series Ultra 9600** v.32, v.42, V.42bis $795
**Practical Peripherals 9600SA** V.32, V.42, V.42bis $525
**Prometheus 9600 Plus** V.32, V.42, V.42bis $695
**US Robotics 9600 V.32** V.32, V.42, V.42bis $695

**HARD DRIVES**

**Quantum**
105 Int/Ext $499/$599
210 Int/Ext $875/$995

**MacWran**
300 (250MB) Int/Ext $1245/$1495
330 (Runner) Int/Ext $1495/$1695
600 (703MB) Int/Ext $1785/$1875
630 (766MB) Int/Ext $2049/$2129
1 Gig (1200MB) Int/Ext $2999/$3195

**E-Z MACHINES**

**E-Machines T16** $1995
Call for other E-Machines

**E-Machines T16** $1995
Call for other E-Machines

**MONITORS**

**E-Machines T16** $1995
**call for other E-Machines**

**MegaGraphics Rival 19"** $1095
**NEC MacSync** $455
**Seiko 14" w/RasterOps 208** $885
**Seiko 14" w/RasterOps 264** $980
**RasterOps 208** $295
**RasterOps 264** $395
**Sigma L-View Multimode** $1395
**Sigma PageView** $895
**SuperMac** Call!

**CD-ROM**

**Chinon** $595
**NEC Portable** $395
**Toshiba** $745
**Pioneer DRM-600** Call!
**Minichanger**

**SIMMS**

**4 Meg** $175 Call!
with trade in 1 Meg Call!
Lifetime warranty

**SYQUEST**

**Mass Micro DataPak** $695
**Eagle Syquest Drive** $499
**PLI Infinity 40** $695
**Syquest Cartridge** (In Stock!!) $72

**SCANNERS**

**Caere TYPIST** $465 CALL!
**Microtek 300ZS** Free Color Studio & Image Studio $465 CALL!
**UMax UG80** (256 Grey Scale) $995
**UMax UC300** (24 bit color w/PhotoShop) $1695

We will not be undersold on MicroTek or UMAX!

**FAX MODEMS**

**Challenger VP24/96** Send only 2400 data/9600 fax $99
**Challenger VP24/96SR** Send & Receive 2400 data/9600 fax Call!
**Abaton 24/96 InterFax** Send & Receive 2400 data/9600 Fax $295
**Global Village TelePort** ADB port send only 2400 data/4800 fax. Includes Fax Software $175
**Orchid Fax Modem** Send & Receive Networkable 2400/data/9600 fax includes BackFax $425
**Prometheus 9600 Plus** Send & Receive GS 9600 data/9600 fax $695

**PRINTERS**

**Kodak Diconix Color 4** Call!
**Seiko ColorPoint PS** Best Price!

**ACCELERATORS**

**DayStar Fast Cache IIci** $275
**DayStar 40 MHz PowerCache IIci** $895
**$1000 Trade-In on Fast Cache IIci Cards!!**
**DayStar 25 MHz PowerCard** $995

**DayStar 33, 40 & 50 MHz PowerCard** Call!
Total Systems SE 16 MHz 030 $395
Total Systems SE 20 MHz 030 $755
Total Systems SE 25 MHz 030 $995
Total Systems SE Gemini 33 MHz 030 $1185

**ACCELERATORS**

**DayStar Fast Cache IIci** $275
**DayStar 40 MHz PowerCache IIci** $895
**$1000 Trade-In on Fast Cache IIci Cards!!**
**DayStar 25 MHz PowerCard** $995

**DayStar 33, 40 & 50 MHz PowerCard** Call!
Total Systems SE 16 MHz 030 $395
Total Systems SE 20 MHz 030 $755
Total Systems SE 25 MHz 030 $995
Total Systems SE Gemini 33 MHz 030 $1185

**OPTICAL DRIVES**

**FWB HammerDisk 600S** $4950
**Pinnacle Micro** Call!
**Racet** $2995
**Storage Dimensions** Call!
**SuperMac LaserFrame** Call!

**MACCENTER™**

The Center Of The Macintosh Universe™

**800-950-3726**

Fax 512-476-3726 International Orders 512-476-7466

Please circle 77 on reader service card.

MasterCard, Visa & COD accepted.
NO surcharge for MasterCard/Visa.
Corporate, Government & University P.O.'s accepted with approved credit.
Prices valid 1/28/91 - 2/28/91
<table>
<thead>
<tr>
<th>Drive Size</th>
<th>Quantum Internal</th>
<th>Quantum External</th>
<th>Seagate Internal</th>
<th>Seagate External</th>
<th>SyQuest</th>
<th>MICROPOLIS External</th>
</tr>
</thead>
<tbody>
<tr>
<td>40Mb</td>
<td>$269</td>
<td>$319</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80Mb</td>
<td>$429</td>
<td>$479</td>
<td></td>
<td></td>
<td></td>
<td>320Mb $1219</td>
</tr>
<tr>
<td>105Mb</td>
<td>$479</td>
<td>$499</td>
<td></td>
<td></td>
<td></td>
<td>600Mb $1749</td>
</tr>
<tr>
<td>210Mb</td>
<td>$789</td>
<td>$839</td>
<td></td>
<td></td>
<td></td>
<td>1.2 GIG $2699</td>
</tr>
</tbody>
</table>

All internal drives contain mounting brackets, SCSI cable and ONTRACK formatting/partitioning software.

Warehouse 54 brings you the highest quality hard drives available at the lowest prices in the industry. All drives come in a zero-footprint, solid metal case, with dual SCSI ports for daisy-chaining and an external LED for convenience. All drives include a SCSI cable, power cable and ONTRACK formatting software.
“Our prices are great, but our service is even better!”

DynaPerspective $624

DynaWare 3D conceptual design program for powerful multimedia presentations. Visualize and present complex 3D ideas. Play high speed animations without pause. Import and export 2D, 3D, DXF files; export PICT and PICS.

Data Club Call

International Business Software

Amazing new concept in server software. Provides parallel processing performance, centralized server access, and practically unlimited storage—yet it doesn’t require dedicated hardware. LAN Magazine Software of the Year. 3-user and 10-user packs.

Of course, we have hundreds more products than you see here. So call if you want something that isn’t listed.

WealthBuilder $145

Reality Technology

Designed for the individual investor and perfect no matter what your level of expertise. Gives you objective information up to 1200 mutual funds and 10,000 stocks and bonds. Earn more by investing wisely and saving more effectively!

Turbo Tax

Mac $49

Chip Soft

ChipSoft introduces TurboTax Personal/1040 for the Macintosh. The easiest-to-use and most complete individual tax preparation software. TurboTax provides on-line help, IRS instructions and comprehensive tax assistance. Eleven companion TurboTax/State programs available separately.

NuScan Call

Askuka

NuScan True Grayscale Scanners give 256 gray levels with 100-400 dpi resolution. NuScan Color scanners provide up to 4096 colors. Compact and easy to use, these scanners are a must for anyone who works with graphic applications, multimedia, or desktop presentation.
Powerlunching at Mac's Place

Here at Mac's Place, we live, breathe—and eat—Macs. So it's not surprising that many of us hardly ever leave our Macs. Not even for lunch. Yep, Mac and the gang really know Macs. In fact, we're the only major Mac mail order company run entirely on Macs. So call us. A Mac expert will always answer the phone. Even during lunch.

Our Hours: Monday through Friday 6AM-10PM PST and Saturday 6AM-6PM PST  Call 1-800-367-4222 US & Canada
“Use your fax machine – fax us your PO.”—Mac

Mac’s Policies

- Visa, Mastercard, American Express, and Optima gladly accepted.
- Your credit card is never charged until your products ship.
- When a partial order is shipped, no additional interest is charged for shipments that complete the order (U.S. only).
- Most items carry the manufacturer’s 30 or 60 day Money Back Guarantee (MBG). Mac’s Place has a 30 day MBG on all hardware (USA only).
- Ask for details when ordering.
- 120 day limited warranty on all products, some hardware items carry one year warranty. Defective software is replaced immediately with like items. Defective hardware items repaired or replaced at our discretion. Loan drivers subject to availability (USA only).
- Most personal and company checks approved upon receipt to ensure immediate shipment.
- Allow approximately one week for checks over $1,000.
- Government, School, and Institutional P.O.’s clear immediately (some corporate accounts require credit approval, please call). All PO Customers pay full shipping charges on each shipment.
- No sales tax except WA residents add 8.2% to total, including shipping.
- All returns must have an authorization number. Please call 800-367-4222.
- All prices & promotions subject to change without notice. All items subject to availability. Not responsible for typographic errors.

Orders USA: Orders placed weekdays by 7:30 p.m. F.S.T., 4:30 p.m. P.S.T. for “in stock” items by same day shipping system failure. (U.S.) for overnight delivery via American Express. Our $50 shipping charge includes insurance at no extra charge. Arroyo locations may require an additional day for delivery. Areas not serviced by American Express will be sent via U.S. Postal Service or UPS Second Day. Alaska & Hawaii orders ship UPS 2nd day air. Alaska customers outside metropolitan areas pay full shipping charges, ask for rates.

International Orders: Call 206-881-3090. We ship throughout the free world. Contact Mac’s Place for information. Mail, Fax or electronic orders gladly accepted.

Electronic Mail Orders: Compuserve (76535.660), GEnie (PLACE!), America Online (Mac’s Place). Mac’s Place uses CE Software’s QuickMail to check our mail each hour.

Phone: 206-367-4222, 206-883-8312, Fax 206-881-3090
Mail: 6461 154th Ave NE, Redmond, WA 98052
© 1991 Mac’s Place, Inc.

Felix $98 Special!!
Altra Finally, a stationary mouse that’s quicker and easier to use. Utilizes “Optical Pointing Technology” and an onboard microprocessor to achieve very high resolution. Full-screen cursor control in just six square inches of desk space!

Daystar Digital
Powercache lci $1098/
FastCache Ici $289. Get an economical boost with the Fast Cache Ici. Make your Mac faster than a 128k with the new 50 Mhz PowerCache Ici. Daystar cache cards deliver the speed you need at a price you can afford. See listings for other Daystar products.

Norton Utilities for the Mac $85
Symantec
An unbeatable combo of data recovery programs & hard disk optimization utilities that protects data & improves the quality of daily Mac processing. Includes: Disk Doctor, Unerase, Speed Disk, Keyfinder, Disk Editor & much more!

Power Key w/ Quick Keys Lite $64
Sophisticated Circuits Turns on your Mac and peripherals from the keyboard and shuts everything down from the Special menu. Can be programmed with an on/off schedule. Great for communications and back-ups. Four outlets provide surge and overload protection and noise filtering, SE and II compatible.

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090
even greater.” –Mac

Nisus 3.05 $235
Paragon Concepts Power features include unlimited undos, noncontiguous selection, integrated thesaurus, foreign language dictionaries, Power Search, and Power Search+ to streamline all writing jobs. Even simplifies complex tasks like reformatting downloaded mainframe files.

CheckWriter II $34
Aatrix The most versatile finance software in its class! Latest version offers budgeting with over-budget warnings, bill reminding, tax summaries, importing/exporting, and more. Address database prints envelopes, labels, and any style personal or business check.

