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**DISPLAYS**

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On the cover: The first member of Apple's Newton family of personal electronics is slated for release in early 1993.

Cover photo by Walt Denson

Penny-pinching color-monitor bargains.

Hewlett-Packard's pint-sized hard drives.

1,001 Mac hardware and software reviews.

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MiniFinders Buyer's Guide

Compiled by Bruce Mewhinney

It's our biggest buyer's guide ever! Get the bottom line on 1,001 Macintosh hardware and software products in more than 40 categories — from hard-disk drives, display systems, scanners, printers, and input devices to word-processing, spreadsheet, database-management, and graphics programs as well as utilities — all in a comprehensive, concise minireview format.

Perfection for Pennies: Autosynchronous Monitors

By Winn L. Rosch

Autosynchronous monitors have been a popular low-cost color-display option for PC users for years, but they haven't fared well on the Macintosh — until now. We tested 14 autosyns and found several that are ready for prime time in the Macintosh marketplace. Find out why these monitors may be the perfect multiplatform display solution.

Departments

Jon Zilber
When bad things happen to good reviews.

Michael Swaine
If a picture's worth a thousand words, what's the value of multimedia?

John C. Dvorak
Style crazy after all these years.

Letters
Views on voice recognition, database debates, scripting the future, and why System 7 upgrades are like eating your vegetables. Plus: your chance to speak out on the high cost of upgrading.

Zmac
ZiffNet/Mac's exclusive MiniFinders stack makes it even faster and simpler to find the product reviews you're searching for. For even more MiniFinder information, go on-line with MacUser's MiniFinder editor, Bruce Mewhinney. Plus: The latest utility for downloading, online tips and tricks, and advice from the MacUser staff. And it's now cheaper and easier than ever to get on-line with ZiffNet/Mac.

Advertiser Index

Marketplace
Sneak Preview: Introducing Newton — with Apple's ingenious integrated assistant in your pocket, you'll stay informed, industrious, and in touch. Plus: Claris' new FileMaker Pro 2.0, the latest in OCR, and HP's 1-ounce hard drive.

Prepress
How to choose the best strategy for perfect desktop color separations.

Integration
The vital stats on VITAL, Apple's ambitious blueprint for multiplatform distributed computing.

Personal Best
Was tax time even more taxing than usual this year? Steven Bobker explains what went wrong. Plus: Easter egg of the month.

Shopping List
Before you replace your mouse or keyboard, check out these 13 hints on how to buy input devices.

Techniques
A SCSI survival guide: untangling the gnarly mass of cabling confusion connecting your hard drive, printer, and other peripherals.

Beating the System
Get some sound advice from Bob LeVitus: From whale songs to "Don't have a cow, man," it's easy to add your favorite sound bytes to your Mac.

Tip Sheet
How to master Microsoft Word, PageMaker, Claris Resolve, aliases, the Finder, WordPerfect, MacroMaker, Nisus, and more. Plus: what can you do with a dead floppy disk?

Help Folder
Is TrueType dead? Can a Classic II run with System 6? What's a PRAM? Why does Bob LeVitus have 5 megabytes of system software? Answers to these questions and more.

Reviews
Magic
Abracadabra! Creating animation and slide-show presentations that sizzle is a snap with Macromedia's powerful Magic.

PowerPlay for the Macintosh
This new approach to visual data analysis is powerful but hardly child's play.

SwivelMan and ShowPlace/MacRenderMan
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THINK C 5 and CMaster
The latest version of Symantec's premium programming language (with Jersey Scientific's add-on) adds an improved compiler, object-extension enhancements, and an expanded THINK Class Library.

In Control
Planning projects and maintaining to-do lists becomes a breeze instead of a chore with this multidimensional outliner.

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CA-Cricket Draw III
Sophisticated yet simple, this entry-level drawing package is a beginner's bargain.

Quick Clicks

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The Mobius 030 Accelerator increases the speed of a Mac SE six times. Source: MacWorld 6/92

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About

MacUser Labs: Science and Art

Product reviews are an art form with a healthy dose of science thrown in. The first comparison review of any computer product was published in a Ziff-Davis publication nearly 14 years ago. Since then Ziff-Davis, MacUser's parent company, has come a long way, refining both the art and the science. MacUser Labs was an early beacon in the sea of product testing, a state-of-the-art facility at a time when most product evaluation was still at the gee-whiz level.

MacUser Labs was one of the guiding models for building our corporate testing facility, ZD Labs. Less than a mile from MacUser's offices, ZD Labs is a 31,000-square-foot building designed expressly for testing computer hardware and software — everything from single-user applications to LANs with hundreds of users. This world-class testing facility houses a variety of computers, including PCs, Macs, file servers, minicomputers, and a small mainframe. ZD Labs is home to more than 100 Macs of every imaginable type and configuration, of which nearly half are wired into the 25 miles of cabling in the LAN lab. The other half are in constant service evaluating hardware, software, and peripherals.

In this issue, we present the first product review performed by ZD Labs for MacUser: "Perfection for Pennies: Autosynchronous Monitors," a comparison of autosync monitors. ZD Labs, in conjunction with MacUser Labs and MacUser's editorial staff, designed a series of rigorous tests, using such high-tech tools as a Microvision Superspot 100 System monitor analyzer and a Minolta Color Analyzer CA-100. ZD Labs performed the critical tests in a room specially designed for testing monitors: It has matte black walls, nonglare task lighting, and an optical table. The optical table is a huge slab of precision-milled aluminum floating on vibration-damping and self-leveling air columns to make certain the monitors remain perfectly motionless during testing. After performing our suite of tortuous tests, we probably knew more about some of these monitors than their manufacturers did.

Performance alone does not a great monitor make, so we also set up a jury whose members scrutinized the monitors individually and in comparison with each other and reported their personal impressions. The ZD Labs staff combined the objective data with the subjective evaluations, and then added an analysis of that information. The resulting thick lab report represents a cooperative effort between MacUser and ZD Labs, the first of many to come.

— Bill Machrone

ZD Labs director Elizabeth Springer and test manager Andrew Eisner steer Ziff-Davis' new multimillion-dollar testing facility.

— Bill Machrone
The next time you see a 'sad Mac' on your screen or your Mac's performance isn't up to par, diagnose from your desk with SNOOPER, the revolutionary new standard for Mac diagnostic and testing tools.

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CIRCLE 60 ON READER SERVICE CARD.
**LETTERS**

Just when we thought we'd heard it all, Jim Martin, of Redmond, Washington, asks: "If I were to select my RAM disk and eject it, would the SIMMs pop out of my Mac? I'm afraid to try this . . . ."

Hey, Jim, you don’t by chance work for Microsoft, do you? (Please say no.) By the way, did you hear the one about the programmer who got stuck in the shower indefinitely? He took the instructions on the shampoo bottle literally: "Lather. Rinse. Repeat."

Write to Letters to the Editor, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or post your letter on the MacUser Forum of ZiffNet/Mac (also known as Zmac), our on-line service.

All letters become the property of MacUser, and we reserve the right to edit any letters we print. Please include a return address and a daytime phone number.

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### Start Making Sense

**Your May '92 issue contained two articles that got my Critical Thinking award. Both Jon Zilber (speech recognition) and Guy Kawasaki (multimedia) exhibit that all-too-rare ability to promote new technology while simultaneously describing its limitations.**

Jon’s torture test for speech recognition ("A Conversation with Casper," page 21) was hilarious. Here’s another: Just feed a certain song from Cassablance into the magic box. You might get the following:

> “Ewe muster ember disk, Ah keester jester keys, Ahs mile ease jester’s mile, Dee fund a mental sings apple eye, Ass thyme ghost bye.”

A. Bruce Jacobs

Fargo, ND

**The LC Turns II**

The Mac IIsi has a faster processor and a full-width bus, so it should perform more than 20 percent better than the Mac LC II on CPU-intensive tasks. Yet your speed comparisons in the May issue ("Personal Power," page 78) didn’t show any substantial difference between the two machines.

Did your labs take into consideration the memory-access conflicts between the CPU and the built-in video on a IIsi when a program runs in the first megabyte of RAM? To obtain true performance on the IIsi, you must fill up the first megabyte of RAM so that the CPU doesn’t have to share memory-access time with video. The easiest solution is to boost the disk cache to 512K or 768K. Performance will then increase 25 to 30 percent on CPU-intensive tasks.

The problem plagues the IIsi as well but is less noticeable, because of the IIsi’s faster 25-megahertz CPU.

Warren DeLano

New Haven, CT

You’re right, and turning up the disk-cache setting does increase performance, because it forces applications into the second bank of RAM. However, this approach reduces the amount of RAM available for applications.

MacUser Labs simulates “typical” real-world use, so we use the manufacturer’s recommended settings to test products. For example, the default disk cache for a IIsi with 5 megabytes of RAM running under System 7 is 128K. Thus, the IIsi and IIsi will always run a bit more slowly than their maximum capabilities in our tests. Of course, you can bypass the problem entirely by installing a video card.

The built-in video on the LCs and Quadras uses separate VRAM, so these machines don’t suffer the same performance hits. — JP

**Your article about the Mac LC II says, “As with the original LC, the maximum amount of RAM is 10 megabytes.” It also says there are 4 megabytes soldered on and two empty SIMMs . . . .**

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### Dear Mr. Sculley . . .

Readers flooded us with responses to our May question, which asked whether or not you had switched to System 7. Most holdouts cited the standard litany of complaints: System 7 is too slow, it takes too long to install, too many programs are incompatible, program upgrades and RAM cost too much.

Andrew B. King, of Ann Arbor, Michigan, is a frustrated speed demon. Even System 7 with Tune-Up is too poky, he laments. "I challenge Apple to make Finder 7.2 at least as fast as MultiFinder 6.0.7. It's rumored that Apple will 'tune up' System 7 yet again. Let's face it — the car doesn't need another tune-up, it needs a complete overhaul."

But J. Reviere, of Conroe, Texas, reports, "I've experienced none of the speed problems that others report. In fact, PageMaker 4.01 loads and works better — no more crashes — with System 7 than with any version of System 6!"

For Robert Gelber, of Auburn, California, time is the major issue. "The only hassle-free upgrade to System 7 comes with a new Mac. Upgrading for the rest of us is a major time sink — time to upgrade all your software and make decisions such as whether to use TrueType or stick with ATM. To minimize downtime, he suggests upgrading when opportunity knocks in the form of frequent system crashes or a hard-disk-drive disaster. "For those of us who use the Mac as a tool, a System 7 upgrade is like eating our vegetables. A system crash is just God's call to dinner."

Steven R. Jaynes, of Beaverton, Oregon, is another fan. "The usability is worth every dime of the $99 upgrade." Like many readers, however, he's irate at the cost of product upgrades. "Changing to System 7 almost broke the bank, because of all the compatibility upgrades and, more recently, those that take advantage of System 7-specific features. I've had endless bug-fix upgrades, some free, most not."

Jaynes and his fellow readers gave us the idea for this month's question.

### Speak Up:

**How much is fair to pay for an upgrade?**

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LETTERS

Cheap Thrills

Your article "Chasing Rainbows: Accelerated-Video Cards" (May '92, Buyer's Guide page 16), was thorough, but there's an alternative to buying a 24-bit accelerated-video card outright. Buy a Radius PrecisionColor 8X or NEC MacFG 8X video card instead, and install 16 video-memory (VRAM) chips (256K x 4-bit versions).

With street prices of less than $800, these 8-bit cards are less than half the cost of their 24-bit siblings. Even after adding the 16 VRAM chips (about $200 via mail order), you'll come out $600 ahead! If you can get by with 16-bit color, purchase just 8 chips and save an additional $100. Worried about voiding the card's warranty? Wait until it expires.

Technical-support staff members at NEC and Radius have confirmed that extra VRAM chips are all that distinguish the 24-bit cards from the 8-bit cards. Unfortunately, the do-it-yourself upgrade doesn't work with SuperMac or RasterOps accelerated-video cards; they require additional proprietary chips.

Paul Stregevsky
Gaithersburg, MD

Bigger Is Better

"The Big Screen" (April '92, page 206) had some good tips for becoming more productive on large monitors. However, there was an error in the reference to PageMaker. The article says that in a two-monitor setup, PageMaker doesn't let you open a window larger than the startup monitor’s screen. In fact, if you hold down the Command key while resizing a window, you can enlarge the window to fill either monitor or stretch it across both monitors.

Paul Sorrick
Software Quality Assurance
Aldus Corp.
Seattle, WA

In "The Big Screen," Sharon Zandletto Aker says, "the Monitors control panel also lets you define the spatial relationship between two monitors." Does she mean that I can separate two monitors by some "electrical" distance between them? If so, how? The illustration leads me to believe that this is what she meant!

Kris Bueltmann
via ZiffNet/Mac

The Monitors control panel lets you define the virtual boundaries between two monitors, not their distance. You arrange the icons in the Monitors window to indicate which monitor is on the left side of your setup, for example, and where their borders will be contiguous (if the monitors are different sizes). The artwork was misleading; You can’t indicate a physical or electrical separation between two monitors.

— JB

Notebook Nagging

Here I am in an airplane, using my newly acquired Outbound Notebook 2030, which I bought partly because of your review (February '92, page 46). Reveling in my glory, I casually watch as the gentleman next to me produces a PC notebook, which I discover has a full set of function keys and a built-in modem and costs almost a thousand dollars less than my
Fast cars. Bungee jumping. Triple chocolate cheesecake. Seems like all of life's really satisfying stuff comes laced with danger. Or at least cholesterol. • Our drawing program on the other hand, is an exception to the rule. • A peak experience that's actually good for you. • Good how? • Good by souping up your productivity. With Canvas, you won't need to hop around as you work, passing your piece from program to program to get things done. And you won't find yourself face to face with significant built in compromises, either. Because Canvas puts every tool and effect you'll need for just about any design job together in a single coherent package. It's all there. And it's all good. • How good? • Good enough to generate a slew of rave revues and positive comparisons with programs costing much more. • And good enough to capture virtually every significant industry award there is - from a MacUser Eddy for Best Drawing Program to a MacWeek Target for Best Business Graphics Program to the Infoworld Buyers Assurance Seal. • Canvas 3. No fat. No side effects. No shin splints. Just supreme drawing satisfaction.

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Within the closed Mac environment, the Outbound Notebook is a great buy, even at $3,600, and certainly the Mac PowerBooks are a welcome (albeit long overdue) addition to the Apple family. If you compare the Mac or Outbound notebooks with an equivalent PC product, however, your exhilaration plummets. The feeling resembles the one you get after your first hard-disk crash.

Why don’t Mac notebooks have user options comparable to those of their PC cousins? No function keys? No built-in modem (except in the case of the PowerBook 170)? And a higher price? Sorry, it makes my SIMMs sizzle.

Steven Shmerler
Burbank, CA

Tales from the Script

Ge, batch files for the Macintosh. What a wonderful idea.

Michael Swaine may prefer to learn obscure techonerd words and phrases (“Control Freaks,” May ’92, page 29) and then labor for hours, patching them together into a never fully debugged mini-application that sometimes but not always works as it should. I don’t. Most human beings don’t.

Frontier will find a small market among folks who love technology and are easily bored by ordinary, useful, practical things. Remember when the Mac was the computer for the rest of us? It’s not anymore. Scripts and script lovers will drive it even farther away from the practical tool it used to be.

Mike Bradley
Oakland, CA

After reading the May columns by Michael Swaine and Steven Babker (“The Best for the Brightest,” page 205), I’ve become intrigued with AppleScript. The possibility of using a scripting language to enhance Apple events and personalize applications has roused my imagination.

One implication of a universal scripting language would be an end to the diversity of current scripting languages, HyperCard, Frontier, SuperCard, WordPerfect, and many other applications now have their own distinct forms of user scripting. A single language would let users write scripts for many different applications. A consistent interface would free users to be creative and productive — one of the original goals of the Mac interface.

I do have a couple of questions: What is the status of AppleScript? What, if any, relationship will it have with HyperTalk?

Mark Weedman
Johnson City, TN

AppleScript, Apple’s universal scripting system, should be released later this year. HyperCard and other existing applications will have to be rewritten to work with it. — MS

Shell-Shocked

Your comparison of Easy4D and 4thRight! Professional (February ’92, page 60) was so poorly presented and so slanted that we question the impartiality of the reviewer. Louis Benjamin did not consider the audience for which each of these 4D shells is best suited, and in fact, it’s obvious that he failed to use 4thRight! Professional before writing the article. There was no head-to-head comparison of the results of building an application with each product. He goes out of his way to point out things he considers to be drawbacks in 4thRight! but doesn’t mention similar “problems” with Easy4D.

Your reviewer has no concept of the needs of most customers who need a 4D development shell. To compound this problem, he failed to talk to any of our customers. He did not call to clarify anything, although he vigorously disparages everything about our product. Nor did he bother to find out that there are three versions of the product—4thRight! Lite, 4thRight! , and 4thRight! Professional —to accommodate the wide variety of customer needs.

Many of our customers did this same product comparison and came to a much different conclusion. Most 4thRight! users are corporate, scientific, or defense employees who need robust compiled applications. Our selection of tools and resources saves them the hundreds of hours that would be required to build the same applications from scratch, as would be required with Easy4D.

Buddy Page
President
Digital Concepts, Inc.
Portland, OR

Although my reviews of Easy4D and 4thRight! Professional appeared together, they were not intended as a head-to-head comparison. I created simple databases with both products, thoroughly read the documentation, and opened the source code. Because of space limitations, I couldn’t detail the reasons behind all my
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conclusions. For example, 4thRIGHT! has a fundamentally flawed multiuser routine; this aspect alone had a significant chilling effect on my review.

Mr. Page and I simply have a basic difference of opinion on how and why shells are used. My experience with corporate as well as free-lance developers has been that they want predefined code but don’t want the shell to “get in their way.” Too many of 4thRight! Professional’s procedures do essentially the same thing, and the documentation does a poor job of explaining the product’s underlying philosophy and how to take advantage of it.

Mr. Page’s comments lead me to believe that I would probably have a more favorable opinion of 4thRight! and 4thRight! Lite. — LB

Your review of 4D development shells omitted the Generation Four Application Development Shell (G4 Shell). G4 Shell is the oldest, smallest, and simplest shell on the market. Its documentation not only describes how to implement a feature but also the background and methodology behind the feature. This gives new 4D developers enough information to expand and enhance G4 Shell’s features.

G4 Shell is part of a suite of Generation Four products that provides a complete 4D development solution. For example, the User and Administrator References allow application developers to rapidly produce high-quality documentation for their clients. The G4 PowerDisk provides information and examples on beginning, intermediate, and advanced 4D programming techniques; database design; and practice-management tools.

John T. Zeltai
Generation Four, Inc.
Los Alamos, NM

The “M” Word

I normally agree with Guy Kawasaki’s writings, but he’s way off base in “Let the QuickTimes Roll” (May ’92, page 25).

From the user’s standpoint, the computer is not a tool. Only when combined with applications that address real needs does it become a tool. Ease of use plays a role in making a tool more usable, but it doesn’t determine whether something is, in fact, a tool.

As for the role of multimedia, it’s easy to look at a hardware or software innovation and say, “I didn’t know I needed that.” However, successful adoption of a technology is virtually always preceded by a vendor’s clear understanding of user requirements. The challenge for users (and managers) is to evaluate and adopt promising technologies when a successful match between need and functionality exists.

As a technology (it isn’t a tool), multimedia has considerable promise as a way to integrate and synthesize vast quantities of information: One has only to consider the areas of teaching and collaborative learning to understand its potential impact. Viewing multimedia as simply a cool way to make presentations narrowly casts its promise.

Richard A. Whitney
Anchorage, AL

Mr. Kawasaki is missing an important point: When used selectively, multimedia can add the zest that most presentations need to keep an audience interested.

My accounting firm deals primarily with government agencies. Needless to say, our business isn’t sexy or glamorous. So instead of presenting statistics and in-depth information with overhead transparencies of bulleted text, we use multimedia techniques to display data in a “fun” forum. That way, our clients are relaxed and want to see more about the product or service.

Our video usage is limited to educational materials, but movement on-screen sure keeps the audience’s attention. Perhaps animation is so appealing because the kids in all of us likes to escape to cartoonland once in a while. Animation keeps even the most conservative starched collar interested and stimulated by the most mundane stack of statistics.

Julia A. Delligatti
Washington, DC

Clarifications

The phone number listed in our review of Vellum 3D (June ’92, page 63) was the fax number. Ashlar’s voice number is 408-746-1800.

The current incarnation of Taste, the word-processing program from DeltaPoint, is version 1.02c ("Key Words," June ’92, Buyer’s Guide page 28).

In “Blasting Off: CPU Accelerators” (June ’92, page 166), the price shown for the Radius Rocket in Table 1 on page 184 was for the Rocket 25i, which was not tested. The correct price for the test configuration is $1,999.
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Blanket Statements

The scene is 1913, Whewell’s Court at Cambridge University, the living quarters of Srinivasa Ramanujan, a brilliant young student of mathematics from India. Ramanujan, one of the giant intellects of the century, is entertaining a fellow countryman, Prasanna Chandra Mahalanobis, who, like Ramanujan, has had difficulty adapting to the cold English winters.

The visitor asks if Ramanujan is warm at night. Ramanujan responds that he’s so cold that he must sleep with his overcoat on.

“Figuring his friend hadn’t enough blankets, Mahalanobis stepped back into the little sleeping alcove on the other side of the fireplace from the sitting room. The bedspread was loose, as if Ramanujan had just gotten up. Yet the blankets lay perfectly undisturbed, tucked neatly under the mattress.

“Yes, Ramanujan had enough blankets; he just didn’t know what to do with them. Gently, patiently, Mahalanobis showed him how you peeled them back, made a little hollow for yourself, slipped inside . . . .”

This little tale from the fascinating biography of Ramanujan, The Man Who Knew Infinity, by Robert Kanigel, offers a charming variation on the familiar ailment of not seeing the forest for the trees. But whether it’s missing the forests, missing the blankets, or realizing that Murphy Brown is a fictional character, there’s nothing more embarrassing than missing the obvious.

Well . . . we goofed.

The scene is earlier this year, in the working quarters of MacUser Labs, where a team of brilliant young students of the Macintosh are hard at work benchmarking relational-database programs.

Months of development, countless hours of heated discussion, weeks of testing, and mountains of data later, we assembled the data for the manuscript that appeared in our June issue as “Database Strategies: Relational Databases” (Buyer’s Guide page 60).

Somehow along the way, we forgot to figure out how to get under the blankets.

When the article appeared, letters flooded in and on-line debates started raging. Our conclusions just didn’t ring true, and the phone just didn’t stop ringing.

Beneath every review or lab report we print, there’s an iceberg of information and analysis you never see. There are months of advance work that lead up to the review. But there’s also an extensive postreview process that starts after the issue hits the stand — or the fan, as the case may be.

Hardly a review appears that someone doesn’t dispute. Few readers like to see their product of choice criticized, and the maker of that product feels even more strongly.

Even when we get only a few complaints, we check them out. Usually they end up being a difference over how the ideal interface should work, a semantic debate over specific word choices, or an agreement to disagree over which is more important: ease of use, a robust feature set, the quality of tech support, or user-friendly pricing.

Occasionally, the trickle of complaints turns into an avalanche. In the case of the relational-database programs, it took a bit more digging than usual, but we finally found the cause of most of the disagreements: a mislabeled floppy disk. Our tests for one of the database programs had included an almost-final benchmark test instead of the right one. Although the two versions differed by only a single line of code, it was an important line of code.

That little version mix-up had made a significant difference in the performance results that so baffled so many readers. But the process of digging deeper into our own benchmarking process also brought to the surface several more-fundamental issues — issues that pertain to all product categories, not just database programs.

Test Gauge

Which is more important, speed or ease of use? Or, as in the case of database programs, how do you weigh performance and ease in setting things up against performance and ease of retrieving information?

Consider the issue of synthetic benchmark tests versus real-world tests. Which is the better tool for testing a product: a lab-based torture test designed to stress a product until you find its breaking point or a test that reflects the typical ways real users actually work with the product?

Synthetic tests have several points in their favor: They’re reproducible and unequivocal, and they provide information most users can’t discover on their own. Real-world tests, on the other hand, offer results that are more immediately relevant and understandable.

Evaluating a product is a bit like thinking about entering into a personal relationship. It’s important to know what it’s going to be like before you decide to take the plunge.
like on a day-to-day basis, but you also need to know the worst-case scenario: What it’s going to be like when the going gets rough?

There is no easy answer, except to provide as much information in all our evaluations as space and time permit. Which brings us to MiniFinders. MiniFinders is MacUser’s database of product reviews. Each review includes a brief summary of the product’s pros and cons and a one-to-five-mouse rating that indicates how the product fared on MacUser’s rodent scale. This month’s installment of more than 1,000 MiniFinders reviews is our biggest and most comprehensive ever, which means that it’s the most useful — and most dangerous — buyer’s guide of Mac products ever.

Why dangerous? The name MiniFinders is borrowed from a laughably obsolete junior version of the Macintosh Finder. We have to take special precautions to make sure our own MiniFinders reviews don’t become just as obsolete.

The Mac product universe is exponentially more complex than it was eight years ago when we published MiniFinders in our premier issue. And that universe keeps changing and evolving faster than ever.

This means that yesterday’s five-mouser is today’s ho-hum. Last year’s highflier is today’s has-been. The needs of today’s Mac users are vastly different now from what they were last year.

We’ve made every effort to ensure that the reviews and ratings in MiniFinders keep up with the times. When we add new MiniFinders reviews to the database, we review and rerate the products in the applicable categories. And as the state of the art advances, our rating scale gets tougher and tougher.

But MiniFinders still tells only a fraction of the story. You owe it to yourself to get the full picture. In this month’s MiniFinders, you’ll find something new: A business-reply postcard you can use to request current information on any product listed in MiniFinders.

But don’t stop there. We’ve also made it easy for you to retrieve the text of the original full-length reviews. The issue in which the review originally appeared is listed at the end of each MiniFinder review, and you can instantly access back issues of MacUser through ZiffNet/Mac, our CompuServe-based on-line service. (Sign-up information appears on page 6 of this issue. See the Zmac page in the Power Tools section to find out how to get a HyperCard stack of the MiniFinder database for easier searching.)

As for relational-database programs, we’re reevaluating the products as well as our evaluation process. Thanks to your input, you’ll be getting a more robust, more meaningful picture next time around.

And we won’t get caught on top of the blankets. 🧣

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CIRCLE 125 ON READER SERVICE CARD.
Words and Pictures

Hold that word processor! Do words still wield any power for the MTV generation? Or does "Gilligan's Island" mean more than Hamlet?

Uh-oh. Not another column that asks whether multimedia on the Mac is good for anything.

Not quite. Instead, I've been wondering about the conventional wisdom that "a picture is worth a thousand words" and trying to figure out what the real relationship between pictures and words might be.

I've never accepted that a picture is worth a thousand words. It's a pretty fishy claim. Even if we overlook the question of what coin we are using to measure worth, we can challenge it: it sort of depends on the picture, doesn't it? And on the words.

Then too, if a picture is worth a thousand words, how about a movie or a television show, which is made up of lots of pictures? The arithmetic is straightforward. One episode of "Gilligan's Island" = King Lear + Hamlet. That's without the commercials; otherwise you have to throw in the sonnets.

But maybe that's not the best way to go about interpreting the claim. If worth is measured in the coin of memory or disk space, then the formula can be made meaningful and even precise. A byte-value version of the conventional wisdom might read "a (moderately compressed 128-x-128-pixel 8-bit-color QuickTime) picture is worth a thousand (plaintext standard-English) words."