Mac To Mac See Listings
Caravelle Networks Fast, simple background file transfers over any AppleTalk Network. Sends and retrieves files. Excellent security. Activity log. Handles multiple zones. Two-way text conferencing and message facility. Mac Plus or higher, 6.02 or higher.

Paracomp
FineWriter 3...438...
Model Shop...375...
Swivel 3D Professional...435...
Swivel Art...61...

Silicon Beach Software
Personal Press...195...
Super 3D 2.0 (Blue)...309...
SuperWriter 2.0...

Solutions Inc.
Cerato...75...
Super Qube II...

Somax
ClipArt CD Vol. 7...

Tactile Software
Artclips Volume 1...
Artclips Volume 2...
ArtPro...
FontShare...
Icon-It...
Sound Clips 1-4...

TimeWorks
Publish It Easy 2.0...

Wayzata Technology
CD-ROM...
ClipArt Masterpiece...

Adobe Type On Call

The easiest, quickest way to get the type you want.

$49

Only at Mac's Place

Call 1-800-367-4222 US & Canada

New! Now you can get the entire Adobe Type Library—over 800 fonts—delivered on a single CD ROM. Type On Call lets you select the fonts you want—since all the fonts are on the CD ROM, you never have to buy another disk. You get the bitmaps to all fonts, the 13 standard font packages, your choice of 2 typeface packages out of a list of 8 and Adobe Type Manager. And new fonts are always just a phone call away. Speaking of phone calls, call us now for complete details.

Type On Call + NEC CD-ROM Portable $459
Type On Call + Everex CD-ROM $598
"If you don't like it, I'll take it back." –Mac

MaccessCard Reader
Call
ASD  Designed for use with File Guard 2.5 software. Can be configured so no one can access your Mac without a registered MaccassCard or a MaccassCard and an access key. Comes with cards, or use any ID card!

File Guard $139
ASD  Protect your hard disks, applications, files, and folders (including the System) from unauthorized access and deletion. Includes audit trail capability. Also available in five- or ten-user office packs.

The Typist $479
Caere  Scan any document—no matter what the font, font size, or column format—and enter it into any file, word processor, spreadsheet, or database! This compact peripheral with proprietary AnyFont technology delivers incredibly accurate 500 word-per-minute speed.

M3 CD ROM
2-Disk Set $88
Over 1.1 Gigabytes of carefully selected Macintosh Public Domain and Shareware files. Over 100 LW fonts, 1,000 IW fonts, 300 games, 350 Inits, 400 DA's, 10's of megabytes of utilities, sounds and much more, make this the most complete set of software available anywhere. A must have for any CD reader owner!

EMAC
Metro CD-ROM Drive $598
Everex  Access all industry-standard CD ROM CDs—and even listen to your favorite CD tunes. Zero-footprint chassis fits under Plus, SE, and SE/30. Includes built-in speaker and headphone jacks, and comes with CD ROM sampler disk with text, audio, and graphics files.
SIMMS Call

Expand the mind of your Mac! One megabyte SIMMS at incredible prices! 80 nanoseconds or faster. Includes the most complete installation manual available. SIMMS for all Macs including II, cl, sl, LC and Classic. Get your Mac ready for System 7—call today for pricing!

Software Bridge $81

Systems Compatibility Corporation New Mac version! Word processing file conversions from PC to Mac and back. Operates conveniently under Apple File Exchange. Retains formatting as you convert between 24 popular word processing programs.

Sky Shadow .................. 29
Cantron .................... 38
Casino Master deluxe Color ... 40
Delta Tao Software .......... 35
Spaceward Hol .................. 35
Strategic Quest 2.0 .......... 35
Electronic Arts ............... 35
Bard's Tale ...................... 32
BlocKout .................... 26
Chessmaster 2100 ................. 31
Chuck Yeager's (A.F.T.) ........ 31
Weaver Baseball ............... 31
Might & Magic II ............. 38
Starlight .................... 39
Entertainment On-Line ........ 24

Menu Shadow .................. 29
Mextron ..................... 31
Micro League Sports ......... 35
Microprose ................. 35
Microprose .................. 35
Mindscope .................... 29
Balance Of Power 1990 .......... 29
Colony ..................... 28
Crossword Magic ............. 31
Deja Vu .................... 29
Dreams ..................... 29
ShadowGate .................... 24
Uninvited .................... 24
Silicon Beach Software ....... 31
ApeMule 1.1 .................... 31
Beyond Dark Castle ............ 31
Dark Castle .................... 31
Software Tools .................. 28
Cribbage King/Fin King ....... 28
Hunt for Red October ......... 28
Life And Death .................. 32
Spectrum Holobyte .......... 2.2
Fly

Think Pascal & Just Enough Pascal $208

Symantec THINK Pascal—A powerful, easy-to-use development environment that lets you develop applications and DAs and sample object orient programming. Just Enough Pascal—An interactive tutorial that works with THINK Pascal to teach you Mac programming fundamentals.

Color 300/Color Scanner $1878

Abaton New! Affordable 300/Color Scanner designed to handle all of your scanning needs. Provides 24-bit color and 256 gray scale, line drawing, and text scanning. Free additional 90-day on-site warranty. Bundled with award-winning Adobe PhotoShop.
Call us and we’ll prove it.” –Mac

Hot Keys $49
GO Technology Predefined F-key macros for any Mac extended keyboard. Uses a keyboard template overlay with clearly printed commands. Over 100 predefined macros—no programming is necessary! Choose Word, Works, Write, PageMaker, MacWrite II, Nisus, WriteNow and Full Write Pro.

Mac Pro Plus Call
Keytronic New enhanced 105-key keyboard compatible with any Mac. Includes productivity features such as Period/Comma lock capability and interchangeable Caps Lock and Ctrl keys. Comes with cables and a limited lifetime warranty, plus a free offer for Tempo II™.

Contact Ease $258
Westware A Rolodex™, Mail merger, & phone dialer all in one. Helps you keep in touch—it never lets anything fall through the cracks. “...the simplest interface of any contact package we’ve seen...a solid hit”—MacWeek

Picture Link $218
Media Labs Import or export real-world full-color images into 4th Dimension or File Force. Scan directly from black and white or color scanners. Grab images in real time from many different video sources. A real winner!

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090 with

CRU Case Opener/Torex Kit .................... 10.
Internal Mounting Kits
Mounting Bracket (Box/60) ............ 15.
Mounting Bracket (SE/II) ............. 15.
CRU Accessories
Data Port Covering Case ............. 19.
CRU Hard Drive Case
Data Port Removable Case ........... 18.
Full Height Case Black .............. 220.
Full Height Case Platinum .......... 220.
Half Height Case Black ............ 168.
Half Height Case Platinum ......... 116.
Squyet Case Platinum ............. 116.
Micropolis
5.25" Full Height Drive
5.25" Half Height Drive
5.25" Full Height Drive
Quantum 3.5" Drive
Half Height Drive
60-MG 19ms ................................ 348.
100-MG 19ms ............................. 348.
150-MG 19ms ............................. 579.
220-MG 19ms ............................. 829.
340-MG 19ms ............................. 948.
540-MG 19ms ............................. 1148.
Syquest
44 MB Cards ...................... 75.
44 MB Mechanism ............. 425.
One Inch
Classic, ST, LC ................. Call.

DataExpand Express ....................... 172.
DataLink/Mac (Internal 2x60) ......... 198.
DataLink .................. 164.
Azente Call for New Low Prices!
Enet Thin Thick, & Twisted Pair .... 0.
Cyman Systems
GetShare Software .......... 1269.
Connectix
Virtual-8630 Macs .......... 110.
Datadisk
Petion Key Module ............. 38.
Hyper Dialer ....................... 33.
Mac 101 Keyboard ............. 129.
Switchboard ....................... 115.
Switchboard ....................... 169.
Dyana Communications
Dual Drive 360x/1.2MB ........ 718.
Dual Drive 360x/1.4MB .......... 994.
Dual Drive 2MB/1.4MB .......................... 848.
Single Drive 5.25"/360KB ................ 469.
Daystar Digital
Fast Cache II 64K ............... 276.
PowerCache II 64MB .............. 998.
PowerCache II 32MB ................ 1598.
PowerCache II 64MB Accelerator .... 2085.
PowerCache II 64MB Accelerator .... 2085.
25 MEG for Mac llx ............... 3529.
EMAC 60T ITape Backup .......... 1698.
Single Drive 5.25"/360KB .......... 469.
EMAC 150MB Tape Backup ........ 1898.
EMAC 150MB Tape Backup ........ 1898.
MD2400 Baud Modem MNP-3 .... 169.
Farallon
Media Tracks ................. 189.
Media Tracks MM PK ............. 318.
Media Tracks MM PK CD ............ 319.

Micropolis
5.25" Full Height Drive
5.25" Half Height Drive
5.25" Full Height Drive
Quantum 3.5" Drive
Half Height Drive
60-MG 19ms .................... 348.
100-MG 19ms .................... 348.
150-MG 19ms .................... 579.
220-MG 19ms .................... 829.
340-MG 19ms .................... 948.
540-MG 19ms .................... 1148.
Syquest
44 MB Cards .................... 75.
44 MB Mechanism ............. 425.
One Inch
Classic, ST, LC ......... Call. 

Remtron 2.0/6600V24 Mod Kit .... 839.
PhoneNET DB9 ..................... 31.
Din-8 ..................... 121.
Star Controller ................. 159.
StarController-EN ............ 159.
Global Village
TelePort A200 (4400 bps) ........ 128.
TelePort Plus 1 ................. 198.
Ikeagami
20" Color Mon .................... 1299.
20" Color Mon Ultrasonic .... 2299.
20" Monochrome Monitor .... 869.
Iomega
Bernoulli Dual Drive ............. 2695.
Bernoulli Portable ............. 1495.
Bernoulli Transportable .... 1698.
Bernoulli Tin-Pack Gold .... 1698.
Micron
XCEED II-128K (Cache Card) ... 259.
Micron Video Cards
8bit Mac II - 16" Mon ............ 558.

The Datasette
Removable Hard Drive Case

CRU Hard Drive Case
Data Port Removable Case ........ 18.
Full Height Case Black ........... 220.
Full Height Case Platinum .......... 220.
Half Height Case Black ........... 168.
Half Height Case Platinum ......... 116.
Squyet Case Platinum ............. 116.

Mac's Place

Contact Ease $258
Westware A Rolodex™, Mail merger, & phone dialer all in one. Helps you keep in touch—it never lets anything fall through the cracks. “…the simplest interface of any contact package we’ve seen…a solid hit”—MacWeek

MacWrite II, Nisus, WriteNow and Full Write Pro.

with every order:” –Mac
“We’d rather help you than sell you.”  –Mac

**Mac Luggage**
- Ultimate Classic $64

**I/O Design**

**Personal Press & SuperPaint Publishing Value Pack $278**

**Silicon Beach**
- Created with the entry-level user in mind, the Publishing Value Pack offers a powerful, low cost publishing solution that combines ease of use with powerful page layout, paint and draw features, and more.

**Plains and Simple $255**
- At last—accounting software powerful enough to help you manage your business with confidence, simple enough so you don’t have to be a computer expert—or an accountant—to use it.