That's actually a useful bit of information, but it's not what the conventional wisdom really means. And what it means, however much one may differ on the actual valuation, is important. It really matters what a picture (or a movie or a voice annotation or a voice message) is worth. More and more, hardware and software products are going to differentiate themselves by their ability to facilitate the capturing and storing and presenting of speech and pictures, moving and still. Purchase decisions will depend on assessments of the relative worth of written words versus a picture (or movie or voice annotation or voice message). And although we do need some simple disk-space formulas such as the one above, what we really want to compare is the worth of the content of the media. We want to know whether digitized pictures and movies and speech are worth the cost of the hardware and the software and the disk space required to manage them. We want to know how much worth can be put into a picture, as compared with text.

Unfortunately, this comparison can't be made, because the visual and print media don't express the same kinds of things; their contents are incommensurable. A communication theorist could probably say just exactly what sort of content each of the different media expresses best. Presumably that's what Marshall McLuhan was up to in his Understanding Media and his other works. I can't say, because I never really understood Understanding Media. It seemed as if its content was expressed in the wrong medium.

Shaken though I may be after confessing my McLuhan illiteracy, I think I still have my grasp on the obvious. And isn't it obvious that we have to use words, not pictures, when we want to express ideas? You've never seen a picture of "a picture is worth a thousand words." It takes words to express that idea, or any idea. A particularly powerful picture might be presented as evidence, but never as an expression, of an idea.

The conventional wisdom is wrong. A picture is not worth a thousand words. It's not necessarily better to show than to tell. And QuickTime notwithstanding, video will never replace the book.

The Power of the Picture
I'll grant that it is powerful.

A portion of this column was written to the accompaniment of background video. As I typed these words into a PowerBook, I was seeing in the corner of my eye images of videotaped violence. On CNN that morning, Los Angeles was not a pretty picture. Dozens of people were dead and hundreds injured after 48 hours of rioting in Los Angeles and other American cities — the national news mentioned San Francisco, Atlanta, Seattle, Las Vegas, Tampa, San Diego, Madison, Beloit, Omaha, Minneapolis, San Jose, and New York, but I knew of many other, smaller cities where the damage was being assessed that morning — in a terrible chain of events that began when a passerby videotaped the beating of motorist Rodney King by four Los Angeles police officers.

The production values of the Rodney King video are not impressive, but it is more compelling than the larger-budget moving pictures for which Los Angeles is known. It pushes a brutal truth in our faces. Watching it made me angry, and watching what went on in the streets of L.A. in the wake of the trial and its verdict was like being hit in the gut.

This is one strength of video and the other visual media: to hit us in the gut, to get to us at
an emotional level, and to do so with very little intellectual filtering. We remember the striking, emotional visual images. We remember that student facing down the tank in Tienanmen Square. Neil Armstrong’s “one small step.” The Zapruder film of the assassination of John Kennedy and the shooting of Lee Harvey Oswald in the basement of the Dallas police station. Or the less violent and more personal: our parents or children mugging for the camera, laughing, talking. Video is visceral.

Virtual Valerie notwithstanding, there’s not a whole lot of visceral video on the Mac yet. But it’s early: Let Apple sell half a million CD-ROM drives, and that may change.

Pictures and video have some other virtues, of course. Pictures are good at communicating spatial relationships, for example. Flowcharts and Gantt charts and org charts do this, as do architects’ plans, engineers’ blueprints, and drawings of crime scenes. Even a spreadsheet is a kind of picture, although its two dimensions represent conceptual, rather than physical, space.

Moving pictures add a dimension, the dimension of time. They can represent real time, compressed or expanded time, or some other dimension entirely. Seeing the clouds roll by on the weather map is a good way to get an understanding of the movement of the storm, but rotating a 3-D molecular model in space can give you a sense of its three-dimensional structure — a use of motion that has nothing to do with time.

And there are things the picture can communicate that we don’t know how to articulate — such as the things we read in facial expressions.

But the real power of the picture is in stirring our emotions.

The Power of the Word

So suppose we take power as the coin we use to measure worth. Which is more powerful, a picture or a thousand words?

I am not unbiased in this matter; as a professional writer, I’m committed to the word. But it seems clear that the written or spoken word, wielded by an expert, is more powerful than any visual image. A picture can only stir your emotions, whereas words must touch your mind. I maintain that the mind touch is more powerful than the emotion stir, because if you are able to touch people’s thoughts, you can influence or manipulate what they think they know of the world. You can even manipulate what they think they see in pictures and videos.

I cite as evidence the verdict in the Rodney King trial. Reasonable people can differ, and although I haven’t run into a reasonable person yet who thought the verdict was correct, there may be such a person. To such a person, I acknowledge that the following is only my opinion. My opinion, then, is that this was a case in which words won. A team of skillful lawyers was able to convince 12 jurors that they didn’t see what they saw. Whether or not the jurors were predisposed to ignore the evidence of their senses, they needed permission to do so, and apparently they got it.

Video can only put something before our eyes. It can’t make us believe our eyes. And our capacity for denial and selective blindness is enormous.

This is a distressing example of the power of words. There are some more mundane, less disheartening examples. Anyone who has ever given a presentation with any kind of visual aids knows why they are called visual aids. The slides just won’t make the speech for you: The speaker has to tell the story, put across the ideas. The slides — or projected transparencies or PowerPoint presentation frames — only aid. When the speaker says that the following slide demonstrates such and such, we as the audience tend to accept the assertion uncritically or we work to see such and such in the slide. Pictures and words complement each other, and where there are ideas to communicate, pictures should support the words. They need to be the right words, of course, and finding them is not always easy.

The challenge in using words and pictures together is to use the pictures to make people feel what the words say and to use the words to make people see what is before their eyes.
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An affordable, easy-to-install full-page display, that's what you get with the Power Portrait from Sigma Designs. It's 15” full-page display lets you race through graphic displays. Chose between 72, 80 or 88dpi, or select the hardware plan feature to create a virtual two-page desktop to power through multi-page tasks. Sigma Designs #00571

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Pamper your PowerBook, in style! This dual-purpose case combines a luxurious leather briefcase together with a functional laptop carrying case. The Premier offers four fully-lined document sections and a padded computer compartment. The zippered portfolio section has Velcro-secured disk pockets, pen/pencil and business card holders, two pockets for miscellaneous items, a snap-on key ring and a pouch for glasses. Targus #05284

NoteBook Keypad

$104

The Kensington NoteBook KeyPad gives you the flexibility and features of a full keyboard when you use your Macintosh PowerBook. Its compact, sleek design is perfect for travel with your PowerBook or any other ADB device. This module gives you function and arrow key control, as well as the standard mathematical and number keys found on an extended keyboard. Kensington #00639

External Full-Cycle Battery Charger for PowerBooks 140/170

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"Memory Effect" is the loss of battery capacity due to using a battery over only a portion of its storage range. Since the PowerBook automatically shuts down on low battery, the battery is never used over its whole range, causing it to develop a memory effect. The Lind External Full-Cycle Charger not only charges the PowerBook 140/170 ni-cad battery but optimizes full performance and long life by giving you the option to discharge the battery completely before the charging cycle begins. Lind Electronic Design #05354

Auto Adapter for all PowerBooks #05352

External Battery Charger for PB100 #05353

Auxiliary Power Pak for all PowerBooks #05355

Targus Universal PowerBook Case #07454

External Full-Cycle Battery Charger for PowerBooks 140/170

$188

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PLI CD-ROM HardDrive $644

The PLI CD-ROM is one of the most fully-featured drives available. It has a self-cleaning objective lens which eliminates bothersome dust problems and offers audio output through a 1/8” headphone jack and two RCA jacks. Volume control for the headphones is provided by a convenient dial on the front panel. PLI #03691
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AGFA
The complete picture
The reading Mac: OCR on the Mac hasn’t really changed much since Caere shipped the first OmniPage back in 1988. There haven’t been many new vendors, and the prices of OCR software have stayed high, but nothing stays the same forever. * TypeReader ($695), from ExperVision (800-732-3897 or 408-428-9444), is the latest OCR entrant. In its most automatic mode, a single button click captures the page, determines the content areas, and launches the recognition process. The resulting file retains most character formatting plus document formatting, such as table structures, tabs, and paragraph positioning. It can export its recognized files in a variety of formats — including Excel, Word, Lotus 1-2-3, and RTF — and it also supports Hewlett-Packard’s AccuPage technology, for better, easier scanning. TypeReader directly supports a variety of scanners, including models from Abaton, Apple, Hewlett-Packard, and Microtek. * OmniPage Direct ($595), from Caere (408-395-7000), makes the OmniPage technology a true utility. OmniPage Direct installs on the Apple menu, so you can capture a page and perform the recognition without leaving your active application. The recognized data automatically drops into your currently open document. And because OmniPage Direct supports Apple events, you soon won’t have to go to the Apple menu at all. * WordScan and WordScan Plus, from Calera Recognition (408-720-8300), have also been upgraded to incorporate HP’s AccuPage technology, but the biggest news is cost: Calera has slashed prices to $295 for WordScan and $595 for WordScan Plus. * Someday OCR will be just another extension in an already overstuffed System Folder. Until then, we’ll have to settle for easier, cheaper OCR. Sigh.

Up to Date...

QuicKeys 2.1.2, the latest rev of CE Software’s popular macro program, works better with Word 5.0 than the previous version did and has two new utilities: Instant QuicKeys, for easy macro creation, and QKIcons, for creating icons that can launch macros. 515-224-1995. $149. * Meeting Maker 1.5 is the latest edition of ON Technology’s meeting scheduler. Networking improvements include better server handling and more administrator capabilities. Client improvements include color support and the ability to handle flexible working hours. 800-950-4750 or 617-876-0900. $495. * The QMS-PS 2000, QMS’ 20-ppm network printer, has had a huge price cut: $3,000. It now lists for $12,995. 800-523-2696 or 205-639-4400.

By Russell Ito
FileMaker for Macintosh and Windows

Fulfilling its promise to become a true cross-platform developer, Claris has introduced its first in-house Windows program: FileMaker Pro 2.0. But before you start thinking that Claris has abandoned the Mac for Windows’ greener pastures, rest assured — there’s a Mac version of FileMaker Pro 2.0 too.

Put side by side, the Mac and the Windows versions look identical, and that similarity goes more than skin-deep. FileMaker Pro 2.0 offers true file compatibility between the versions, so no translation is needed. Scripts, layouts, and graphics are all immediately transportable. In multuser environments, users can mix Mac and Windows versions of their FileMaker files, with instant updating.

For Mac purists, Claris has given FileMaker a full System 7 treatment. In fact, the company has coined yet another System 7 adjective: omniscient. FileMaker Pro 2.0 supports Apple events, host access via DAM, QuickTime, and external script control. The new program can launch other scripting programs such as Resolve, HyperCard, QuicKeys, and Tempo IH for performing functions that aren’t native to FileMaker. For example, it can launch Resolve or Excel to generate a chart from FileMaker data.

Claris Corp., 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052; (408) 727-8227. Price unavailable at press time.

Intelligent Drawing

Applications are a lot like wildflowers: After a while, they’re going to get cross-pollinated. It’s been some time since we’ve seen a new drawing package, but Aldus’ Envision is a drawing package with a truly cross-pollinated feature set.

Envision’s biggest addition to what you would normally expect in a drawing package is intelligence. Ever since Vellum, we’ve seen smart cursors in CAD packages. Just about every CAD package out there has an intelligent-cursor option, and even Canvas included this feature. But Envision goes a step further. Instead of an intelligent cursor, it introduces intelligent objects. With Envision, objects “understand” factors such as size, alignment, and positioning, so if you have a group of objects and alter one, all the others will update to maintain their relative relationships so you don’t have to tweak things.

Like some 3-D packages, Envision lets you create master and clone objects. Instead of being just a dumb duplicate, a clone remains linked to its master, so if you alter the master, all the clones — wherever they might happen to be in the
A NuBus board with support for monitors as large as 16 inches, the PrecisionColor 24Xp drives Apple and third-party monitors plus Radius' Color Pivot/LE (in landscape orientation) and VGA monitors. With 15- and 16-inch monitors becoming the norm, the 24Xp may become the new standard in accelerated-video cards.

Radius, Inc., 1710 Fortune Drive, San Jose, CA 95131; 408-434-1010. $599.

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If you think it's time your drawing program did some of the work for you, check out Aldus' Envision. It's the first drawing program with object intelligence, which can automate tedious tasks such as alignment, sizing, and positioning.

Automation is one of Envision's key selling points. For example, the Symmetricon automatically draws symmetrical objects, so you don't have to try to join halves. Connector lines remain attached to the objects they connect, stretching and shortening as needed. Dimensioning lines update automatically, and a numbering tool creates numbered labels and acts like a footnote function in a word processor, updating the numbers as labels are added or deleted.

And just like FileMaker Pro 2.0, Envision is a cross-platform application, so files created on the Mac are immediately readable under Windows and vice versa.

Silicon Beach Software, Inc., 9770 Carroll Center Road, Suite J, San Diego, CA 92126; 619-695-6956. $299.

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SQL Made Easy

Now you're probably saying, "Yeah, right. That's a contradiction in terms." But what if you could work with a SQL database without having to do anything more complicated than fill out an on-screen form? That's what the folks at Brio Technology promise with their latest creation, DataEdit.

DataEdit is a forms-based front end for relational databases. Using a forms environment that looks quite a lot like FileMaker, you can query, update, and insert data into a host database without having to know how to speak SQL.

Creating a form is a simple click-and-drag procedure, because all you have to do in DataEdit is select the fields you want from a given database and drag them into the desired position. DataEdit does the rest. Working with the data is just a simple matter of working with whatever forms you need. And to prove it's actually working, DataEdit even has a SQL window that shows you the SQL queries it's building and sending.

DataEdit can connect to Butler, ORACLE, and Sybase databases via DAL. Other databases, including Ingres, will be added to the list soon.

DataEdit is expected to ship in the third quarter of this year.

Brio Technology, 444 Castro Street, Suite 700, Mountain View, CA 94041; 415-961-4110. $499.