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Gravis</td>
<td>$9.99</td>
</tr>
<tr>
<td>Apple</td>
<td>$10.65</td>
</tr>
<tr>
<td>American Power Conversion</td>
<td>$20.55</td>
</tr>
<tr>
<td>Casio</td>
<td>$69.79</td>
</tr>
<tr>
<td>C-Enterprises AB Box</td>
<td>$35.79</td>
</tr>
<tr>
<td>Apple M001</td>
<td>$49.99</td>
</tr>
<tr>
<td>SF-9500</td>
<td>$245.99</td>
</tr>
<tr>
<td>Fellowes</td>
<td>$6.64</td>
</tr>
<tr>
<td>Goldsteined &amp; Blair</td>
<td>$19.99</td>
</tr>
<tr>
<td>Hammonton Bible 3.0</td>
<td></td>
</tr>
<tr>
<td>I/O Design</td>
<td></td>
</tr>
<tr>
<td>MagnaPak</td>
<td>$115.99</td>
</tr>
<tr>
<td>Kraft</td>
<td>$39.95</td>
</tr>
<tr>
<td>Kurta</td>
<td></td>
</tr>
<tr>
<td>MacV/32</td>
<td>$58.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$43.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$58.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$33.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$43.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$58.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$33.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$43.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$58.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$33.95</td>
</tr>
<tr>
<td>MacV/32</td>
<td>$43.95</td>
</tr>
</tbody>
</table>

**Xceed Video Cards**
- See Listings

**Macsync HC 14" Monitor $498**

**NEC**
- Designed exclusively for Mac II video card and compatible with all the latest monitor technology.

Accepts all kinds of video cards for a wide variety of applications.

---

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090
Access to the Entire Adobe Type Library

FREE!

Get Adobe's Type On Call FREE with your purchase of Microtech's CD600, or NEC's Intersect CDR-35 Portable CD-ROM reader.

Adobe’s Type On Call™, the CD-ROM version of the Adobe Type Library for your Macintosh® is the fastest, easiest, and most economical way to buy Adobe type. Type On Call stores 950 high quality Postscript™ Type fonts all on one compact disc.

Whenever you need to purchase a font package or a single typeface, simply call DR MAC toll free and we will issue you an access code to open the desired font file on your CD-ROM. It's that simple. You are up and running in minutes.

By ordering Type On Call now, you will also receive Adobe Type Manager™ (which includes 13 of the most popular Adobe typefaces) and 2 typeface families from a selection of 8 absolutely free.

Call the Doctor for further details and other special Adobe font discounts.
## Software

### ABRACADATA
Design your own Home Landscape, Architecture or Interiors

### Adobe Systems
- Adobe Illustrator 3.0
- Adobe Type Manager
- Adobe Typewriter 1.2
- Adobe Type Align
- Streamline

### ALFRED
FontMaster: Please Call

### Microvantage
MacPRO PLUS** $129
Compatible with all Macintosh computers, this enhanced DOS-keyboard macro package includes Period/Commas lock capability and interchangeable Caps Lock and Ctrl keys. Connecting cable also included and a free offer for Tempo™ keyboard macro package. 3-year warranty and unlimited toll-free product support.

### DELTA POINT
**$205
Special 10-pack price!
Network Desk Accessories: FileShare, a fast and simple tool for sharing files across an AppleTalk network. Features direct multiple file transfers, background operation and security. TextExchange is a text conferencing tool that allows users on any AppleTalk network to talk to each other and leave messages.

### FREEDOS
- White Knight
- HYPERPRESS
- ICOM SIMULATIONS
- On Cue
- HyperTMQ
- INNOVATIVE DATA DESIGN
- MacPerf
- INSIGNIA
- Soft PC
- INT'L BUSINESS SOFTWARE
- DataVault - 3 user pack
- LANGUAGE SYSTEMS
- Fortran and MPW
- LAYERED SOFTWARE
- ALLDOS
- EXPERTSYSTEMS
- Ad السعودية
- MACROMIND
- Magnetics Director

### FONTSHARE** $125
Now all files on a network can share downloadable fonts residing in any network file server. Imagine the disk space, not to mention the money, you'll save by not needing a dedicated printer for each workstation or printer. Compatible with AT and includes 3 free fonts and the N-FONT utility.

### POWER UP
- Office Plus
- Address Book Plus
- Address Book Plus with Binder
- Calendar Creator
- Fast Forms
- PREFERRED PUBLISHING
- Database
- Exposure Pro
- PersonFinder
- PRE-PRESS TECHNOLOGIES
- SpectroJet
- QuarkXPress

### QuarkXPress** $199
Enhance your desktop publishing with QuarkXPress. QuarkXPress is the industry standard for desktop publishing and is used by thousands of designers and publishers around the world. It is the easiest way to create professional-looking documents and presentations, whether you're designing brochures, newsletters, or business cards.

### MACPRO PLUS** $129
Compatible with all Macintosh computers, this enhanced DOS-keyboard macro package includes Period/Commas lock capability and interchangeable Caps Lock and Ctrl keys. Connecting cable also included and a free offer for Tempo™ keyboard macro package. 3-year warranty and unlimited toll-free product support.

### Delta Point
**$105
- Database
- Exposure Pro
- PersonFinder
- PRE-PRESS TECHNOLOGIES
- SpectroJet
- QuarkXPress

### QuarkXPress** $199
Enhance your desktop publishing with QuarkXPress. QuarkXPress is the industry standard for desktop publishing and is used by thousands of designers and publishers around the world. It is the easiest way to create professional-looking documents and presentations, whether you're designing brochures, newsletters, or business cards.
**Hardware**

**Takes Care of You!**

**WEALTH BUILDER $142**

Earn more, invest wisely and save effectively with Wealth Builder, your complete personal planning and investment system. Receive objective information on up to 1200 mutual funds and 10,000 stocks and bonds.

**APPLE**

Mac Systems - Lowest Pricing CALL ABATON

- Interfax, fax-modem 24/96: $358
- 256 grey scale scanner w/extra: $1259
- 300 color & grayscale scanner: $1699
- ColorLink, Laser Printer: $1995

**ABCOM**

- Extended Carry Case for Mac SE: $76
- Carry Case for Mac IIx/Imagemac: $76

**ANIMAS**

- True Color Hand Scanner: $522

**CAERIE**

- The Tiptouch: $469

**CAYMAN SYSTEMS**

- GatorBox: $1890
- GatorCard E/I for Mac II: $432

**COMPATIBLE SYSTEMS**

- EtherRoute: $1045
- Ether Plus: $369
- Ether II: $318

**ABCAM CARRYING CASES $76**

These sturdy cases are constructed of cordura nylon, backed with 1" foam padding and use metal hardware and heavy duty zippers for the best protection available. (navy or black)

**Policies**

- Visa, Mastercard & Amex accepted.
- Credit card is not charged until order is shipped.
- California residents add 6.75% sales tax.
- Hours: Mon-Fri, 9:30-11 EST, Sat 11-6 EST.
- Call (818) 501-6581, FAX (818) 501-3760 for current pricing. All prices & policies subject to change without notice.

**Shipping**

- $3 Airborne Overnight continental US.
- Ground shipping over 10 lbs will be shipped ground.
- Same day shipping.
- Returns: Call for R.A. number before return.

**Money Back Guarantee**

- Most products have a 30 day money back guarantee. Please inquire when you order.

**Internat'l Reseller Program**

- We ship regularly to 45 countries worldwide.
- Call about our special pricing.

**Special Products**

- WEALTH BUILDER
- DART PRODUCTS
- DAT ADAPTERS
- DESK
- E-MACHINES
- ERGODITION
- FARALLON
- USB Stick
- WEI & 2WAY PORTS
- CD-ROM DRIVES
- COMPUTER CASES
- DATA PROTECTION
- MICROTECH
- INTERFAX 24/96
- RADIUS
- RASTEROPS
- UMAX SCANNER
- INTERFAX 24/96
- RECORD HOLDER PLUS
- RECORD HOLDER PLUS
- BLACK & WHITE SCANNERS
- COLOR SCANNERS
- SUPER PRINTER
- SUPER PRINTER
- SONY
- A400 Color Monitor: $695
- SUPRA
- 2400 Baud External Modem: $109
- TOTAL SYSTEMS
- Gemini 16MHz 020, *New Low Pricing* - $99:
- Gemini 16MHz 020, *New Low Pricing* - $99:
- Gemini 16MHz 020, *New Low Pricing* - $99:
- Gemini for MacPlus
- UMAX
- UC300 Scanner: $1675
- WACOM
- Designing Tablets

**DR-MAC**

14542 Ventura Blvd., Suite 200
Sherman Oaks, CA 91403
(818) 501-6581
Federal ID 95-4183196
Five Simple Reasons:

1. Quality: While our products may not be fancy, our cases are all domestically manufactured, none of those questionable-quality imported knock-offs. They utilize the best auto-switching digital power supplies and quiet, high capacity fans. Our connectors are all name brands of the finest quality. Our drive mechanisms speak for themselves. Quantum, WREN, Maxtor, Conner, Syquest, Teac... Industry standards... the best available.

2. Knowledge: Our helpful, knowledgeable sales associates will help you determine what is the best drive for your needs (not just the most expensive). They'll help you navigate those thorny termination issues, and help you decide the right drive for your particular hardware configuration.

3. Support: Our trained technical associates will help you address any questions you might have about an APS drive. Are you running into conflicts when you use certain combinations of hardware and software? Our technical associates can help you sort through the kinds of problems that plague both the novice and the power user.

4. Service: Absolutely the best in the industry! If we tell you we have it, WE DO! We'll ship your drive when we promise, as we promise. We never charge your credit card until after your order has shipped from our factory. In the unlikely event that you have a problem with your drive, our exclusive 90 day performance guarantee goes immediately into effect. We'll ship you a new drive overnight and have the suspect drive picked up at our expense. After the first 30 days, our warranty turn-around time is 72 hours (often 24). We'll Ship back to you via overnight air - our expense. Our one and two year warranties include a thirty day money-back guarantee. Your toll-free phone call to either sales or technical support is answered by a real person 24 hours a day, none of those frustrating voice mail mazes that you find other places. Our goal is to care for you better and faster than the dealer down the street.

5. Economy: Our prices speak for themselves! APS consistently offers the lowest prices on immediately available inventory in the business. Our pricing is based on assembled, formatted products with everything you need to plug-n-play. Our external drives are available in externally terminated (with terminator) or internally terminated units, - your choice. Need a Mac to SCSI, or daisy-chain cable? Take your pick, - no extra charge. Need multiple units? Don't pay for the same piece of bundled software three times, buy them only if you need 'em*. We have outstanding values on several "industry standard" drive utility products at as much as 80% off retail prices!