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Newton's World

A revolution in palm-sized personal electronics is coming. And Apple's Newton technology and personal digital assistants will lead the way.

Apple's first personal digital assistant (PDA) is a lot like the first bikini, about which an observer said: "What it reveals is interesting; what it conceals, essential." In many ways, the same can be said of Apple's PDA. As a teaser, Apple revealed details about some of the PDA's underlying technologies at the Consumer Electronics Show in Chicago last May.

Apple unveiled an impressive collection of capabilities, which it calls its Newton technology, while keeping enough of the product specifics hidden to hold the audience in suspense until the first PDA product actually rolls out next January. With pricing expected to be between $500 and $700, the first PDA will weigh in at a fraction of the size, heft, and cost of a PowerBook.

But that's where the comparison with the PowerBooks ends. Unlike full-blown computers, the PDAs are designed as tightly focused, limited-purpose machines. For example, the first shipping model will be primarily for quick note taking; schematic sketching; simple letter writing; and performing basic personal information-management functions such as keeping address-book, calendar, and schedule databases.

Don't expect to see Word or PageMaker on a PDA. But don't expect a simple Sharp Wizard either (even though Sharp will manufacture the first PDAs for Apple). The Newton technology is a lot more powerful than anything in a product that's hit the consumer market so far. The keys to the technology are the hardware, the operating system (called Newt/OS for short), and the interface.

Physically, the first PDA resembles its ancestor, the Sharp Wizard — at least in terms of size and weight. It's roughly the size of a paperback book and a little less than an inch thick. It weighs less than a pound (how much less, Apple couldn't say, because it didn't have a finished unit to show us) and is black.

A hinged lid covers the combination touch/LCD screen, giving the whole thing the look of a cross between a Communicator and a Tri-corder. The screen covers about two-thirds of the top surface area, giving ample working room while still providing what looks to be a sufficient amount of space for a wrist rest.

What's not under the lid, however, will surprise Wizard users: There's no

PHOTOGRAPHER: WALT DEZIGNER

Unlike full-blown computers, PDAs are designed as tightly focused, limited-purpose machines.
keyboard! The first PDA is entirely pen-based: no mouse, no keyboard. In fact, it contains no physical buttons anywhere at all. You do everything with on-screen controls and a special stylus.

**Newton's Core**

The PDA's heart is a RISC chip from the British chip manufacturer ARM Ltd. Apple invested in ARM a few years ago to explore RISC development, and this chip seems to be the first fruit of that agreement. The ARM (for Advanced RISC Machine) 610 RISC controller was developed jointly with Apple, and according to Apple, it's 1.5 to 2 times as fast as the 40-megahertz 68030 chip in the Mac Ilx. ARM designed the core of the CPU, and Apple contributed the design for a custom MMU (memory-management unit) that works with the ARM 610. The result of this codevelopment was a hardware system that was designed to work optimally with applications and small object-oriented operating systems, such as Newt/OS, in tight memory conditions.

Because Apple assumes that PDA users will want to share their work or information, the first PDA offers several connectivity features. A LocalTalk port will be included, although at this writing, Apple hasn't decided what form the port will take. For transferring information among PDAs, the units offer infrared point-to-point communications, just as with a TV's remote control. The infrared link operates at distances as great as about 6 feet, so you can send files across the table but not across the room. A later model will offer diffuse infrared capability, which will allow you to log on to an AppleTalk network and then walk around the office freely while still maintaining full contact with all the zones on the net. At some point, you should also see an AppleShare client for the PDAs, for accessing AppleShare volumes.

As for storage, the PDAs do not include any moving media (although Hewlett-Packard may have something to say about that later; see "HP's Half-Dollar Drive," in this month's New on the Menu). They include a PCMCIA (Personal Computer Memory Card International Association) slot for use with credit-card-sized solid-state memory cards and an Apple-developed PCMCIA-compatible slot that Apple calls a TRIMbus, for products that require faster throughput than what the standard PCMCIA interface can offer.

Although PCMCIA cards have shown potential, they remain extremely expensive (about $40 to $50 per megabyte, or around $400 for a standard 10-megabyte card), which makes them impractical for software distribution. Apple wouldn't comment specifically on either developer programs or software distribution, but the company did make a point of including some third-party developers at its CES announcement. Initially, Apple is focusing its third-party efforts on communications, content, and compatibility products (both Macintosh and Windows) for the PDAs.

Although users won't want to be forced to keep their data on the same disk as their application, Apple hasn't commented on how users might store data in a PDA so that two applications residing on different PCMCIA cards can use it. Hopefully, Apple's solution will be better than the one it had for the original one-floppy Mac system (remember "128K elbow?").

**Eye on Newt/OS**

Newt/OS shouldn't be confused with the Mac OS. Newt/OS is a different beast altogether, designed to meet different needs and different challenges. It has four key elements that make it unique: recognition algorithms for text and graphics, the system's intelligence and software agents, forms, and a multitasking architecture.

Newt/OS' free-form handwriting-recognition algorithm is significantly different from other handwriting-recognition systems you may have encountered. If you've seen demonstrations of pen-based systems from companies such as GO, you may be surprised to find that the Newton OS doesn't force you to write each letter in a comb field that makes you feel as if you're constantly filling out a tax form. With Newt/OS, you just start writing anywhere on the screen and the recognition takes place. Like the GO OS, however, Newt/OS supports only printed...
How It Works: The PDA Interface

Although the final interface for Apple’s hand-held PDA hasn’t been finalized as of this writing, this article’s conception is based on a prototype Apple showed us. At the top of the screen is an example of the handwriting- and graphics-recognition algorithms at work. To the right of that, you can see the auto-time/date stamping that occurs when you save a “file” by drawing a line across the screen. The bold line denotes a new document. The on-screen buttons along the bottom of the screen (which will probably have different names and a different order in the final version) activate pop-up “drawers,” or cards, that offer appropriate options and commands. You have the choice of formatting this document as a letter, memo, or fax. The arrows between the Files and Format buttons let you navigate through the PDA’s continuous scrolling interface.

The graphics recognition, which, like the handwriting recognition, is always on tap, offers a similar kind of intelligence. Like the handwriting-recognition function, the graphics capability is free-form:

The graphics recognition, which, like the handwriting recognition, is always on tap, offers a similar kind of intelligence. Like the handwriting-recognition function, the graphics capability is free-form:

You can start drawing anytime you like. Newt/OS assumes that most people want to draw symmetrical objects, so it helps you draw neat graphics, even if you ordinarily can’t draw a straight line. For example, if you draw something that’s roughly a square, Newt/OS analyzes your drawing and creates a proper square of the same size. Likewise, if you draw a rough hollow arrow, Newt/OS straightens all the lines and produces a proper hollow arrow.

Intelligence and software agents (artificially intelligent “servants” that anticipate what users need) are central to the Newton operating system. Because the PDAs are intended for consumer-electronics users and not necessarily computer users, Apple’s goal is to automate as much work as possible, putting the emphasis on the A for assistant in PDA.

Working together, intelligence and agents combine to simplify repetitive tasks, making technology work for people who might otherwise find a hand-held computer intimidating. To this end, Newt/OS can parse sentences, so that it can intelligently adjust its responses, depending on the specific command. For example, if you enter “Jeff Bailey” and then select the name and look it up in the built-in Rolodex, Newt/OS will pull the Rolodex card with all of Bailey’s information, including his address, phone numbers, and so on. However, if you enter “call Jeff Bailey,” select it, and look it up, Newt/OS will pull a card that includes only his name and phone numbers. Likewise, if you enter “fax Jeff Bailey,” Newt/OS will pull his name and fax number. Newt/OS is one of the first practical examples of intelligence and agents in action.

Forms are another part of this simplification process. Because you aren’t going to want to store formatted documents in a PDA, you need a way to format a file quickly for output. Newt/OS uses a set of forms you can create elsewhere and store in a PDA. When you’re ready to print a file or send a fax, all you have to do is select the document you want to format, tap the Format button, and choose the appropriate form (the system supports batch processing for formatting multiple documents simultaneously). The Newt/OS then, in effect, performs a mail-merge, combining the data with the format, and sends the merged file to a printer or a fax modem.

Because PDAs should connect to an IBM PC or compatible as easily as to a Mac, Apple is developing forms-creation packages for both the PC and the Mac that will let you design forms for the PDAs.

Newt/OS is a multitasking operating system: It can have multiple recognition functions active at the same time. This means that you can create a drawing, using the graphics-recognition function, and then annotate it with labels, using the handwriting-recognition function — all without switching modes. This multiple-function interface for jotting notes or sketching diagrams is as natural as using paper.

Newton’s Applications

Being tightly focused, the first PDA comes with several applications already loaded into ROM. There’s a note-taking function, a MacDraw/MacPaint-like graphics function, a Rolodex-like address book, and a calendar/scheduler.

The note-taking function, like the graphics function, is always available: You never have to enter a special handwriting- or graphics-recognition mode. The PDA’s interface resembles a continuous scroll of paper: You write or draw whatever you want, and each time you want to start a new “document,” you just draw a line...
across the screen, which separates what you’ve already done from your new work and automatically time-and-date-stamps it. You can then name your work appropriately and file it for later retrieval. Apple hasn’t worked out the exact mechanism by which you’ll be able to “file” your documents, but it’s reasonable to assume that the system will make use of aliases that will create and maintain pointers among documents and their “folders.”

Because the PDA doesn’t use a Clipboard, editing your work is a direct process. To select something, you just drag the stylus across the object (a word, sentence, graphic, whatever), and the selection is highlighted as if you had used a highlighter felt pen. To move the selection, you simply drag it to the new location, just as with the “drag and drop” feature in Word 5.0 and Excel 4.0. If you’re repositioning text, the system will even display a little caret to indicate where the insertion will occur.

The graphics function combines the look of MacPaint with the object-oriented abilities of MacDraw. Although the drawing process is a lot like MacPaint’s, the graphics themselves are more like MacDraw’s, because they’re objects, not bit maps. You can pick them up, move them around, alter their shapes, and combine them into new shapes. But unlike conventional drawing programs, the PDA’s drawing function lets you erase all or part of an object, à la MacPaint.

The final graphics function may go even further. At press time, Apple was investigating auto-grouping and auto-joining as possible features. With auto-grouping, if you select several objects, they’ll automatically be grouped into a single object. With auto-joining, if you position one object to touch another, they’ll automatically be joined into a single compound object.

The Rolodex should look and act much like the Rolodex sack that shipped with the original HyperCard. The calendar/scheduler offers some basic personal-scheduling functions, supplemented with intelligence. For example, if you enter “lunch meeting with Jeff Bailey on Tuesday,” the scheduler will “know” that you are probably talking about the Jeff Bailey in your Rolodex, the nearest Tuesday in the future, and that lunch should occur between noon and 1 P.M. It will then automatically propose these as the date and time for your meeting. And, of course, you can recall all of Bailey’s Rolodex information, just as you did with the note-taking function.

Like the Mac, the PDA includes a trash can—but with a difference. Apple showed an early prototype that “tears” a deleted file off the screen, crumples it up into a ball, and tosses it into the trash (all with appropriate sound effects, of course).

**Newton’s Future**

Although you won’t be able to buy a PDA until early next year, you may then find that you have a choice of vendors. Apple has said that it will not be the only company to sell Newtonian PDAs next year, so look for a similar unit to come from Sharp Electronics at about the same time. As the software that will run on it, that’s an open question we’ll revisit in a few months. Software distribution will be a major issue, because PCMCIA cards are so expensive that they’re a thoroughly impractical distribution medium.

Apple has also already preannounced some of the features that will be included in upcoming versions. As mentioned earlier, in addition to cursive-writing recognition, Apple will introduce a model with diffuse-infrared AppleTalk capability. Although Apple hasn’t said anything about models with internal fax modems, it was quick to suggest that an optional PCMCIA-based fax modem is already in the works.

The last time Apple made a fuss about intelligent agents (in its controversial Knowledge Navigator concept video, which featured a talking man in a bow tie as the agent), it generated more snickers than excitement. But the PDAs demonstrate that some form of agency can be useful, whether the machine talks to you or not. How soon handwriting and graphics recognition and other intelligent elements of the operating system will reach the Mac is anyone’s guess, but it’s a safe bet that Apple didn’t design this technology just for its consumer products. We still have a lot to learn about the PDA; just as with the first bikini, we’ll have to wait and see how much more gets revealed.

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Russell Ito
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<td>AmiRISC RISC processor</td>
<td>Motorola 68000</td>
<td>Weitek RISC processor</td>
<td>Motorola 68000</td>
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<td></td>
<td>9 ppm 8.5x11</td>
<td>4 ppm 8.5x11</td>
<td>9 ppm 8.5x11</td>
<td>Optional 2nd paper tray</td>
<td>8 ppm 8.5x11</td>
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<tr>
<td>Cons</td>
<td>Only available through 1-800-3G4-USER</td>
<td>No SCSI port</td>
<td>No SCSI port</td>
<td>Only expandable to 2 mb RAM</td>
<td>No 2nd paper tray</td>
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<tr>
<td>Optional 2nd paper tray</td>
<td>$269</td>
<td>$299</td>
<td>$300</td>
<td>Optional 2nd tray</td>
<td>$329</td>
</tr>
</tbody>
</table>

Optional enve. feeder $269
Optional 2nd paper tray $299

Elimination of fragmentation = memory allocated dynamically and automatically reclaimed
Mail in this card or call toll-free for your **FREE SAMPLE** of RealTech Laser Printer output
(Seeing is believing! We figure a real-life example in your hands is worth a thousand words.)

This is 300 dpi output
Shown at 100% (14 pt. Times Roman)

This is 400 dpi output
Shown at 100% (14 pt. Times Roman)

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—Debora Koontz
Riverword, Inc.

---

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• 2 paper trays included!
• SCSI port
• Edge-to-edge printing!