*Some limitations may apply
**Performance 30 Day Guarantee**

**Quantum 10 - 12ms Access**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>40mb</td>
<td>$299</td>
<td>$399</td>
</tr>
<tr>
<td>52</td>
<td>329</td>
<td>429</td>
</tr>
<tr>
<td>105</td>
<td>399</td>
<td>499</td>
</tr>
<tr>
<td>120</td>
<td>599</td>
<td>699</td>
</tr>
<tr>
<td>170</td>
<td>729</td>
<td>829</td>
</tr>
<tr>
<td>210</td>
<td>859</td>
<td>959</td>
</tr>
</tbody>
</table>

**MAXTOR 15 - 17ms Access**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>$299</td>
<td>$299</td>
</tr>
<tr>
<td>80</td>
<td>429</td>
<td>429</td>
</tr>
<tr>
<td>200</td>
<td>859</td>
<td>859</td>
</tr>
</tbody>
</table>

**Conner 25ms Access**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>$319</td>
<td>499</td>
</tr>
</tbody>
</table>

**Syquest Syquest**

- 45 meg Removable $549 Dual 45 Meg 999
- All Include one cartridge + $72 per cartridge for additional cartridges

**Teac 155mb Tape**

Include Retrospect $629

**WangDAT**

- All Include one cassette 1749

**Dual Drive Combo's**

- 1 gig WREN/WangDAT $4999
- 600 mb/WangDAT 3799
- 600/Teac 155 2699
- 600/SyQuest 2599
- 300/Teac 155 2049
- 300/Syquest 1999
- 330/Teac 155 2399
- 330/SyQuest 2399

- All Tape Combo's Include one cassette and Retrospect!
- All SyQuest Combo's Include one Cartridge

ASK ABOUT OUR OTHER COMBO's, SUN & IBM SCSI DRIVES

---

**Pollard Peripheral Systems**

1-800-233-7550

**0014 800 125 875**

Toll Free from Australia

0800-897545

Toll Free from U.K.

Toll Free U.S. and Canada

VISA/MC., Corp., Gov., Univ. PO's, NO SURCHARGE

AMEX ACCEPTED

International Orders Call (816) 478-8300

9:30am - 7:00pm Central Time

fax: (916) 478-4596 24hrs.
Your window to hot new products in the Macintosh industry. A unique section displaying new advertisers and their products. The place to turn first for this month’s latest.

For special rates and details contact your local MacUser sales representative.

True Contour Mapping for the Macintosh®

MacGRIDZO 3.1 features:
• Surface modeling using up to 32,000 randomly spaced points.
• Plot 2D and 3D contours, 3D mesh and shaded relief maps.
• Calculate volumetrics, surface area and cross-sections.
• High resolution printing. Save images as PICT or DXF.

RockWare, Inc. offers a wide variety of affordable software for the earth-sciences. Call or write for a free catalog of programs including mapping, digitizing, log-plotting, terrain data, statistics, etc.

4251 Kipling Street, Suite 595, Wheat Ridge, CO 80033
PH: (303) 422-5645 FAX: (303) 422-6171

Please circle 31 on reader service card.

FaxPro™—The Network Fax Modem!

FaxPro puts the power of fax into every Mac on your network. Lowers costs and eliminates the headaches of multiple phone lines and fax boards. Uses your existing AppleTalk, EtherTalk or PhoneNet.
Rated BEST by PCWeek (5/29/90).

Features: Background operation—no dedicated Mac! Unlimited users on one phone line! Automatic cover sheets! Phonebook DA! Mailing lists! Custom overseas dialing! Centralized call accounting! Available now!

$1099 FaxPro
(for Tops, AppleShare, Novell & 3Com)

$1199 with FaxProShare™
file sharing software

(800) 292-7771
(408) 746-1590 FAX (408) 746-1593

Please circle 84 on reader service card.
by HR Record Keeping?
Use "Abra Software"
Abra 2000 - Employee Information
For 10 to 1,000 Employees
AbraTrak - Applicant Tracking
Helps you - "Find 'em Fast!"
Real working Demo & Manual $25/product
plus shipping (and sales tax for CA companies)
Abra MacDabra Software Company
485 Pala Avenue, Sunnyvale, CA 94086
(408) 737-9454 • FAX (408) 737-9456
Please circle 375 on reader service card.

GeoSell!
Frankly, if we had your customer list,
we'd dump it. Right into GeoQuery.
The software that turns any
ordinary list into an instant,
interactive sales map.
For a free GeoQuery
demo disk, call 1-800-541-0181.
It's the one call that can make your
other calls really pay off.

GeoQuery
Put Your Business On The Map.*
1-800-541-0181
GeoQuery is a registered trademark, and "Map" s slogan a trademark, of GeoQuery Corp. © 1990.
Please circle 19 on reader service card.

Changing your mailing address?
It's a simple procedure to
ensure that your next
issue of MacUser will
catch up with you as soon
as you move.
Please send your NEW
address PLUS your
current mailing label to:
MacUser
P.O. Box 56986
Boulder, Colorado
80322-6986
Please allow up to 60
days for change of
address to take place.

Install your Large
Hard Drive with a
Click of Your Mouse.
Installation of virtually any SCSI drive is easy and
only minutes away with Ontrack's Disk Manager - Mac
Hard Disk Installation Utility for Macintosh.
Ontrack, the world leader in disk management software,
gives Macintosh users added hard drive options
with Disk Manager - Mac. Select the SCSI drive of your
choice, and create a Macintosh that is easier to use and less
expensive to upgrade.

· Install any SCSI drive · Create customized partitions
· Complete with utilities to manage and secure your
data - including password protection and
· a removable drive option
· Available with or without a hardware installation kit
· FREE TECHNICAL SUPPORT!
Technical Support: 612-937-2121
1-800-752-1333
International: 612-937-1107 • Fax: 612-937-6815
Please circle 357 on reader service card.
If you hate to back up, don't.

Introducing DiskTwin, A Revolution In Macintosh Backup.

Your Macintosh is only as useful as the data that's stored on your disk. Unfortunately, it's not a matter of if, but when, your disk will crash. **STOP WORRYING** about losing data or time when a hard disk fails. While other backup systems can only take periodic "snapshots" of your disk to a tape or a floppy, DiskTwin runs continuously, making an up-to-the-instant backup of your primary disk on a second disk. When your primary disk fails, you have a complete backup that comes online automatically, so **FORGET ABOUT DOWNTIME**. Whenever your Macintosh saves data to disk, DiskTwin simultaneously saves to a twin disk. And DiskTwin **WON'T SLOW YOUR MACINTOSH DOWN**.

With removable media like erasable optical, SyQuest, or Bernoulli drives, **DISKTWIN GIVES YOU ARCHIVAL STORAGE**. **DISKTWIN IS PERFECT FOR APPLESHARE** file servers because it runs transparently, without degrading performance, while AppleShare is running. And DiskTwin maintains all user and group privileges. If you hate to backup, **YOU'LL LOVE DISKTWIN**.

For Macintosh II family or SE/30 computers.

GOLDEN TRIANGLE

619/279-2100 • FAX 279-1069 • AppleLink D0593

Please circle 15 on reader service card.

DiskTwin and the Golden Triangle logo are trademarks of Golden Triangle Computers, Inc. All other trademarks are the property of their respective owners.
$1495 Says
A Mac LC Beats A IIfx!

Introducing TopCards™
68030/40 CPU Cards For The Mac LC & Ilci.

When it comes to upping the Macintosh performance ante, nobody deals out the power like Venture Technologies™. Install one of our new 50MHz 68030 or 68040 TopCards in your Mac LC or Ilci and you'll own the world's fastest Macintosh, outperforming even the IIfx... by as much as a twelve to one margin!

Installation is easy. Just plug a TopCard into the direct slot of your LC or the 'cache' slot of your Ilci and drag an INIT SOMHz Power into your System Folder. Nothing could be easier. Better yet, because the TopCard is totally user transparent, your everyday computing routine remains unchanged — except, of course, for how quickly you'll finish your work! Best of all, at prices starting as low as $1495, a Venture Technologies TopCard is a sure bet for Mac power users everywhere.

We Draw Some Pretty Impressive Numbers.

Regardless of which 50MHz TopCard you choose, your Mac will be able to 'outplay' any IIfx around. Select our 68030 TopCard and you'll beat the IIfx hands-down — by as much as a 10-15% margin. Of course, if you're a real high-performance player, you'll appreciate our 50MHz 68040 TopCard®. Featuring 1.2 million transistors and executing 40 million instructions per second, the 50MHz 68040 Motorola processor can crunch through floating-point data up to 12 times faster* than a IIfx. Plus, the 68040 includes a built-in floating-point coprocessor and 32K of cache memory with buffered writes. No more waiting for a five megabyte illustration to redraw itself just because you moved it a pica or two to the left. And those two-hour spreadsheets? They're a thing of the past! With a TopCard installed, your 50MHz Mac will almost seem to anticipate your creative thought process.

We Deal 'Em The Way You Like 'Em.

Can't decide which TopCard you need? No problem. Get our $1495 50MHz 68030 TopCard and later return it for a full purchase credit toward our 50MHz 68040 card. No other vendor offers such a liberal trade-in policy. Nobody.

And speaking of policies, our warranty and support programs are among the best around. TopCard owners have nearly three times more peace-of-mind than IIfx owners. That's because we back every TopCard with a full three-year factory warranty, not to mention a no-risk, 31-day money-back guarantee.

Want to get in on the best 50MHz card deal around? Call us today at 803/951-3600. We'll bet you $1495 that your Mac LC or Ilci can beat their IIfx... anytime!

Venture Technologies
111 Yachting Circle • Lexington, South Carolina 29072
Telephone: 803/951-3600 • FAX: 803/957-9504
Please circle 50 on reader service card.

* Compared to an equivalently configured 60MHz 68030, the 50MHz 68040 executes instructions up to four times faster on overall system performance and more than 12 times faster on floating-point instructions. Metrics concerning Trade-In Policy, Three-Year Factory Warranty, Product Specifications, Availability, and Money-Back Guarantee are available, in writing, on request. The $1495 introductory pricing on 50MHz 68030 TopCards is valid through February 28, 1991. Prices and specifications are subject to change without notice. Venture Technologies and TopCard are trademarks of Venture Technologies, Inc. Macintosh and Mac are trademarks of Apple Computer, Inc. ©1991 Venture Technologies, Inc.
Versatile and elegant.

The future lies in image management.
Keith Brock
Executive Creative Director
Landor Associates

3D Conceptual Design
- Complete modeling tools
- Extensive Library Part Set
- DXF import and export

Rendering
- Render as you design
- 24-bit color support
- Anti-aliasing
- MacRenderman™ Compatible

Animation
- Turn your design into a 5 minute Animated Presentation
- Play back lengthy animations from your hard drive
- Animations play at up to 30 frame per second

System Requirements: System 6.0.3 or later / 32-bit Color
QuickDraw™ / 2 Mbytes RAM (minimum) / Color Graphic Board (6-Bit or more) / Hard Disk Drive
DynaPerspective is a trademark of Dynaware USA, Inc.
MacRenderman is a registered trademark of Pixar.