AGAINST THE COMPETITION

11x17 PRINTERS/HIGH-SPEED PRINTERS

<table>
<thead>
<tr>
<th>RealTech Laser</th>
<th>QMS 2210</th>
<th>Hewlett-Packard IIIi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$4495</td>
<td>$9995</td>
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<tr>
<td>Pros</td>
<td>Weitek RISC processor</td>
<td>Motorola 68020</td>
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<tr>
<td></td>
<td>8 ppm 11x17</td>
<td>11 ppm 11x17</td>
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<td>2 paper trays</td>
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<td>300 or 400 dpi</td>
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<td>SCSI port</td>
<td>SCSI port</td>
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<td></td>
<td>4 mb RAM upgradeable to 16</td>
<td>4 mb RAM</td>
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<td></td>
<td>PostScript Level 2</td>
<td>PS Level 1</td>
</tr>
<tr>
<td>Cons</td>
<td>Only available through HARDWARE THAT FITS</td>
<td>Very expensive</td>
</tr>
<tr>
<td></td>
<td>1-800-364-USER</td>
<td>Limited to 300 dpi</td>
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<tr>
<td></td>
<td></td>
<td>Poor paper handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slow for complex graphics; 4 mb RAM maximum</td>
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</tbody>
</table>

Prints edge-to-edge!* No more tilting to get the full image area! The RealTech Laser 400 prints the entire page, not just to 1/4" from the edge.

SCSI port. The standard configuration includes a SCSI port and 2 Mb of RAM upgradeable to 10 Mb (RealTech Laser) or 4 Mb of RAM upgradeable to 16 (RealTech Laser 400).

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---

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---

**Seiko Instruments Personal ColorPoint PS**

**$175**

High quality color! 300 dpi color thermal printer can produce full-bleed comps on plain paper or transparencies. 84 page size allows printed image of 8.53" x 11.93". 6 Mb RAM upgradeable to 10 or 22 Mb. 39 resident fonts, 16 MHz RISC processor.

---

**Seiko Instruments Smart Label Printer Plus**

**$5295**

Lease: $145/mo.

Same specifications as the PSX, but with a 16 MHz processor, 6 Mb of RAM standard, upgradeable to 34 Mb.

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**Seiko Instruments ColorPoint PS**

Same specifications as the PSX, but with a 16 MHz processor, 6 Mb of RAM standard, upgradeable to 34 Mb.

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**Seiko Instruments AddressWriter**

**$469**

**LabelWriter II**

**$189**
High-speed thermal printer produces edge-to-edge comps on 11x17 or smaller paper...

300 dpi thermal transfer technology prints quality color or monochrome output. 10 Mb standard; upgradable to 18 or 34 Mb. Three interface ports (RS-232, parallel, and AppleTalk®) can be used simultaneously. Includes 39 resident Bitstream fonts.

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Adobe PostScript® compatible...perfect for graphic arts applications, publishing, business presentation graphics, and more. 4 scanning passes; Pantone-approved color palette. Includes printer tray and sheet feeder.

Prints on BOTH sides of thermal or plain laser paper!*

- Easy-access front control panel
- 300 dpi
- 10 Mb of RAM
- SCSI port
- Largest "live" image area of any cut-sheet printer

The RealTech Color 350 uses state-of-the-art thermal technology, which allows you to print on both sides of thermal paper, or on both sides of high-quality, smooth finish plain laser paper. (Use thermal paper or clay-coated paper for optimum output quality and consistency.) Call for more information.

*Prints on both sides of plain laser paper requires the use of a paper tray and sheet feeder. 

The color output shown above is an Aldus Freehand sample file.

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Magic

Magic’s modes and theatrical metaphors help users conjure animated business presentations.

Magic is an animated-presentation tool that produces near-professional-looking results without requiring professional-level skills. With familiar MacDraw-like tools, Magic lets you animate objects simply by drawing paths. Graphical controls let you integrate graphics, sound, and QuickTime movies into presentations as well as make them interactive without requiring the use of scripts. Although Magic’s talents are impressive, the program doesn’t offer the power and feature set of its more expensive sibling, Macromind Director, which is aimed at professionals.

Magic uses a theatrical metaphor for creating animated presentations — all text and graphic objects are called actors, and actors move about on a stage. Animated sequences take place in distinct scenes, and you provide actors with custom costumes, such as colors, patterns, and sounds. You can make presentations automatically cycle through scene sequences, or you can make them interactive with buttons. QuickTime support, which is new in version 1.1 of the program, allows you to use time-based movies with your presentations, giving you more accurate control over the length of presentations than the previous version of Magic did.

Compared with Cinematation, a similar program from Vividus, Magic is more modal. A mode selector at the top of the program’s tool palette lets you select one of six modes. In Draw mode, you can create or import actors as well as align, flip, or rotate them. By selecting an actor, you can activate one of Magic’s other modes. The Shape mode lets you tweak your graphics with Bézier-like points and handles, and the Mask mode lets you mask actors and backgrounds to create transparent effects, such as QuickTime movies that play within objects and text. In Pan mode, you can create the illusion of a graphic moving through a shape. The Move mode lets you draw paths for objects and synchronize their motion, and the Run mode lets you play your finished presentation in a sequential fashion or as interactive scenes.

Although Magic’s use of modes may be frustrating for some users, for others it can be a boon. The modes act as layers that help separate the functions of the program. For the most part, they make Magic manageable, particularly for novice users. Because you begin in Draw mode and always return to it before moving to other modes, you can never get lost. However, we found it annoying to be constantly returning “home.” Unfortunately, you’re locked into Magic’s modes even after you’ve become adept at using the program. It seems that little of the program’s manageability would be lost if, at the very least, Magic’s Draw and Shape modes were combined, because shaping an object is a function of drawing it.

In Draw mode, you can create text (Magic supports ATM and TrueType); basic shapes such as ovals, rectangles, and polygons; and freehand shapes and lines. You can also import PICT files and use them as backgrounds, actors, or costumes. The ability to group objects is missing, however.

To set in motion the objects you’ve created, you simply draw paths for them in Move mode. Once you’ve set up objects and their paths, you have several options for viewing and controlling them. A floating VCR-like Control palette lets you move through an animated sequence interactively, using the play, rewind, and fast-forward controls. You can also run straight through the sequence in Run mode.
Right on Cue

To modify the actors in a scene, synchronize their motion, and fine-tune animations, you use Magic’s Cue palette. The Cue palette is the program’s main control center. All the controls are graphical and fairly easy to master. A timeline situated along the top of the palette displays a scene’s frames in ten-frame intervals. A list of all the actors in a scene, including graphic bars representing their life spans, appears at the bottom of the palette. You can expand and contract an actor’s life span in a scene simply by stretching or shrinking the corresponding life-span bar.

Clicking on an actor’s name in the list displays the attributes associated with that actor, which include various animation effects, transitions, and sounds. As with life spans, you modify an actor’s attributes graphically by stretching and shrinking attribute bars. The Move bar, for example, lets you control the number of frames for which an actor is in motion. Using the Fill In/Out and Line In/Out bars, you can control the actor’s transitions for entering and exiting from the stage. The Fill Pan and Line Pan bars control transitional panning effects, which you use with imported graphics, PICS, and QuickTime movies. Pop-up icons let you fine-tune each attribute—for example, you can specify motion to be point to point or along a spline.

You can also attach sounds to actors. Sounds are imported as snd or QuickTime files, or you can create them within Magic, using the external microphone on a Mac LC or IIci or a MacRecorder with a Mac II.

To see how you’ve modified an actor’s attributes from within the Cue palette, without going into Run mode or using Magic’s VCR-like controls, you can simply move a control line (called the tape head) back and forth through the frames in the time line.

Buttons and Links

Once you’ve created several scenes, you can arrange them in any sequence by using a dialog box that displays a thumbnail for each scene. Clicking on and dragging a thumbnail lets you reorder the scene in the sequence. To create an interactive presentation, you can make any actor, animation, or QuickTime movie a button. With the Link palette, you can then link any button to another scene or to a FilmMaker, QuickPICS (included in the Magic package), or QuickTime movie stored on your hard disk.

To keep the size of your presentation file manageable as well as to improve the playing quality of complex animations, Magic lets you export scenes as PICS or QuickTime files and incorporate pointers to them from within the program. Once you’ve exported a scene, you can compress it with QuickPICS or with any of the QuickTime compression schemes. Such external movies can serve as full-screen transitions between scenes. When compressed and saved as movies separate from Magic, complex animations that incorporate many actors and elements will run more quickly and smoothly.

Overall, we found Magic easy to learn and use and its flip-card manual and tutorial helpful. You don’t have to be a multimedia expert to master Magic’s simple path-based animation technique, or a scripting whiz to create interactive presentations. Most users will probably be comfortable with the program in a matter of hours. The product comes with a variety of sample animation, graphics, music, sound, and 3-D clip-art files to help get you started. A series of animated presentation templates is also included—you simply plug in your text. A run-time version of the program is included too, so you can distribute your presentations for noncommercial use.

Performance can be a bit sluggish, however, and if modal programs frustrate you (constantly returning to the Draw mode is especially tedious), we recommend Cinemation over Magic.

The Bottom Line

Anyone who’s used MacroMind Director will recognize Magic’s approach to creating animated presentations. But because Magic’s MacDraw-like tools are easier to use than Director’s and because its use of modes can help guide users through the difficult process of creating complex animations, it has a significantly shorter learning curve than its higher-priced sibling. Alternatively, Magic’s similarly priced rival Cinemation provides a number of advanced animation tools, such as ghosting, that Magic lacks, and it uses frame-based editing tools, which makes it an excellent choice for users who already have traditional film-editing experience. For those who don’t have that experience, Magic’s tools, which offer novices a high degree of precision for controlling animation elements, may cast the right spell.

—Michael Miley

Get Info

**Magic**

Published by: Macromedia, Inc., 600 Townsend, San Francisco, CA 94103; 415-442-0200.
Version: 1.1.
List Price: $395.
PowerPlay for the Macintosh

PowerPlay's graphical approach to data analysis turns out to be its Achilles' heel.

Competing head to head with MUSE for the elusive decision-support market, PowerPlay for the Macintosh is a tool designed for exploring and analyzing multidimensional data. PowerPlay differs from MUSE in several significant ways, however. First and foremost, its features can't compete with MUSE’s for depth of power and functionality. PowerPlay takes a graphical approach to data analysis, a unique strategy that in the end works against it by limiting its muscle for manipulating and transforming data, tasks at which MUSE's worksheet-oriented approach excels.

PowerPlay comprises three separate applications: Creator, Viewer, and Reporter. All three can be open simultaneously under System 7, although users will work mainly within Viewer and Reporter — Creator is a tool best left to systems professionals. With its built-in DAL (Data Access Language) compatibility, PowerPlay can extract data in ASCII format from outside sources (such as corporate SQL-based mainframe databases). With the extracted data, PowerPlay’s Creator formulates a special PowerPlay-formatted database that’s structured according to business-specific categories such as months, quarters, years, and products.

As with MUSE (see review, July ’92, page 52), the most difficult aspect of PowerPlay is the process of extracting the required data and structuring it in such a way that users can manipulate it in Viewer and Reporter. The multistep process of setting up the necessary import files is slow and tedious. You must create files of raw data (Data files, in PowerPlay parlance); descriptions of the data (the Definitions Input file); and the Generics file, comprising information that can be shared by several different PowerPlay databases. Once it’s been created, a PowerPlay database exists in a proprietary file format that cannot be imported or exported directly.

To give you an idea of how painful the setup process can be, we’ve provided a brief selection (see next page) from a sample Generics file. This is the sort of ASCII file you must master before you can make PowerPlay do your bidding.

Once your data has been structured properly, you can explore and analyze it in the Viewer. The idea behind PowerPlay, as with MUSE, is that accomplishing the same analytical tasks with traditional spreadsheet or database programs would require considerable time and expertise. PowerPlay is set up primarily to explore data graphically. It provides nine chart formats, including bar, line, and cluster. By default, the charts plot summarized data, but PowerPlay lets you slice through a chart to examine the underlying detail simply by clicking on chart elements, such as the bars in a bar chart. In this way, you can create multiple graphical views of your data by “drilling down” into the underlying data categories. For example, if the summarized sales data you’re viewing is for the entire U.S., you can drill down through the regions category to the states category to see sales revenue by state. You also have the option of viewing data in standard worksheet format, without giving up any of the program’s layering features.

With PowerPlay’s Reporter, you can then build customized reports in much the same way as you do with a database manager’s report writer. Using the Compute menu in Reporter, you can also perform various calculations, such as multiply, percent, and average, on your data.

If you want to present your data, you’ll probably want to move it to a spreadsheet program, because PowerPlay’s charts are far from presentation-quality. Unfortunately, PowerPlay doesn’t make this task as easy as it should be. The program doesn’t support any of the common spreadsheet export formats. It does allow you to publish editions to other...
programs (subscribe isn’t supported, however), so you can publish numbers and alphanumeric data in table format from the Reporter to Excel, for example, and create attractive charts there.

Overall, we found PowerPlay to be fairly easy to use, although its limited data-selection options and heavy reliance on graphically represented data constrains its analytical powers. That’s not to say that mastering PowerPlay’s graphical-delayering features doesn’t require some practice. Even if you’ve used a 3-D spreadsheet before, you’ll find the learning curve to be somewhat steep and the help you get from the manuals to be modest. (Don’t even bother with the on-line help stacks — they contain such useful gems as “Use the Preferences command to set preferences for creating PowerPlay databases.”) And don’t expect PowerPlay’s data-analysis and -exploration capabilities to be on a par with those of statistical-analysis packages such as Data Description’s Data Desk or even with spreadsheet programs in the hands of power users.

PowerPlay has a prodigious appetite for hardware when you’re working with large data sets. Although Cognos recommends a 68020 or more powerful machine, we recommend you use a minimal configuration of a Mac Iici with 16 megabytes of RAM, a 160-megabyte hard disk, and at least an 8-bit monitor for displaying PowerPlay’s graphs. Our test platform was a Mac Iici with 32 megabytes of RAM and a 50-megahertz DayStar Digital PowerCache accelerator.

PowerPlay is derived from Cognos’ PowerHouse family of 4GL (fourth-generation language) products for workstations and mainframes and is available in a Windows version as well. You can run PowerPlay with System 6.0.5 or later, and the program supports System 7 features such as publish and subscribe, Balloon Help, and the revised DAL. DAL is supposed to make it easy for PowerPlay to access host databases, but based on our experience, that’s a chore best left to MIS managers and other techies. The DAL problems we experienced probably have as much to do with DAL’s imperfections as with PowerPlay’s, but that doesn’t make it any less painful to get data into the darn program and structure it properly. Of course, you also have to have a network connection if you want to import data from file servers or remote databases.

The Bottom Line

In its effort to make an accessible data-analysis tool, Cognos has made PowerPlay’s features a bit too simplistic. The program’s method of drilling down through graphically represented data layers limits users to a fairly superficial examination of their data. MUSE offers much more in data-manipulation capabilities and provides a natural query language and scripting capabilities too. Moreover, the painful process of extracting and structuring data so users can access it from PowerPlay’s Viewer and Reporter applications is no trivial task. It’s even more tedious than getting data into MUSE’s databases. Frankly, with both PowerPlay and MUSE priced at $695, MUSE is the better bargain.

— Don Crabb

PowerPlay Generics files can be somewhat cryptic.
The AsantéHub 1012 is a 12-port, intelligent 10BaseT hub that brings enterprise-level hub capabilities to departmental Ethernet networks. Working with AsantéView network management software, it offers power, flexibility and reliability at a very economical price.

That means your out-of-band network management is just as powerful as your in-band management. And you can graphically monitor and control individual connections, locally or remotely, from your choice of computer platform.

AsantéView out-of-band management software lets you simultaneously manage up to 12 AsantéHubs which can be distributed up to 2000 feet apart.

AsantéView keeps you in control of your network with performance monitoring windows, a map editing function, multi-level password protection and direct control at the hub and port levels. The software can even be set to trigger your pager whenever certain pre-specified events occur. This provides you with
the flexibility to instantly solve your office network problems when you’re not there.

Be Smart.
Be Flexible.

To take advantage of the latest technology, the AsantéHub includes a built-in expansion slot designed to accept internetworking option cards. For this slot, Asanté offers the in-band SNMP management module as an option. This allows you to delay the expense of SNMP until you need it.

In addition, the AsantéHub includes a built-in RS-232 port for remote dial-up access, and both RJ-45 and RJ-21 connectors for direct-to-computer or punch-down block connections. There is also a 3-in-1 “13th” port for interconnecting multiple hubs with backbone cabling. This port includes BNC, RJ-45 and AUI connectors supporting a variety of cabling media including thin coaxial, unshielded twisted-pair (UTP) and, with a transceiver, thick coaxial or fiber optic cabling.

To maintain network services should the main operating cable fail, this backbone port supports auto-switching redundant cabling with a software override capability.

In short, the AsantéHub 1012, combined with AsantéView management software, offers all the features and benefits of a high-end enterprise hub for a departmental price.

Asanté has built a reputation for producing compatible, reliable and flexible networking products. We offer a full family of Ethernet and Token Ring adapter cards for PCs and Macs. And a full line of 10BaseT hubs. We’re the networking company of choice because we give you more choices.

For specific smart hub questions, make the smart choice, and simply call us today at 800-523-3115.

Resellers: Asanté products are available from Ingram Micro, Merisel and Tech Data.
MODELING & ANIMATION

SwivelMan and ShowPlace/MacRenderMan

For an entry-level 3-D-design suite, team Macromedia's 3-D modeler with Pixar's composition/rendering software.

Tight budgets and sophisticated 3-D-design projects generally don't mix. However, if you're in search of a way to do RenderMan work that won't cost you an arm and a leg, consider the combination of Macromedia's SwivelMan and Pixar's ShowPlace/MacRenderMan package. Together, these two products can comprise a reasonably priced RenderMan still-image-production suite.

SwivelMan is a full-featured modeling package that supports RenderMan RIB (the standard RenderMan file format) output, and ShowPlace is a composition program for assembling and rendering scenes consisting of premodeled 3-D objects. If there were a PostScript language for the world of 3-D modeling and rendering, RenderMan would fill the bill. Available on a range of machines, from Macintoshes to Silicon Graphics workstations, RenderMan is the only practical device-independent 3-D-rendering language.

SwivelMan

The latest version of Macromedia's 3-D-modeling package, SwivelMan, combines the standard Swivel 3D Professional program with enhanced RenderMan support. SwivelMan is a well-balanced modeler that has relatively unspectacular animation and rendering capabilities. The exception is the program's lightning-fast Phong renderer — one of the fastest Phong renderers on the Mac. Its excellent object-linking options are also key strengths.

The new RenderMan shaders are programmable surface attributes, such as roughness, bumpiness, transparency, color, and reflectivity. If you're a RenderMan-savvy user, you can access and manipulate shaders by programming, although learning how to program in RenderMan is almost as difficult as learning PostScript programming.

In SwivelMan, RenderMan shaders appear along with the standard Swivel 3D color attributes in the program's surface- and color-control dialog boxes. Preview dialog boxes display slider controls that let you modify major RenderMan shader attributes without programming. However, previews are static and don't reflect the actual shader settings, so you'll have to render objects externally, using RenderMan to see how a selected set of parameters actually looks.

SwivelMan's solid set of modeling tools includes an extruder and a lathe tool. SwivelMan also lets you create nonuniform objects with top, front, and side profiles that you can edit separately. You can create complex surfaces by arranging several cross-sectional "ribs" and then stretching a skin over them. This is a powerful modeling feature, but you can't edit the newly created skin as a model. You have to change the rib elements and then replace the skin on the object. SwivelMan's selection tools for editing control vertices are among its weakest aspects.

With SwivelMan, you can create hierarchical links between objects to form complex models. You can also constrain the motion axes for linked objects to create ball-joint connections, constrained sliders, and the like. The constrained-link modes, which are invaluable for complex animation and simulation work, have been one of the most compelling reasons for using SwivelMan. Something to keep in mind is that the program is designed as a "visualization" 3-D product — if you're more concerned with numerical precision and volume calculations, you'll be better off with a traditional CAD program.

SwivelMan has basic keyframe-animation abilities — you can move a set of objects around the screen and take snapshots (keyframes), and the program automatically creates motion between them. Because its animation features are basic, you'll need a full rendering and animation package such as Macromind Three-D if you intend to do intensive animation work.

You can create as many as eight light sources in SwivelMan, but the overall lighting options are limited — there's only a Point light mode, and you can't specify colors for light sources. Most likely, you'll use the built-in SwivelMan lights as a reference and reprogram the lights in another program such as ShowPlace.

Besides RenderMan output, SwivelMan offers a wide variety of other output options, including 24-bit PICT, EPS, and DXF. You can save animation files as PCS files or as Scrapbook files. A separate file-conversion utility, Swivelizer, lets you convert DXF, Claris CAD, MacDraw, and PICT files into Swivel images. Swivelizer can also create extruded 3-D type from PostScript Type 1 fonts, although you can't bevel type edges.

The SwivelMan package includes a full copy of MacRenderMan. Although this means that you can easily get by without an additional external rendering program, you'll probably want a more advanced interface to MacRenderMan than the one SwivelMan provides. For example, if your work involves colored lights, you'll be frustrated with rendering images directly from SwivelMan. Also included is a copy of QuickPics, a utility for compiling PICS animation files into a more efficient animation file.
format. However, in comparison with QuickTime, QuickPics is arguably less desirable for compressing animation files.

ShowPlace/MacRenderMan

For inexperienced users, ShowPlace is a good front-end application for manipulating MacRenderMan files, making it a complement to SwivelMan, which is weak in this area. You create “scenes” by importing and arranging precreated RIB models; setting their surface attributes and lighting; and rendering the scene with MacRenderMan, which is bundled with ShowPlace. ShowPlace has no modeling or animation tools and is clearly aimed at 3-D novices — the software offers little to attract advanced 3-D artists who may already have a RenderMan-compatible rendering/animation program such as MacroMind Three-D or Electric Image.

ShowPlace imports RIB files from any RIB-compatible 3-D-modeling program, including SwivelMan. Once you’ve imported objects into ShowPlace, you can position, rotate, and scale them in the scene. ShowPlace’s interface for manipulating objects and changing views is not exactly intuitive, but once you’ve gotten used to it, it’s fairly workable. The toolboxes let you control object positioning and scaling, surface attributes, and the camera and lighting.

In ShowPlace, surfaces (or shaders) are called looks. ShowPlace comes with a good selection of basic looks, including metals, marbles, woods, building materials (brick, concrete, and plaster), and more. Looks are loaded into a scene one by one, and you can change the shininess and color of a look in the Surface attributes dialog box. Although the level of programmability of looks is sufficient for beginners, more-advanced users will probably be frustrated by the inability to edit all of a look’s attributes. A partial but unsatisfactory workaround to editing looks is detailed in the ShowPlace documentation.

ShowPlace comes with a basic selection of shapes (including the expected primitives such as spheres, cones, cubes, and tubes) as well as with more-detailed objects (lamps, decorative columns, furniture, and chart symbols). Although several third-party clip-object packages have appeared for use with ShowPlace (the Valis Group’s line of shaders and primitive objects is particularly attractive and useful), a separate RIB-capable modeler is essential. SwivelMan is a good candidate if you’re looking for a reasonably priced RIB modeler. An added bonus is that ShowPlace lets you create beveled extrusions of PostScript type, but you can’t separately shade the edge bevels. If you could, you could create an object with matte front and back text faces and shiny beveled edges, for example.

The rendered quality of ShowPlace/MacRenderMan images is excellent. Using the Photorealistic MacRenderMan driver, you can create images that look as if they’ve been constructed on high-end graphics workstations. Although image quality is high, speed is not. MacRenderMan may not be the slowest renderer on the Mac, but it’s far from speedy. Even MacRenderMan’s so-called fast Draft mode is slow at previewing simple scenes — a faster preview renderer would be helpful.

ShowPlace saves rendered images in a variety of formats, and it can save an 8-bit anti-aliased alpha channel that masks 3-D objects from their background. This valuable feature lets you use a program such as Photoshop after rendering to create composites of multiple 3-D images that overlap one another smoothly. An excellent tutorial videotape is included in the software package. After watching it, you’ll be sufficiently prepared for tackling most of the program.

ShowPlace and MacRenderMan as well as additional shaders and model files are available on a CD-ROM for $695. If you buy the software package ($995), documentation for both programs is included on-disk — virtually no printed documentation is included. For those who buy the CD-ROM, the manuals for both ShowPlace and MacRenderMan cost $100 — and the videotape costs $19.95.

The Bottom Line

Together, SwivelMan and ShowPlace/MacRenderMan offer novice 3-D users a good starting point for creating RenderMan images on a Mac. Although SwivelMan can be used as an all-inclusive modeling, rendering, and animation package, it cries out for a more capable animation and rendering environment. ShowPlace should be considered only in conjunction with a RIB-compatible modeler, such as SwivelMan. Moreover, the program won’t have much appeal for more-advanced 3-D/RenderMan artists. Given these parameters, ShowPlace is a bit pricey, but SwivelMan offers a solid deal.

— David Biedny

Get Info

ShowPlace/MacRenderMan


SwivelMan

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**THINK C 5 and CMaster**

Symantec’s top-notch development tool gains an improved compiler and an add-on editing tool.

THINK C 5 is the latest version of Symantec’s excellent integrated C-language development environment. Enhancements include a rewritten C compiler with a new optimizer, expanded object extensions with C++ features, and a debugger that saves expressions in its data window that can be reused later.

The THINK C compiler has been rewritten from the ground up to produce code that’s vastly superior to the code produced by previous versions. In general, the new version churns out code that’s as good as or better than the code you get with Apple’s MPW (Macintosh Programmer’s Workshop) C compiler. And fortunately for users, the price for this improvement is not a commensurate increase in compile time — the THINK C 5 compiler generates code at the same fast clip as do previous versions. A new optional optimizer can further improve code quality, but if you choose to use it, you can expect to take a performance hit — the optimizer roughly doubles the compile time, so it’s best to use it mainly to tweak final versions of code. According to Symantec, the THINK C 5 compiler complies with the ANSI C language standard.

THINK C’s object extensions, introduced in version 4, have been expanded to support private and protected members and public and private inheritance. They also provide improved support for pointer-based objects. The object extensions conform to the Annotated C++ Reference Manual specifications, but don’t mistake THINK C 5 for a C++ compiler. THINK C’s Object C lacks key C++ features such as operator overloading and multiple inheritance.

Regrettably, improvements to THINK C’s compiler are not accompanied by changes in THINK C 5’s C-language development environment. It sports numerous significant enhancements, including an overhauled compiler that’s vastly superior to the compilers of previous versions. To compensate for the Spartan nature of THINK C’s editor, the CMaster add-on shown here supplies several enhancements, including menus and an icon bar.

---

**CMastering THINK C’s Editor**

The THINK C editing environment is positively Spartan by today’s standards. To address this shortcoming, Jersey Scientific has come up with CMaster, an inexpensive and indispensable add-on that enhances the THINK C editing environment.

Once you’ve installed CMaster, every open window in the THINK C editor will contain a CMaster-supplied set of menus in the title bar and an icon bar on the left side of the window. The icons provide access to CMaster’s most commonly used functions. Overall, CMaster’s feature set is large and varied. Most noteworthy are a pop-up list of a file’s functions, easy block commenting, multiple Clipboards, and quick access to search functions and to such useful features as a vars resource editor. You can configure your own keyboard command equivalents and menu items to access CMaster’s features, many of which should have been integrated into the THINK C editing environment long ago. For those who spend a lot of time working in THINK C’s editing environment, CMaster is worth every penny.
improvements to its linker, which still considers the smallest unit of code to be the contents of one source file and not a single function. As a result, if only a single function in a source file is used, the entire file's code is included, leading to an unnecessary increase in code size.