For A Video Call 1-800-445-DYNA
MacUser Marketplace

**HARDWARE** 322-329
BAR CODE ........................................... 322
CD-ROM ........................................... 322
COMPUTER SYSTEMS ..................... 322-324
DATA ACQUISITION ................. 324
DATA RECOVERY SERVICES .......... 325
DISK DRIVES ......................................... 325
DISKETTES ........................................... 325
GENERAL ........................................ 326-327
INSURANCE ........................................ 327
MEMORY UPGRADES ................. 327-329
PERIPHERALS ................................. 329
PRINTERS ........................................... 329
SCANNERS ........................................... 329

**SOFTWARE** 329-335
ACCOUNTING ..................................... 329
BAR CODE ........................................ 330
BUSINESS ......................................... 330
BUSINESS TIME MANAGEMENT .... 330
CD-ROM ........................................ 330-331
DESKTOP PUBLISHING .......... 331
EDUCATIONAL .................................. 332
EMULATION ...................................... 332
ENGINEERING .................................. 332
ENTERTAINMENT/GAMES ........ 332
FONTS ........................................... 332-333
GENEALOGY ...................................... 333
GENERAL ........................................ 333
GRAPHICS ........................................ 333
LANGUAGE TOOLS ............................. 333
LOTTERY ........................................ 333
MEDICAL/DENTAL ............................... 333
MUSIC/MIDI .................................... 333-334
PRINT DRIVERS/SPOOLERS ........ 334
PUBLIC DOMAIN ............................... 334
RELIGION ........................................ 334
SHAREWARE ...................................... 334
STACKWARE ...................................... 335
TAXES ........................................... 335

**MISCELLANEOUS** 335-337
ACCESSORIES ..................................... 335-336
DATA CONVERSION SERVICES ...... 336
DESKTOP PUBLISHING SERVICES ... 336
DISKETTE COPY SERVICES ...... 336
INSURANCE ..................................... 336
SERVICES ........................................ 336-337
SLIDE IMAGING SERVICES ...... 337
SUPPLIES ........................................ 337

**ADVERTISING RATES AND INFORMATION**

MacUser Marketplace is a special economical section for product and service listings.

Advertisements are grouped by category and sold by column inches. Second color option available.

Standard Directory Listings are also available for a minimum of 3 issues at $415.00 per issue ($1,245.00 total).

For additional information call 212-503-5115.

**CLASSIFIED ADVERTISING STAFF**

One Park Avenue, New York, NY 10016
(212) 503-5115 or (800) 825-4ADS

Director, Classified Sales  
Paul Stafford  
Paul A. Fusco

Group Advertising Director  
Kathryn J. Cumberlander  
Wanda D. Brown  
Advertising Support Manager  
Monica Dixon

Production Director  
Anne R. Brockinton  
Production Supervisor  
Bessi Dion

Production Manager  
Carolyn Bingham  
Production Coordinator  
Chris Meyer

**ACCOUNT MANAGERS**

KAREN CASTORINO (212) 503-5140  
AZ, CA (213, 619, 714, 818), DC, DE, HI, MD, NH, NB, NV,  
PA, SC, TN, UT, VA, WI, WV, CANADA and Overseas

THOMAS KOLETAS (212) 503-5136  
AL, FL, GA, MA, ME, MI, MO, ME, NJ, NC, NY, RI, TX,  
and VT

DENNIS LEAVEY (212) 503-5111  
AK, AR, CA (209, 408, 415, 707, 805, 916), CO, CT, IA, ID,  
IL, IN, KS, KY, LA, MN, MT, ND, NM, OH, OR, OK, SD,  
WA, and WY
MacUser Marketplace

HARDWARE/ BAR CODE

BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II
Requires no additional program or port
Does not affect keyboard or mouse
Industrial quality, heavy-duty units
Also available
SmartCard encoder reader
Magnetic encoder
Code & 38 UPC Printing Software
Portable Bar Code Reader

TPS Electronics
4047 Computer Street
Palo Alto, CA 94303
415-656-6833 1-800-525-5920
Telex: 668-5906
Fax: 415-656-3843
CIRCLE 201 ON READER SERVICE CARD

EZBarcode®
Bar Code Reader for Macintosh, Mac Plus, SE, II
PC-WEDGE II Included $399
Metal Wand add $60
Mag Stripe Reader add $190
Works with any program no software required
Connects to Apple port or between keyboard and computer
Recognizes bar code type automatically
Reads all standard bar code types
Supersets ASCII, check digits, add-on, printable point, barcodes, matrix, and more
Automatic switch from bar code to text

TimeKeeping Systems, Inc.
1300 V East 51st Street
Cleveland, OH 44103
Phone: (216) 361-9995 Fax: (216) 361-0026

CD-ROM

CD ROM, Inc.
CD-ROM, WORM,
MAGNETO-OPTICAL DRIVES
CD-ROM DRIVES FOR IBM AND MAC
OPTICAL CONSULTING SERVICES
• PUBLISHING
• DISTRIBUTION
• NETWORKING
QUALITY PRODUCTS AND SERVICES
AT COMPETITIVE PRICES
FREE CATALOG
TEL: 503-231-9973
1690 CORNELL BLVD. QUITE 400
GOLDEN, COLORADO 80401, USA
FAX: 303-231-9888, CS 76007,544
VISACARD/MAEUOVEY/PO
CIRCLE 202 ON READER SERVICE CARD

MacUser Marketplace
To place your ad call
(213) 503-5115 or (800) 825-4ADS

COMPUTER SYSTEMS

1-800-334-KIWI

1-800-729-7031
New Jersey
1-800-268-7805
Toronto, Ontario

Brand new, latest models in stock!
One Year Warranty Included

Entire Mac Line
New and Used: Bought and Sold

The Best Prices, Quality and Service. Period.

CRA Systems Inc.
500 SOUTH UNIVERSITY PARKS DR.
WACO, TX 76701

We Buy and Sell New and Used Systems Any Quantity
Call us for a quote on your mac

CALL (817) 754-2345

University And Corporate PO'S Welcome
CIRCLE 203 ON READER SERVICE CARD

MACMARKET

Mac Classic 2/40 ............... 1279
Mac SE/30 2/40 ............... 1099
Mac IIfi 2/40 .................. 7699
Mac IIci 3/60 .................. 2999
Mac LC/30 ................... 1299
Mac LC IIe .................. 1799
Mac LC IIi ................... 2499
Mac LC IIi Plus ............... 2999
Mac LC IIi Quad .............. 4299
Mac LC IIi Quad Plus ......... 2199
Mac LC IIi Quad Plus II ....... 3699
Mac IIci 2/40 ............... 2999
Mac IIci 4/80 ............... 7999
Mac Portable 1/40 .......... 2999
Mac Portrait Monitor ......... 799
MACSync HC Monitor ....... 429
Personal II SC/NT ......... 1399
LaserWriter IINT ........... 2799
LaserWriter INTX ........... 4099
HP DeskWriter ............... 689
HP LaserJet Series III ..... 1599
HP AppleTalk Interface .... 219
Radius Pivot Monitor+Card ... 1249
SuperMac 19" Trin Monitor .. 2350

WE ONLY SELL BRAND NEW COMPUTERS

MicroUSA
(213) 473-2535 Fax (213) 473-5236

For more information please call (213) 473-2535

For more efficient response please fax your request to us at FAX: 818-981-4218

MACMARKET/GMCC
818-981-4210
CIRCLE 207 ON READER SERVICE CARD

In U.S.A. Call:
1-800-729-7031
New Jersey
1-800-268-7805
Toronto, Ontario

In Canada Call:
International

We Buy and Sell New and Used Systems Any Quantity
Call us for a quote on your mac

CALL (817) 754-2345

University And Corporate PO'S Welcome
CIRCLE 203 ON READER SERVICE CARD

CompuServe (817) 754-2345
Mac User Marketplace

MacUser
March 1991
You taught MacInStock a lesson. In 1990, we ran ads of all sizes, types, and colors, but you didn't care. On your quest for the very best combination of price, service, and quality peripherals, you called them all, big or small.

This is going to save us a bundle. Now, we can spend more on tech support and customer service (Although we already devote more phone time per customer than any other mail-order Mac dealer). And one other thing. We can also cut prices. That's going to save you a bundle.

Mac Expertise • Toll-Free Tech Support • Free Warranty Repair • Rock-Bottom Prices

Ask a veteran where to buy your Mac. There are at least 15 mail-order Macintosh dealers in this magazine. We all say we’re the best -- so get customer references. Ask about reliability. Ask how support was handled. Then buy yourself a Mac.

For great prices and expert service on new Macintosh computers and the best quality Macintosh peripherals, call us last.

Mac•In•Stock® 800-633-1538 
Fax:213-322-1486 • International:213-322-1455

We can also cut prices. That's going to save you a bundle.
MacUser Marketplace

Stand out in a crowd! Take advantage of MacUser's new second and third color options.

Call 1-800-825-4237

MacUser Marketplace

Standard directory listings available for a minimum of 3 issues at $415.00 per issue ($1,245.00 total).
DATA RECOVERY SERVICES

ONTRACK DATA RECOVERY

Ontrack Data Recovery specializes in recapturing data from any network, microcomputer hard drive or floppy diskette.

- 95% success rate
- Fast turnaround
- Expertise with Macintosh, DOS, Novell, OS/2, Unix, Xenix, Bernoulli and more!

Find out why we are the leaders in data recovery - call an Ontrack Data Recovery representative today for more information.

Keeping you in business is our business.

1-800-872-2599

DATA Recovery Specialists

Lost data from a Quantum, Wren or Seagate drive?
STOP!

MacUser Marketplace

To place your ad call (212) 503-5115 or (800) 825-4ADS

Do nothing more until you call us!
SyQuest! WREN! Drives! Quantum Drives! Fujitsu Drives! We can probablY help you recover your data from non-working drives. Free estimates, reasonable rates, fast turn-around. Don't make II worse...

Give us a call
(816) 478-3999

MacDirect! 800-621-8461

Vax, Mac, CDC, Gov, Corp. Univ. P.O.'s, Accepted! New drives, Factory Warranty, 1 Year Warranty, cables and software included.

TelePort 2400 baud ADB Modem $125
300 bps Fast Cache, lifetime warranty, $29.95
1 meg SIMM, lifetime warranty, $42
4 meg SIMM, lifetime warranty, $229

DISK DRIVES

Quantum Drives!

SyQuest! WREN! Drives! Quantum Drives! Fujitsu Drives! 45MB $349
Two Year Warranty

Quantum 50MB $429
100MB $599
200MB $999

SoQuest

Renewable Hard Drive with Warranty
45MB $399
One Year Warranty

Seagate

20MB $299
One Year Warranty

Conner

40MB $349
One Year Warranty

Keep in touch with your Mac!

Complete with Cables, Mounting, and HD Package Utilities
With True Partitioning Ready to "Plug-In and Run".

Call 1-800-BAVERLINE, Belmont, MD 20705

FAST 30-Day Money Back Guarantee

MacUser Marketplace

Gives you the versatility you need to get your product the most attention. Our options include:

- Second and third color options
- A choice of display format or directory listings
- Frequent and advance payment discounts that let you get the most from ad dollars

GENERAL

Category begins on the next page.
**Hardware**

New hardware abound. The current list includes:

- **Syquest Drive Cleaning Kit**
  - Removes media and cartridge problems
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589

- **Syquest**
  - $20

- **Syquest Drive Cleaning Kit**
  - $72

**Hardware**

- **Printers**
  - New 16 ppm
  - $2495

- **Hardware**
  - Video Displays:
    - Atari Computer

- **Scanners:**
  - Interfaces
    - Atari
    - IBM PC

- **Upgrades:**
  - Digital Video
  - Outboard
  - Digital Image

- **CD ROM Titles:**
  - Chord
  - CD Audio
  - CD Video

- **Other**
  - Apple Graphics
  - Apple II
  - Apple III

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Software:**
  - IBM/Novel
  - IBM PC

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Syquest Drive Cleaning Kit**
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589

**Hardware**

- **Printers**
  - New 16 ppm
  - $2495

- **Hardware**
  - Video Displays:
    - Atari Computer

- **Scanners:**
  - Interfaces
    - Atari
    - IBM PC

- **Upgrades:**
  - Digital Video
  - Outboard
  - Digital Image

- **CD ROM Titles:**
  - Chord
  - CD Audio
  - CD Video

- **Other**
  - Apple Graphics
  - Apple II
  - Apple III

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Software:**
  - IBM/Novel
  - IBM PC

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Syquest Drive Cleaning Kit**
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589

**Hardware**

- **Printers**
  - New 16 ppm
  - $2495

- **Hardware**
  - Video Displays:
    - Atari Computer

- **Scanners:**
  - Interfaces
    - Atari
    - IBM PC

- **Upgrades:**
  - Digital Video
  - Outboard
  - Digital Image

- **CD ROM Titles:**
  - Chord
  - CD Audio
  - CD Video

- **Other**
  - Apple Graphics
  - Apple II
  - Apple III

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Software:**
  - IBM/Novel
  - IBM PC

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Syquest Drive Cleaning Kit**
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589

**Hardware**

- **Printers**
  - New 16 ppm
  - $2495

- **Hardware**
  - Video Displays:
    - Atari Computer

- **Scanners:**
  - Interfaces
    - Atari
    - IBM PC

- **Upgrades:**
  - Digital Video
  - Outboard
  - Digital Image

- **CD ROM Titles:**
  - Chord
  - CD Audio
  - CD Video

- **Other**
  - Apple Graphics
  - Apple II
  - Apple III

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Software:**
  - IBM/Novel
  - IBM PC

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Syquest Drive Cleaning Kit**
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589

**Hardware**

- **Printers**
  - New 16 ppm
  - $2495

- **Hardware**
  - Video Displays:
    - Atari Computer

- **Scanners:**
  - Interfaces
    - Atari
    - IBM PC

- **Upgrades:**
  - Digital Video
  - Outboard
  - Digital Image

- **CD ROM Titles:**
  - Chord
  - CD Audio
  - CD Video

- **Other**
  - Apple Graphics
  - Apple II
  - Apple III

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Software:**
  - IBM/Novel
  - IBM PC

- **Hardware:**
  - NEC/Novalis
  - IBM PC

- **Syquest Drive Cleaning Kit**
  - $20

- **Syquest Drive**
  - 45 megabyte Removable Cartridges
  - $72 for $699

- **E-Machines**
  - New line
  - New line 2...
  - $279

- **Newbridge MicroSystems**
  - New line
  - New line 2...
  - $349

- **Chinon CDA-431**
  - $589
Cheap Mac's

Macs from $295
Mac Plus from $695. Mac SE from $995.

FULL 100% WARRANTY

Now you can buy Macintosh systems and peripherals for up to 50% off new prices. All come with a 3-month 100% warranty and a no-questions-asked 30-day money-back guarantee.

Reconditioned and guaranteed by Sun Remarketing, America's foremost Macintosh remarketer.

For complete catalog or to order, call anytime. Operators available 24 hrs.
1-800-821-3221 or write to: Sun Remarketing
P.O. Box 4059, Lo.iran, UT 84321

CIRCLE 226 ON READER SERVICE CARD

MacUser Marketplace

is a special economical section for product and service listings.
MEMORY UPGRADES

1 MEG SIMMS
- 80/70ns
- Low profile
- Surface mount
- All new parts
- Lifetime Guarantee

LOWEST PRICE!!!

UPGRADES!
- Accelerators
  by Dove, Daystar, & Newbridge

- Motherboards
  Many types!

800-332-6581
PERIPHERAL OUTLET
314 S. Bdwy • Ada, OK 74820
405-332-6581 • Fax 405-436-2245
(Prices subject to change)

MEMORY/HARD DRIVES
Syquest Removable

INTERNAL
SEAGATE 20 MB $259 $359
SEAGATE 30 MB $285 $369
QUANTUM 40 MB $333 $429
QUANTUM 60 MB $505 $699
T P 105 MB $545 $639
QUANTUM 170 MB $939 $929
QUANTUM 2 yr war, SEAGATE 1 yr Warranty

SIMMS
- 1 MEG X 8 SIMM 60's $59
- 1 MEG X 8 SIMM for MAC II Fx
- LASERWRITER NTX

SYQUEST
- Removable on cartridge

CIRCLE 231 ON READER SERVICE CARD

MAC Stretch a New Macintosh Classic: You get RAM, Big Screen, RAM Disk, Ethernet and future function connections.

A RAM card to grow on. For openers, Mac Stretch is a memory expansion card for the Macintosh Classic. It has 1 meg of RAM on board, and two SIMM sockets, so you can add .5 meg (with two of those 256K SIMMs left over from a previous upgrade) or 2 meg for a total of up to 4 meg of system RAM. Then comes the big surprise. Mac Stretch has a function socket so you can add either a video monitor card or a RAM disk card.

Mac Stretch Big Screen. Use any standard monochrome monitor in addition to the monitor in the computer. Put a big screen to work, now. Plugs into Mac Stretch RAM. This video circuitry was developed in collaboration with Lapis Technologies.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Trade in your current Classic RAM card. (or upgrade) or 2 megs for a total of up to 4 meg of system RAM. Then comes the big surprise. Mac Stretch has a function socket so you can add either a video monitor card or a RAM disk card.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

MacStretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.

ACCU-SIMMS
- We manufacture our own SIMMs and guarantee them for life. Add dependable memory from someone who can back it up with support.

CIRCLE 232 ON READER SERVICE CARD

CIRCLE 233 ON READER SERVICE CARD

MEMORY UPGRADES
256K/1MB & 4MB SIMMS
NTX / FX SIMMS
PORTABLE MEMORY
LIFETIME WARRANTY 30 DAY TRIAL
LOW PRICES! VISA / MASTERCARD
POH ACCEPTED FROM GOVERNMENT, UNIVERSITY & CORPORATE CUSTOMERS

ADDON AMERICA
DIVISION OF ROHM CORPORATION
433 N. MATHEA DRIVE, SUNNYVALE, CA 94088
(408) 746-1590 FAX (408) 746-1923
800-292-7771
CIRCLE 234 ON READER SERVICE CARD

ACCU-SIMMS
- We manufacture our own SIMMs and guarantee them for life. Add dependable memory from someone who can back it up with support.

Call Toll Free 1-800-662-SIMM(7466)
Data Memory Systems Co.
15 Union St.
Lawrence, MA 01840
(508) 683-2325 in MA, Fax (508) 975-5232

MacUser Marketplace
To place your ad Call (800) 825-4ADS or (212) 503-5115
today to reach 315,000 Macintosh Business Buyers


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.

ACCU-SIMMS
- We manufacture our own SIMMs and guarantee them for life. Add dependable memory from someone who can back it up with support.

Call Toll Free 1-800-662-SIMM(7466)
Data Memory Systems Co.
15 Union St.
Lawrence, MA 01840
(508) 683-2325 in MA, Fax (508) 975-5232

CIRCLE 231 ON READER SERVICE CARD

CIRCLE 232 ON READER SERVICE CARD

MacUser Marketplace
To place your ad Call (800) 825-4ADS or (212) 503-5115
today to reach 315,000 Macintosh Business Buyers


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.

ACCU-SIMMS
- We manufacture our own SIMMs and guarantee them for life. Add dependable memory from someone who can back it up with support.

Call Toll Free 1-800-662-SIMM(7466)
Data Memory Systems Co.
15 Union St.
Lawrence, MA 01840
(508) 683-2325 in MA, Fax (508) 975-5232

CIRCLE 231 ON READER SERVICE CARD

CIRCLE 232 ON READER SERVICE CARD

MacUser Marketplace
To place your ad Call (800) 825-4ADS or (212) 503-5115
today to reach 315,000 Macintosh Business Buyers


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.

ACCU-SIMMS
- We manufacture our own SIMMs and guarantee them for life. Add dependable memory from someone who can back it up with support.

Call Toll Free 1-800-662-SIMM(7466)
Data Memory Systems Co.
15 Union St.
Lawrence, MA 01840
(508) 683-2325 in MA, Fax (508) 975-5232

CIRCLE 231 ON READER SERVICE CARD

CIRCLE 232 ON READER SERVICE CARD

MacUser Marketplace
To place your ad Call (800) 825-4ADS or (212) 503-5115
today to reach 315,000 Macintosh Business Buyers


Future? We don't market vaporware, but we can tell you there are more possibilities for the function connection. We'd like to hear some of your ideas.

Mac Stretch RAM Disk. This function card has 4 SIMM sockets so you can add a RAM disk with 1, 2, 4, 8, 10 or 16 meg. This may eliminate the need for a hard drive in many applications. Uses standard 256K, 1 meg or 4 meg SIMMs.
MacUser Marketplace

Listings are grouped by category and sold by column inches.

SOFTWARE/ACCOUNTING

Accounting/Time Management
All NEW ProPayroll® Professional, a fully integrated, double entry bookkeeping system. Easy to use, with complete checkbook, profit and loss, inventory control, customized invoices, receivables, payables, and client data base. Price $349, Demo $40 + S/H. To order or for more info call or write: Weisel & Co., Inc.
147 East Rocks Road
Norwalk, CT 06851
(800) 635-7849 ext. #91

Bar Code
Category continued on the next page.

PERIPHERALS

Sharp IS Color

JX-100: List: $995 $647
8bit Color Scanner
JX-300: List: $2345 $1597
Business Color Scanner
JX-450: List: $5995 Call
Professional Color Scanner
JX-600: List: $14995 Call
Commercial Color Scanner
GPIB: List: $670 $437
Ni-Interface Package
W/Cable
Sales and Distribution
Computers & Peripherals

A.I.P.
9427 LURLINE AVE.
CHATSWORTH, CA 91311
TEL: (818) 882-7034
FAX: (818) 882-7503

CIRCLE 297 ON READER SERVICE CARD

Bar Code

PRINTERS

APPLE DAISYWHEEL PRINTER
Crisp office typewriter print quality on all MAC's & Apple II's. Fast 40 char/sec speed on 6-part forms. Fixed & proportional spaced fonts incl. legal & foreign language signs on one wheel. Boldface. 198 columns. NEW $499; RECONDITIONED $349 w/ easy MAC point & click printer resource & cable. Auto sheelfeeder $49. Commercial grade w/ 90-day guarantee.
Quality Discount Computers, Inc.
135 Arliss View Office
Wellington, NV 89444
(702) 465-2473 (415) 487-8148

CIRCLE 219 ON READER SERVICE CARD

PERIPHERALS

RasterOps

RasterOps 364 Color Board
NOW $ 895
RasterOps 24L Color System
NOW $5333
RasterOps ClearVue GS30 Gray Scale
NOW $1499
RasterOps ClearVue/II Monochrome
NOW $1139
RasterOps 264 II
NOW $ 399
RasterOps Video Expander
NOW $ 499

Subject to stock on hand. Quantities are limited. AUTHORIZED RASTEROPS DEALER

Toll Free (600) 622-6865
Bay Area (415) 623-8690
Canada (800) 833-6698
48860 Milmont Dr., Fremont, CA 94537
CIRCLE 236 ON READER SERVICE CARD

ACM User March 1991 329
MacUser Marketplace

Gives you the versatility you need to get your product the most attention. Our options include:

- Second and third color options
- A choice of display format or directory listings
- Frequent and advance payment discounts that let you get the most from ad dollars
CD-ROM Extravaganza!
1-800-843-9497

CD-ROM Drives
Microsoft Office is only $400 with the purchase of any CD-ROM drive. Limited time offer. Save $50 on EDUCORP CD-ROM 4.0 with any drive purchase. One-year warranty on all drives. Driver software and free SCSI cable included. Specify (+$80 SCSI to SCSI or +$90 Mac to SCSI cable. PC interface available. please call.