THINK C also comes with version 1.1 of the THINK Class Library (TCL), which is an object-oriented application framework similar to Apple's MacApp. The TCL is smaller and less complex than MacApp, with a shorter learning curve. The latest version of the TCL contains the most frequently requested enhancements to the first version of the library, which was released with THINK C 4, including several new classes that support movable modal dialog boxes and pop-up menus. Other noteworthy additions to the library are a new table class, a 32-bit coordinate system, and support for styled text. The only thing about THINK C 5 that disappoints us is the lack of enhancements to its editing environment.

The Bottom Line

Although THINK C is beginning to show signs of age and enhancements to its editing environment remain overdue, it's still a top-notch C-language development environment. With its rewritten compiler, capable of generating high-quality code; enhancements to its object language extensions; and an expanded THINK Class Library, THINK C is a tool that no C-language developer will want to be without.

— Stephan Somogyi

PERSONAL-INFO MANAGERS

In Control

Attain's power outliner makes easy work of managing even the most complicated to-do lists.

If you rely on an outliner to manage your to-do list, you'll want to take a look at In Control, a program that's as fast and easy to use as traditional outliners but has one big advantage: support for multiple columns, so you can attach additional information to the topics in your outline.

Breaking the Tradition

In Control combines the essential features of outlining and database software. As an outliner, it presents a hierarchical view of topic entries, which you can easily rearrange by simply dragging items to a new location (unfortunately, you can select and move only one item at a time). As with other outlining software, you can collapse and expand topics and subtopics in your outline to show different levels of detail.

What sets In Control apart from traditional outlining software is its multiple-row-and-column format. Each topic in your outline forms a row. To attach additional categories of information such as priority levels and dates, you can create columns that serve the same function as fields in databases. The power of In Control lies in its ability to let you sort, search, and format the information in your outline based on column fields. By entering custom sorting information as you create columns, you can also control the order in which your information is sorted, so it doesn't always have to be in alphabetical, numerical, or chronological order.

Data In

If you're keying in data, you can use In Control's handy data-entry shortcuts. You can also import files such as address lists in text-delimited format or use Claris XTND translators (included with the package) to import files from a variety of word-processing and outlining programs. Formatting and arranging your data is also flexible and easy, although In
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<td>Baseball's Greatest Hits CD</td>
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<td>5000 20· Dual-Mode Trinitron</td>
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<td>2330 Spectrum/8•24 PDQ or 2231 PDOsi VideoSpigot LC or 4114 llsi...</td>
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<td>4122 VideoSpigot LC or 4114 llsi special 349.</td>
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</tbody>
</table>
Good news! MacConnection is now your complete source for Apple Macintosh software products. Which means you don’t have to drive 2 or 20 or 200 miles to your nearest Apple dealer to get them. Just reach for the phone and dial our number, and your order will arrive tomorrow morning. You’ll get competitive prices, a $3 shipping charge, and totally free tech support.

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7018 Floptivan 21 MB Drive ... 559.
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**MOS Drives ... 60 day MBC**
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5532 MDS 44 SYQuest w/Norton Utilities 2.0 499.
5534 MDS 88 SYQuest w/AutoDoubler 1.0.6 599.
5535 MDS 88 SYQuest w/Norton Utilities 2.0 599.
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**Micron ... 30 day MBG**
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2261 Xceed Color 30 Card (SE/30) ... 279.
2260 Xceed Gray Scale 30 Adapter Card ... 75.
3668 Xceed Macro Color 30-24-bit Video Card 489.

**Peripheral Land, Inc. (PLI)**
6432 33” Optical Media ... 1866.
Quick SCSI Card (requires cable) ... 510.
8335 PLI TurboFloppy 1.4 ... 295.
8327 PLI Infinity 40 Turbo (removable) ... 599.
9752 PLI Infinity 80 Turbo (removable) ... 729.
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2243 31/2 Color (10) DS 10. 2239 (10) HD ... 18.

**Sony ... 60 day MBG**
3297 31/2 DS Disks (10) ... 9. 6148 (30) ... 42.
3298 31/2 HS Disks (10) ... 15. 6375 (30) ... 42.
1603 DG60M ... 16. 2520 DG90M ... 22.
8185 CD2000M ... 14. 1985 CD2100 ... 21.

**Leister Productions ... 30 day MBG**
7126 Reunion 3.0—The family tree software for the Mac. Quickly record your family information and images. Create charts and documents worthy of publication. Rated 4½ Mice by MacUser. $115.

**Targus ... 60 day MBG**
3617 Mac Classic/Plus/SE Case ... 59.
1305 Universal Notebook (for PowerBooks) ... 69.
4016 Mac SE & Ext. Kybd. Carrying Case ... 75.

**ACCESSORIES**

**TONERS, CASES, DUST COVERS**

Apple Computer
9773 StyleWriter Ink Cartridge ... 22.
7749 Personal LaserWriter Toner Cartridge ... 67.
1115 LaserWriter II Toner Cartridge ... 105.
Avery ... 60 day MBG
7050 Avery 9660 (1"x2 1/4"-Clear Adhesive) ... 32.
5392 Avery 5196 (3/4"-Label Sheet-Laser) ... 29.

**Curtis Manufacturing ... 30 day MBG**
8973 Apple Security Kit (SL-2) ... 22.
910 Design ... 30 day MBG
Full line of Dust Covers (felt green or navy). call
8812 Ultimate Classic Carrying Case ... 64.
1941 Ultimate LC Carrying Case ... 95.

Kensington ... 30 day MBC
Full line available. Partial listing.
4973 Power Tree 20 ... 24.
2559 Apple Security Kit ... 33.
6763 Mac SE Anti-Glare Filter ... 82.
3023 Apple 12" Anti-Glare Filter ... 63.

Moustrak ... 60 day MBG
2594 Moustrak Pad (7"x9") 8. 2602 (9"x11") ... 9.
2695 Moustrak Pad Low Friction (9"x11") ... 10.

**MEDIA**

Fujitsu
2211 31/2 DS Disks (10) ... 9. 2214 (50) ... 32.
2215 31/2 HD Disks (10) ... 15. 2219 (50) ... 59.
4983 31/2 HD Disks (20) with storage case ... 26.
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3297 31/2 DS Disks (10) ... 9. 6148 (30) ... 42.
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1603 DG60M ... 16. 2520 DG90M ... 22.
8185 CD2000M ... 14. 1985 CD2100 ... 21.

**SIMMs ... 2 year warranty**
All SIMMs come with free video & manual.
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9437 2 MB SIMMs (for Basic LC) $65.
7437 4 MB SIMMs (80 ns) $125.
7600 4 MB SIMMs (80 ns, set of 4) $479.
4748 Mac Toolkit (Plus, SE, Classic) 8.

**Computer**
9773 StyleWriter Ink Cartridge ... 22.
7749 Personal LaserWriter Toner Cartridge ... 67.
1115 LaserWriter II Toner Cartridge ... 105.
Avery ... 60 day MBG
7050 Avery 9660 (1"x2 1/4"-Clear Adhesive) ... 32.
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2695 Moustrak Pad Low Friction (9"x11") ... 10.

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- COD maximum $1000. Cash or certified check.
- 120 day limited warranty on all products. Defective hardware repaired replaced immediately. Defective software replaced replaced or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- Our order lines are open continuously from 8:00 a.m. Monday until 5:30 p.m. Sunday Eastern Time. You can call our business offices at 603-446-7711 Monday through Friday 9:00 a.m. to 5:30 p.m. Eastern Time.
We ship overnight.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Price</th>
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<tbody>
<tr>
<td>PSI Integration, Inc.</td>
<td>$3447</td>
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<tr>
<td>QuickStep Plus</td>
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<td>CDWriter Pro Mac</td>
<td>$65</td>
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<td>OProfile 649</td>
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<td>OWordScan Plus 189</td>
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<td>MVP Mouse</td>
<td>$686</td>
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<td>NEC 74</td>
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<td>SilentWriter Model 95</td>
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<td>Orange Micro 30 day MBG</td>
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<td>OProfession 30 day MBG</td>
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<td>OCOMstation ONE 195</td>
<td>$479</td>
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<td>OFX9624 Sendlreceive Fax/Modem</td>
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<td>OMUX2400R Modem</td>
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<td>OTOPS Network 3.1</td>
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<td>OLanRover/l</td>
<td>$599</td>
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<td>OUB强劲的电子邮递程序提供了快速、透明的跨系统通讯。</td>
<td>$449</td>
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<td>OMAC101E 128</td>
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<td>PowerPrint</td>
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<tr>
<td>Hewlett-Packard</td>
<td>$479</td>
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<td>HP Color DeskWriter C (color cart)</td>
<td>$499</td>
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<tr>
<td>HP LaserJet III (requires kit)</td>
<td>$1599</td>
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<tr>
<td>OMicrowave Pack 04 (with MacPack)</td>
<td>$125</td>
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<td>V.42b Fax/Modem (with MacPack)</td>
<td>$255</td>
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<td>V.32 Turbo modem (with MacPack)</td>
<td>$299</td>
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<tr>
<td>HP ScanJet II (requires kit)</td>
<td>$1499</td>
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<td>PowerCache for SE/30, II, llx, llci, llsi, LC</td>
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INPUT/OUTPUT

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<td>Appoint 30 day MBG</td>
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UPGRADES & DRIVES

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<td>MS-DOS files and act like Mac files inside Mac applications. System 6 and 7 savvy. Includes MultiDriver and Media Formatter utilities</td>
<td>$60</td>
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Insignia Solutions

AccessPC 2.0—With AccessPC, MS-DOS files look and act like Mac files inside Mac applications. System 6 and 7 savvy. Includes MultiDriver and Media Formatter utilities. | $60   |

Dayna ... 60 day MBG

DaynaFile 1.2 5.1/5 /Drive .......................... 429.
DayStar Digital 30 day MBG

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DualPort ISA with 20 MHz B8822 .......................... 165.
FastCache for Mac IIC .......................... 265.
FastCache IIC 299. 3389 with FPU 369. 1613
FastCache 040 (for Quadra) .......................... 349.
PowerCache for SE/30, llx, lxi, iix, iix, iix, LC 40 MHz 859. 50 MHz 1349.
F.W.B., Inc. 30 day MBG

PocketHammer 100 599. 2314 PH 200.1199.
PowerCache for SE/30, llx, lxi, iix, iix, iix, LC 40 MHz 859. 50 MHz 1349.
IOMEGA

2254 90 MB Transportable (req. interface). 679.
Mac 1B Interface (w/Central Pt. Backup) 39.
Mac 2B Interface (with Retrospect) 99.
MASS Microsystems

2605 DataPack 45.649. 2599 DataPack 8B. 849.
Diamond Drive

2973 120 MB HD .......................... 639. 2972 210 MB HD 1028.
2969 320 MB HD 1499. 2952 510 MB HD 2119.
5903 120 Internal. 469. 5901 210 Internal. 839.
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LogiCon Technology

5525 QuickStep Xbei 8442X4V—Send and receive fax at 9600 bps. Add 2400 bps modem communication and throughput to 9600 with V.42bis. Great styling, lighted icons, cables and lifetime warranty. | $185.  

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7520 Little Mouse or 8001 Little Mouse Plus 568.
9471 Aii Mouse .......................... 74.
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3043 Sophisticated Circuits 30 day MBG

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Thunderware

4994 LightningScan 400 359. 3107 Pro 256 499.

1536 1 MB SIMMs (80ns, set of 2) .......................... 69.
9437 2 MB SIMMs for IIC or I I.C. .......................... 65.
7437 4 MB SIMMs (80ns) 123. 7000 (set of 4) 479.
Applied Engineering 30 day MBG

2532 QuickSilver Accelerator for the IIC! 269.
8361 0.4 MB High Density Drive 229.
5290 Plus Drive (FDHD for Plus & SE) 309. 
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3319 SE (25 MHz) 799. 3317 (40 MHz) 1479.
4147 LC (33 MHz) 999. 4903 (40 MHz) 1199.

S.577 AccessPC 2.0—With AccessPC, MS-DOS files look and act like Mac files inside Mac applications. System 6 and 7 savvy. Includes MultiDriver and Media Formatter utilities. | $60.  

Dayna ... 60 day MBG

8722 DaynaFile II 1.2 5/5 Drive 429.
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Does not include optional math chip. | $429.
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5903 120 Internal. 469. 5901 210 Internal. 839.
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Phone: 408-441-1944 Fax: 408-441-0720

In Control
resembles outlining
software but
with the added
dimension of
multiple columns.
Columns serve
as fields that
contain detailed
information about
to-do-list topics.
You can use sorts
and searches
to create different
views of your list.

Control lacks an auto-formatting fea-
ture. You can change type styles and
fonts for a single column, for all col-
umns, or for a selected range of rows, for
example. As with a spreadsheet, you can
also change column width, order, textual
alignment, and data format (text, number,
date, or time). You can save specific
column arrangements as layouts, so you
can have one layout for data entry and
another for printing, for example. How-
ever, you can’t share the same layout
among different tasks.

In Control’s powerful Match and Sort
commands go far beyond those found in
most outliners. Matches entail searches,
you can use any column title, value,
and type of match (Equals and Is Greater
Than, for example) to set up your search
criteria. If you’ve created a priority col-
umn in your outline, you can search and
sort information according to Critical,
High, Medium, and Low values. By
combining In Control’s Match and Sort
commands, you can view your data in
just about any fashion.

What’s Missing
In Control’s sorting and matching
flexibility is a key feature, because it
determines what you can print. With In
Control, what you see is what you get.
Unlike the traditional outliner Acta, for
example, In Control doesn’t give you
any printing options beyond what you
see on-screen. As a result, you can’t opt
to print all topics, including those that
have been collapsed. You also aren’t
able to insert manual page breaks after
each major topic, which makes it diffi-
cult to use In Control as a slide-creation
tool for presentations (a common use of
traditional outlining software). The pro-
gram also lacks a print-preview feature.
Given that the only major drawback to In
Control is its lack of flexible printing
options, we hope that the next version
will correct this limitation.