International Graphics Library
Commercial-quality images and backgrounds created by artists in the broadcast TV industry. Over 200 business-oriented 24-bit color & grayscale TIFFs. #1581, $299.00

Desktop Publishing CD
Contains over 150 laser fonts, over 1300 EPS clip art files, 12 programs related to desktop publishing, 22 demos, DTP IDX and utilities, world stamps in grayscale and color TIFF, and more. #1389, $79.95 intro offer

3-CD Pack For Only $99!
 Newly released for the Macintosh—Birth of America (w/sound), Shakespeare, and Sherlock Holmes on Disc! Regularly $288. Limited time offer. #1544, $99.00

EDUCORP CD-ROM 4.0
Over 620 megabytes of the finest public domain/Shareware software. #1388, $99.00

Exotica-ROM 2.0
New & improved Over 140 exotic paintings in brilliant color (24-bit & 8-bit) and grayscale. Upgrades available; please call. Available on floppy disk (task). #1-1327, $199 MAC & PC

Lingua-ROM
Speak Russian, French, Spanish, German, Japanese, Italian, and Chinese. 25 of HyperGlot's language tutors. #1358, $499.00

EDUCORP Stocks The Largest Selection Of CD-ROM Titles—Over 90 In Stock!
We'll meet or beat any advertised price 1-800-843-9497

EDUCORP CD-ROM 4.0
ELECTRONIC PAGE DUMMYING

Computer-assisted page dummying. Helps quickly plan ad placement on pages, following ad-stacking rules. Creates an electronic page template that can be imported into a Macintosh page layout program such as PageMaker™ or QuarkXPress.™ Also prints a hard copy.

• Plan up to 999 pages per press run. Visually see ad placement on each page. Never lose an ad again! No faster way to change or rearrange ad placements.
• Key ad descriptions directly into AdPanner or import ad lists from nearly any order-entry system.
• Quickly learn, easy to use
• Runs on Macintosh Plus, SE, or Mac II family. Customer support available. Call for free brochure.

$299 reg. $795. MacUser special

500 West 1200 South, Orem, UT 84058
Phone: 801-226-2984, FAX: 801-226-8438

CIRCLE 246 ON READER SERVICE CARD

DESKTOP PUBLISHING
MacUser Marketplace

EDUCATIONAL

THE ABSOLUTE BEST IN TESTING!

- LYR-TEST - A.1 is the most advanced and complete testing system available for your Mac
  - Item banking
  - Test generation
  - Scoring & analysis
  - Paper & Interactive
  - Mark reader support
  - Commercial banks

Highest-rated software available in various editors to match your testing needs. Fully licensed pricing from $120. For complete brochure & free preview disk call, write or fax Logix Learning Resources 9551 Business Center Drive Rancho Cucamonga, CA 91730 (714) 980-0046 Fax (714) 987-8706

CIRCLE 254 ON READER SERVICE CARD

THE COURSE BUILDER SERIES

Now in 4th release with enhanced features. Visual authoring languages that allow you to create stand-alone courseware for teaching, testing, and training. Powerful built-in features include drawing, painting, animation, voice, music, grading, intelligent branching, video interface, and extensibility $10 demo. TELEROBOTIC INTERNATIONAL, INC. 725 Oakridge Highway Ste. 104 Knoxville, TN 37921 (615)690-5600

Grade Machine™

Gives you FAST full-screen editing of grades, weighted assignments & categories. Style sheets help customize reports. Each class has 250 students, 250 assignments, and 10 grading periods. Money-back guarantee. NOT copy-protected! Only $79.95 = $5.49 S & H. Mention this ad and SAVE $10 Mitsubishi Software 10521 129th Place N.E. Kirkland, WA 98033 (206) 828-3107

CIRCLE 256 ON READER SERVICE CARD

TEACHER’S ROLLBOOK

A complete classroom management tool
  - Grade averaging and reporting
  - New grading engine
  - Full attendance records and totals
  - Records disciplinary actions
  - class size reports
  - Up to 315 students/table
  - Check out items
  - Letters to parents
  - Requires Mac 512E, 2 Drives $39 = Demo $10
  - Current Class Productions 22824 Berendo Avenue Torrance, CA 90502 (213) 362-4246

CIRCLE 255 ON READER SERVICE CARD

TROPIC SYSTEMS

Electronic Symbol Library for Canvas 2.0. 2.1 or MacDraw™ II Over 1300 symbols. All symbols created to conform to the IEEE 315 & 315A standard.

Also available for MacDraw™ II through the TTY Symbol Library. Includes Logic Symbols and Pin Diagrams for specific individual IC’s. Each Library $59.00 plus $5.00 shipping. To order send money order or check to:

circle 250 ON READER SERVICE CARD

CIVIL, STRUCTURAL, DEED PLOTTING

LANDesign- COMMON/ Surveying- Land Surveying Data
  - Graphic data entry
  - Survey report data
  - Plot print, map check

FRAME mac-
  - Structural Analysis
  - Frame Statics Model
  - Frame geometry in numerically
  - For framing: Steel, Stone, ACI

One-month money-back guarantee. Free support. Other programs available for:
  - Civil design
  - Road design
  - Structural engineering

For free catalog or info call or write: COMPUTRONICS (415) 739-4601

CIRCLE 251 ON READER SERVICE CARD

MacUser Marketplace

To place your ad call (212) 503-5115 or (800) 625-4ADS

CIRCLE 250 ON READER SERVICE CARD

ENGINEERING

McCAD EDS

the leader in Integrated Electronic Design

Schematics Simulations PCB Layout Autorouting

Call or write for free demos.

VAMP Inc. 6755 Selma Los Angeles, CA 90028 213-466-5533

CIRCLE 252 ON READER SERVICE CARD

ENTERTAINMENT/GAMES

"Excellent Animation!" "One of the best card games that I have seen on any computer system! " A wonderful new game!" "It's just amazing this is programmed in Hypercard!"...Neil Shapiro, Mac Hands On "I love this game!"...Brian Randel, Apple Computer, Inc. "10 well executed gambling games!"...Hyperlink Magazine "Wonderful digitized sounds!"...Computer Currents

ALL NEW— GAMBLIN' TIMES 3.0

The best gambling simulation available. Over 180 million different combinations. Craps, Blackjack, Keno, 7 Card Stud, 5 Card Draw. 5 Card Stud, Spades in the Ocean, Texas Hold'em, Five different Slots, Speed-4x4, Liars Poker, Roulette. Multiable gamblers by rank, financial statements, adjustable sound and music, statistical information, unlimited betting, real voice, user defined wildcards, systems, adjustable speeds, house percentage and a lot more. Very fast XFCNs. Requires Hypercard 1.2, hard disk, 1 MB RAM Check or MO for $87.95 = $3 S&H. Wilson Marketing, 123 E. Palm, Alhambra, CA 91801 (818) 791-3656 MC/VISA

CIRCLE 253 ON READER SERVICE CARD

Go - meet your NEMESIS!

Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game, Go is considered by many to be the secret of Japanese success. The leading Go game for the Macintosh Using it is an improvement in learning the game from books or from all but the most patient human "This is without question one of the most extraordinary automated aids to go instruction developed." MacWorld (S)

Toyogo, Inc. 800 Toyogo-9

CIRCLE 254 ON READER SERVICE CARD

FONTS

PostScript Font Software

SAVE UP TO 38% OFF LIST PRICE

Authorized Dealer For:

Adobe
  - Bear Rock
  - Bistreem
  - Casady & Greene
  - Compugraphic Image Club

Kingsley AFF
  - Lextech
  - Linotype
  - Monotype
  - OptiFont
  - The Font Co.

1-800-248-FONT

Mall-Order: 332 Main St., Ste. 115 Concord, CA 94520

CIRCLE 255 ON READER SERVICE CARD

FONTagenezx™ A full set of bitmapped fonts ARTagenix™ 5 sets of fonts including:
  - WordArt
  - Adobe KlikArt
  - Adobe KlikArt in bitmapped shapes

LaserGenix™ 4 sets of downloadable Laser fonts
Cyrillic, EU European, Telos, Cookbook, Bakkers, Others

Only $395 per volume

Foreign Fonts Edition™ 22 design language fonts $695

Devonian International Software Company P.O. Box 2251 • Montclair, CA 91763 (714) 621-0973

All orders and $5.00 California sales tax and 5.75% tax ViaMAC/Check/Money Orders are accepted. Telephone/Fax Orders Required Without Visa/Mastercard Numbers

CIRCLE 256 ON READER SERVICE CARD

MacUser Marketplace

Stand out in a crowd! Take advantage of MacUser’s new second and third color options. Call 1-800-825-4237
Fonts

FONTS

All world alphabets, custom dvpt. Type-1 Postscript Fonts
All-European IPA V Nam Greek Russian... Georgian Armenian
Hindi Sanskrit Bengali Malayal Thai Burma. Ethiopian. Chess
Catalog$5 Ecological Linguistics, Box15156, Wash. DC. 20003

Circle 257 on reader service card

Genealogy

Genealogy General

Genalogy

the family tree software

1-800-334-4291

presentations Quality clip art

World, Continents, Countries, USA by County
EPS, PICT, MacPaint, For information call:
800-334-4291

Map

Circle 258 on reader service card

Graphics

Graphics

AT LAST! Affordable Clip Art!

Each Master Disk previews at least 100 images. Features:
- Men & Women
- Boys & Girls
- Animals & Fantasy
- Holidays & Seasons
- Horse & Office
- Weddings & Bar Mitzvahs
- Religious
- Sports

Order before 2/21/91 & receive our portfolio disk (covering all of our items) FREE!

Circle 260 on reader service card

Presentation Quality Clip Art

MAPS!

World / Continents / Countries / USA by County
E P S - P I C T - M a c P a i n t • F o r i n f o r m a t i o n c a l l : 8 0 0 - 3 3 4 - 4 2 9 1

Micro Dialects, Inc
1401 Bldg. Mechanicsburg, PA 17055
717-697-1378 - Fax 717-697-4373

Roots and Branches

Use this powerful genealogy stack for keeping family records and biographies. Print Pedigree Charts, Family Trees, for everyone. Display and print family groups or individuals. Automatic indexes. Great for reunions, personalized gifts.

Low price, great value: $49.95 + $5 S/H. Credit cards accepted.

GSC, Dept M
PO Box 1113
Fairfield, IA 52556
Phone: (515) 472-6461

Circle 265 on reader service card

LOTTERY

LOTTERY

NEW!!

68000, COP800, PIC16.Cx versions!

μASM™

Cross Assemblers for the Macintosh™

- TEST EDITOR, CROSSMACROASSEMBLER AND COMPLEX, FACILITY IN A COMPLETE INTEGRATED DEVELOPMENT ENVIRONMENT
- ON-HE-FILE OUTPUT DISPLAYS TO MOST EPROM PROGRAMMERS

Available for most 8BIT MICROPROCESSORS AND 68000/010 CALL OR WRITE FOR TECHNICAL BULLETIN. 30 DAY MONEY BACK GUARANTEE. NOV.

Micro Dialects, Inc
1401 Bldg. Mechanicsburg, PA 17055
717-697-1378 - Fax 717-697-4373

Circle 266 on reader service card

MUSIC/MIDI

MUSIC/MIDI

Category continued on
the next page.

Circle 267 on reader service card
Study English, Greek, and Hebrew at the same time!

Introducing macBible.™
The comprehensive Bible research software for the Apple Macintosh.™

Speed, accuracy, flexibility, thoroughness—make macBible a revolutionary tool for Bible study. Only macBible offers all these as individual modules, or in any combination:

- New International Version
- Revised Standard Version
- King James Version
- Greek New Testament (UBSB, corrected)
- Hebrew Bible (BHS)
- NRSV
- NRSV Apocrypha
- LXX

Plus these features:
- Three search options—word and phrase, verse, word count
- Six windows—five text, one special-purpose
- Simultaneous
- Publishing
- Sixteen window sizes
- Print or export any text to ASCII or MacWrite
- Includes textbook: Beginners to Advanced

Zondervan Electronic Publishing
4950 40th Street, Department MU
Grand Rapids, MI 49506

Apples and Macintosh are registered trademarks of Apple Computer, Inc.
STACKWARE

Expand your vocabulary in: CZECH FRENCH SPANISH GERMAN RUSSIAN LATIN

Over 2000 words/1000 foreign synonyms. Complete, accurate translations and thousands of English synonyms! MacFinish Cards get you to the intermediate vocabulary level FAST. Compare our prices and SAVE! German 1/1, French 1/1, Spanish 1/1, Russian 1/1, Czech 1, Latin 1: $25 each. $56/59. CA Res add 7.25% tax. Call or send for additional information. Order today by calling 1-800-283-4080 X850

The Language Quest Software Company
101 First Street, Suite 428, Los Altos, CA 94022

Next Day Shipping
2 Days to your door!

ACCESSORIES

The Best Case Scenario
Airline Check-in or Local Use
Zero Halliburton Aluminum Mac Cases:
Lightweight, Durable, Distinctive Styling
CLASSIC/Plus/SE/ilCA iMac LC IIx
Portable Attachments Monitor & Printer Cases
from $299.95 1-800-542-4591
1-213-578-9710
TCC 1101 W. 36th Pl., #110, LA, CA 90006

NUVU

MAGNIFY YOUR MONITOR SCREEN UP TO 3X!

- Distortion-free lens by 3M
- Designs to fit all monitors up to 16 inches
- Available with Polaroid anti-glare filter

THE SINGLE SOLUTION TO THE PROBLEMS OF RADIATION DANGER AND VISION IMPAIRMENT!

For a dealer near you or for more info call
600-972-1051
Less Gauss Inc. Box 5006 Rhinebeck, N.Y. 12572

ACCESSORIES

Category continued on the next page.

MAC User Marketplace

To place your ad call
(212) 503-5115 or
(800) 825-4ADS

MacUser

MacUser Marketplace

MacUser Marketplace

MacUser Marketplace
DISKETTE COPY SERVICES

Mac Disk Duplicator

Mac and IBM 3.5" disk copying using a Mac, & our Desktop Autoloader for high-speed unattended operation.

$3380

SUPERLOCK & TRADILC® advanced "Copy Protection Systems to protect software also available.

For more information, or to order call 415-651-5980/FAX 415-781-5714.

CIRCLE 285 ON READER SERVICE CARD

WHAT HAPPENS AFTER THE WARRANTY RUNS OUT?

Simple. You’re the one that pays for repairs. Unless you have extra cash to repair or replace your computer system, you need SAFEWARE®. Fix!® be insured for mechanical breakdown (wear and tear) as well as external losses (thief, fire, power surges, natural disasters and more). A single insurance policy covers all your equipment for as little as $100. Call for Free Brochure. 1-800-892-2345

SAFEWARE. The Insurance Agency, Inc.

2929 N. High Street, P.O. Box 92211
Columbus, Ohio 43202

(614) 262-0708 Local, FAX 614-262-1714

CIRCLE 287 ON READER SERVICE CARD
MacUser Marketplace

Standard directory listings available for a minimum of 3 issues at $415.00 per issue ($1,245.00 total).
The Taste Test

It’s easy to say that the general public is an agglomeration of slack-jawed, hair-knuckled goofballs. See how easy it is? But although there are more than a few Neanderthals roaming the streets, the public is surprisingly bright in unusual circumstances.

A few years ago, most pundits predicted that the arrival of PostScript and desktop typesetting and publishing would unleash a torrent of bad taste. They said that every untrained boob who didn’t know a pica from a pixel would produce gosh-awful-looking documents with a mishmash of typefaces and design elements that would disgust even the cat.

Years passed, and we got just the opposite. In fact, even when computer users were given the opportunity to go berserk, most remained conservative. Some users have a little more flair than others, but the expected goofy-looking documents have never appeared—they’re more likely to come from a guy with an IBM Executive typewriter and a tasteless clip-art book. Even computerized clip art has been used judiciously, despite the abuse potential.

Anyway, the public’s bent for conservative personal presentations is exemplified by the fact that the most popular Adobe type fonts remain Times and Palatino. Even Bookman and New Century Schoolbook — hardly wild-and-crazy faces — are seldom used.

This unpredicted nonphenomenon is important, because the next phase for potential abuse is desktop video. New products spearheaded by the Amiga-based Video Toaster, from NewTek of Topeka, Kansas — the highlight of the recent Comdex trade show — mean that professional videotaped presentations will now be made in the office rather than in expensive postproduction video studios. Apple will offer a mixing studio similar to NewTek’s device, and I expect to see a booming business when the millions of camcorder fanatics discover that they can produce whole shows at home for next to nothing.

But with all the features of a video studio at their disposal, what will the masses of untrained users do? Probably surprise you.

If the experience with desktop publishing hadn’t indicated otherwise, one would expect a flood of pathetic amateurish schlock — overdone special effects, cornball cuts and fades, bad editing. But the mechanism that creates crapola doesn’t exist in a vacuum. The desktop-publishing crowd has copied prevailing taste. The view was conservative but not far from the mark. What they didn’t know about sizes and leading and other typesetting idiosyncrasies was automatically adjusted by the applications. (Aren’t defaults wonderful?)

We can expect the same from the video producers who use new software. Some societal mechanism creates higher-quality results than expected. It seems that once people have the tools to produce high quality, they don’t want to look foolish and they expend additional effort to make their work “professional.” So when someone gets a PostScript printer, the presentation of self (even in simple memos) takes on new meaning. The tool offers owners incredible new capabilities. What better way to show them off than to use them properly?

If people are given the right tool, they tend to use it properly. In the case of desktop typesetting, that means producing something that looks as though they know what they’re doing. In fact, people make a point of doing it correctly — even if it means redoing the same document by repeated trial and error, reprinting it over and over to “get it just right.” Users invest the time necessary to learn the tool.

When the tool is hackneyed or incomplete, such as the early HP LaserJet printer (it essentially offered only high-speed, typewriter-like output), the result is poor. Users could fiddle with inconvenient and sluggish downloadable bit-mapped fonts, but the printout was seldom pleasing. Plain Courier was preferred. Only recently have proper tools been introduced in the PC world, and only recently have PC users started producing attractive documents.

The assumption that desktop typesetting will exemplify the bad taste of the public comes from the old notion that nobody ever went broke underestimating the public’s taste. But the pundits overlooked the tool-using nature of Homo sapiens. We call computers and their software all sorts of things, from brain amplifiers to grandiose calculators, always forgetting that they are really tools. Not in the traditional sense of a socket wrench or a hammer. This new programmable tool can do all the things a wrench never could — such as move words around or produce a video. The nature of humankind is tocherish tools. When the tool is given a new function, its new ability is respected. This respect yields quality workmanship, whether evidenced as correctly formatted memo, an elaborate newsletter, or a half-hour home-produced sitcom.

In other words, get ready to be stunned as the public at large makes movies and videos of the highest quality. ☮️
You're tripping over your keyboard. Your CPU needs its own desk. Your monitor is too low. That report you're working on has vanished. Paper is everywhere.

But don't give up. What you need is some help from Kensington. Increase valuable desk space with our new Keyboard Shelf for the compact Mac, or with Keyboard Slideaway® for the Mac II.

Both do more than just get your keyboard out of the way.

Keyboard Shelf's recessed storage compartment is ideal for holding pens, disks and other desk items. And Keyboard Slideaway extends a narrow desktop into a wider workspace.

Another way to increase your workspace is our sturdy Mac II stand. The perfect addition for anyone who wants to get their CPU off their desk and onto the floor.

For the compact Mac, there's Maccessories® Tilt/Swivel. With it, you can rotate your Mac up to 100° and tilt up to 16° for just the right viewing position. And unlike other tilt/swivels, we've combined heavy duty plastic and high density polyethylene for an ultrasmooth movement.

What's more, Kensington's products fit right in with the design of your Mac. The styling is complementary. The colors identical. Even the same materials are used.

Kensington. Because you can't work efficiently if your space doesn't work.

For a free brochure and the dealer nearest you, call 800-535-4242. Outside the U.S., call 212-475-5200.
New Timbuktu 3.1 gives you multiple windows of opportunity.

Now user support is faster and easier than ever because you can help more than one person at a time. With Timbuktu® 3.1, you can observe and control multiple Macintosh computers in multiple, resizable windows. Which means you don't have to wipe out your screen to see someone else's.

Without leaving your Macintosh, you can help a user down the hall solve a printer problem in one window, monitor a server in another, while still using your own application. And each window is dynamically updated, regardless of which one is active.

Timbuktu also provides fast and efficient file transfer capabilities, because you can send any combination of files and folders directly to another user. And that means you can update software quickly and easily.

Multi-window Timbuktu. Now you have more opportunities to solve more problems with a lot less effort.*

For information on Timbuktu, the Timbuktu 30-Pack, or The Gold Plan, our volume purchase program, call Customer Service at (415) 596-9000. Dealers call our Reseller Hotline at 1(800) 344-7489 in U.S. and Canada.

*One copy of Timbuktu is required for each computer.

2000 Powell Street, Suite 600, Emeryville, CA, USA 94608 FAX (415) 596-9020.

Timbuktu is a registered trademark, Farallon, the Farallon logo design, SoftScreen and The Personal Communications Company are trademarks of Farallon Computing, Inc. AppleShare and Macintosh are registered trademarks of Apple Computer, Inc. ©1990 Farallon Computing. All rights reserved.

Please circle 178 on reader service card.