Weighing in at 427K, In Control is
forced to play the role of a full-blown
application. For the future, we’d like to
see a stripped-down DA version of In
Control for System 6 users who aren’t
running MultiFinder and for users of
limited-memory machines such as
PowerBooks.

The Bottom Line
If you’re adept at using traditional
outlining software, you’ll take to In
Control instantly. However, In Control
goes one step beyond other outlining
programs with its use of columns. Using
the columns, you can create categories
that allow you to attach detailed infor-
mation to each outline topic. Then, using
the program’s powerful Sort and Match
features, you can view the data in your
outline in a variety of ways. No matter
how complicated your to-do list is, In
Control can help you manage it.

— Becky Waring

Get Info
In Control
Published by: Attain Corp., 48
Grove Street, Somerville, MA
02144; 617-776-1110.
Version: 1.0.
List Price: $129.95.
Bring your graphics up to speed.

Get with it. MacDraw Pro 1.5 is one of the fastest drawing programs ever. So now you can make faster work of text, scrolling, rotation, gradients, printing, and much more.

But speed isn't the whole story behind this updated version of the Macintosh best-seller. It's what you can do with all this performance.

MacDraw Pro 1.5 takes full advantage of System 7. Like QuickTime, Publish and Subscribe, even Apple events.

It also uses familiar word processing style rulers for greater control of how text looks on a page.

And you can import PICT, PICT2, TIFF, EPSF and all MacDraw files, you name it.

Yet for all these features, MacDraw Pro 1.5 remains as accessible as ever.

Call 1-800-544-8554, ext. 45, and trade up. If you own MacDraw Pro it's just $15, or $99 with any earlier version of MacDraw.

And do it soon. Because when there's a program this fast, you don't want to get left behind.

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FolderBolt

Another great idea from the original Mac security experts

There’s nothing like FolderBolt! Kent+Marsh Ltd. brings you folder protection from the desktop with just a Shift-Click! Create password-protected, read-only, or drop folders. Lock the running System Folder or your hard disk’s window. The latest version even prevents file sharing.

Reviewers agree. FolderBolt is top-notch security from Kent+Marsh Ltd., the experts in the Mac security field since there was a Mac security field.

If you’re looking for a straightforward, easy-to-use solution to the problem of computer security, look no further than FolderBolt. Kent+Marsh Ltd.

MacUser

Eight stars! Easy to use, extremely flexible... should easily meet your security needs. MacWorld

Light Source’s innovative software makes one-step gray-scale scanning a reality.

Ofto claims to be one-step scanning software that eliminates the frustration of rescanning, fiddling with controls, and doing painstaking image editing. Initially we were skeptical, but we soon discovered that Ofto fulfills its promises and more. Originally bundled with Apple’s OneScanner, this powerful gray-scale-scanning software is now available as a stand-alone product from its creator, Light Source, so owners of most other scanners can also take advantage of Ofto’s considerable capabilities.

Custom Calibration

Ofto is an absolute joy to use. The program buries a tremendous amount of power and sophistication beneath its clean and simple interface. The first step in harnessing Ofto’s power is to create a custom calibration for your printer. This takes about 10 to 15 minutes, but the process is a breeze — the program guides you with instructive dialog boxes every step of the way. You may be tempted to forgo this procedure and settle for one of the program’s generic calibrations for output devices such as a LaserWriter or a Linotronic. Our advice is — don’t. Custom calibration makes a discernible difference in output quality.

You can create calibrations for every printer in your office and access them easily from Ofto’s pop-up menu. When you select a calibration, Ofto finds all the information it needs about dpi, screen frequency, and the like for a particular printer, so it can produce the best scan of an image. Calibrations are easy to exchange among different versions of Ofto by exporting and importing.

The scanning process is pretty much a one-step affair once you’ve created the calibrations and selected one for the current session. You simply click on the Autoscan button, and Ofto handles the rest — the software determines the type of graphic (line art or photograph), scans and sharpens the image with settings specific to the printer calibration, automatically straightens the image if it’s skewed, and crops unnecessary white space. You don’t have to know anything about lpi (lines per centimeter), bit depth, or any other scanning arcana. At this point, you can also resize or crop images, but in most cases, all you need to do is save them as EPS, PICT, TIFF, or MacPaint files. The program also supports LZW and QuickTime compression schemes (the QuickTime extension is bundled with the software).

If you ever want to bypass Ofto’s automatic scanning features, you can choose Expert Controls, which adds manual controls to the Scan Controls window. However, Ofto is so good on autopilot that it’s unlikely that even advanced users will want to bother with Expert Controls.

Once your image has been scanned, you’ll find that Ofto’s editing tools are minimal — Photoshop it’s not. The few tools it does provide (eraser, pencil, selection, rotate, grabber, zoom) are useful and enhance the program’s power. For example, when you use the straighten tool to rotate an image, the program provides a grid for alignment.

Ofto features templates that preserve window positions, slider settings, and the current calibration. It also provides controls for brightness and contrast, but again we predict you’ll seldom need to use them, given the program’s intelligent image handling.

Ofto’s single imperfection is its installation process. It took us three attempts to install the software properly. First, we encountered a problem with Symantec’s SAM, even though it was inactive. Removing the antivirus software from the System Folder solved that problem. Then we experienced a conflict between the HP Scanner driver, which Ofto places in the Extensions folder during installation, and a version of the same driver placed in the System Folder by another program. Ofto wouldn’t operate with both copies lurking in the system. The last problem occurred when we updated the system software from version 7.0 to 7.01 — Ofto stopped functioning altogether.
Ofoto represents a breakthrough in gray-scale-scanning software. Its easy-to-use calibration setup lets you customize the scanning process for your printer, giving you the best possible results automatically with the first scan.

until we went back to System 7.0.

Ofoto has a surprisingly modest appetite for hardware and memory — it can even run on a Mac Classic with System 6.07 or later and 1 megabyte of RAM. Ofoto supports scanners from Abaton, Apple, Epson, Hewlett-Packard, Microtek, AVR, and Panasonic.

The Bottom Line

When it was initially released as part of Apple’s OneScanner bundle, Ofoto won the 1991 MacUser Editor’s Choice Award for breakthrough technology of the year. An innovative mix of power and simplicity, the program far surpassed any other scanning software available at that time. Its new status as a stand-alone product allows users of other scanners to reap the considerable benefits of Light Source’s revolutionary gray-scale-scanning technology.

— Gregory Wasson

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Version: 1.1.1.

List Price: $395.

Get Info

Ofoto

Published by: Light Source, 17 E. Sir Francis Drake Blvd., Suite 100, Larkspur, CA 94939; 415-461-8000.

Version: 1.1.1.

List Price: $395.

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• FREE IMAGE DATA BASE. Collect your picture-perfect, electronic images into an indexed, easy accessible database, with the powerful GALLERY software.

• MOVIE PRODUCER, a professional solution for movie and desktop publishing applications. Best ratings by MacUser and MacWorld. Detailed product description & demo tape available.


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Version: 1.1.1.

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Video F/X
Video F/X takes you over the hurdles of producing professional-quality videotapes with a Mac.

The most difficult aspect of producing and editing high-quality videotapes with a Mac is figuring out what equipment you need and how to tie it all together. Video F/X provides a pricey but complete desktop-video hardware/software package — all you supply is the video decks.

**Direct to Videotape**
Although all the hoopla surrounding Macintosh-based movie-making is currently centered on Apple's digitally oriented QuickTime, QuickTime videos are neither full-frame nor full-motion. So for now, QuickTime is geared toward movies that are played on Macs. However, for those who are interested in using videotape as their source and as their final output medium, the frame-accurate Video F/X analog desktop-video-production system is an excellent choice. It provides a relatively painless way to assemble video, audio, graphics, and transitions and to output the results to high-quality videotape.

Video F/X hardware comprises a black box about the size of a Mac II that uses a NuBus card to connect to your Mac, which means you'll need a Quadra or a member of the Mac II family. The box contains hardware for controlling as many as three video decks (Video F/X supports most industrial and professional models) as well as an audio mixer, a video switcher, an encoder that turns Mac video into TV video, and a built-in time-code generator.

For this review, in conjunction with the Video F/X system, we used a Sony Hi-8 and two Panasonic SYHS video decks and a time-based corrector (video hardware that synchronizes video signals for glitch-free transitions). The price tag for all this equipment, excluding the cost of our Mac IIx, was about $20,000.

Digital F/X, maker of Video F/X, provides an invaluable HyperCard-based setup stack that helps you figure out how to plug in the various hardware pieces correctly. The company's helpful and friendly technical-support staff is also available to answer any questions you may have.

The Video F/X desktop-video-production system, a blend of hardware and software, is an excellent but pricey solution for producing professional-quality videotapes on a Mac.
The Video F/X software provides a friendly Mac interface for tasks such as logging video clips, making editing decisions, creating transitions, and adding graphics and titles. Because the software supports Adobe's PostScript, you can import fonts and EPS graphics and overlay them onto videos. The software also provides a basic drawing environment for creating backgrounds and titles from within Video F/X.

The Video F/X system is designed to accomplish two main tasks: log video clips and create the final EDL (edit decision list), which tells the system how to assemble all the elements that make up your video (when to fade in from black, when and where to add graphics and titles, which transitions to use where, and so on). Once that’s done, the system automatically creates a master videotape with the EDL to retrieve and record the clips, graphics, audio sequences, and other elements in the order you’ve specified.

Whenever you log a video clip, Video F/X creates a reference to the videotape source and to the in and out points for the clip. You can name clips and add text comments of any length. A simple database engine helps the system find and retrieve clips (you can also export clip logs to a database for more-powerful archiving). With Video F/X keeping track of all the elements of your video, it’s easy to return to the source material to make any changes. Video F/X also lets you digitize logged clips to your hard disk, so you can retrieve them faster.

After logging clips, you assemble them — along with graphics, titles, and other video elements — into an EDL. The final step is auto-assembly of your videotape — Video F/X runs through the EDL, instructs you to load the various source tapes at the appropriate times, and records a master tape. You can also export EDLs to high-end editing systems and assemble your videotapes on broadcast-quality equipment. Digital F/X also provides Soft F/X, a $995 software-only version of Video F/X that lets you edit videos off-line, using a hard drive and your Mac without video hardware. However, you must first digitize the video through a Video F/X system. Using Soft F/X is a convenient way to produce an EDL quickly and inexpensively, but you’ll need a high-capacity hard drive.

The Bottom Line
Although the setup required for producing and editing videotapes with Video F/X is pricey, the system is a time-saver compared with traditional means. If you’re in the market for an intuitive, well-documented video-production system that harnesses the power of the Mac to create corporate videos or sales presentations, Video F/X is worth every dollar.

— Paul Yi

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Video F/X

List Price: $9,995.
CA-Cricket Draw III

A few defects aside, CA-Cricket Draw III is a solid entry-level drawing tool with some surprisingly powerful features.

If you’re looking for an inexpensive entry-level drawing program, the long-awaited CA-Cricket Draw III may be just the ticket. Several of its PostScript drawing tools rival those of more-expensive illustration programs, and its fountains (gradients) and color controls are exceptional. However, the program suffers from several serious gaps in its feature list.

Finely Tuned Controls

Cricket Draw’s chief strength lies in its ease of use and the control it provides for manipulating objects. Its fountain-customizing controls are particularly outstanding: You can set two-color blends to be linear or radial or to be fitted to or echo the shape of an object. You can also set custom steps for irregular progressive and double blends with a Bézier control.

Cricket Draw lets you specify only two colors for fountains, unlike Claris’ MacDraw Pro, which lets you specify as many as three colors, or Aldus’ SuperPaint 3.0, which allows an almost unlimited number. By setting a fountain to cycle through HLS (hue, lightness, and saturation) values (around the perimeter of the standard Mac color picker), however, you can achieve multicolor blends, but you can’t specify individual transitional colors. Cricket Draw also lets you create 3-D shadows composed of fountains for just about any object.

Although Cricket Draw’s fountains are good-looking, one caveat is that you must display them at the highest resolution possible to get them to print smoothly. Displaying an image with numerous high-resolution 24-bit fountains can bring even a Quadra to its knees, so plan to take long coffee breaks.

In addition to a solid set of PostScript drawing tools, CA-Cricket Draw III features outstanding fountains and an interactive color window that displays the results of using sliders to set color component values. However, its lack of support for an editable PostScript file format severely limits its interaction with other drawing programs, and its interface suffers from several quirks.
Ken Hansen Imaging introduces the new Canon RC-570, the Ultimate Image Processor. The RC-570 is an electronic camera system which allows you to effortlessly create modify and transfer high quality images into and out of your computer. View your images on the computer or a monitor - simple and no mess. If you use images for desktop publishing, multimedia, presentations, image storage, or remote transmission, the RC-570 may just be the one solution you've been looking for. But don't take our word for it. Fax us the lower portion of this ad today for our sample image disc and information kit. Better yet, try the Canon RC-570 for yourself with our convenient rent-to-own program, or visit our showroom for a complete demonstration of Canon Image Processing.
if you intend to use 24-bit color. Fortunately, Cricket Draw's screen redraws are interruptible.

The floating color window lets you select a color for most elements (lines, drop shadows, fills, and so on) of a selected object. Like that of many other programs, Cricket Draw's color window has sliders for setting values for color components based on the selected color model (RGB, CMYK, or HLS, for example). However, Cricket Draw goes one step further and displays color ramps by each slider that show the effects on the current color as you move the slider.

**Pen Pal**

In addition to the familiar drawing tools for creating straight lines, arcs, rectangles, and irregular polygons, Cricket Draw provides a pen tool for creating and editing Bézier curves that's as good as any of the pen tools offered by other drawing packages, including Illustrator and FreeHand. The pen's excellent design makes good use of Option-clicking and Option-double-clicking on anchor and control points, so you can easily convert tangent points into corners on the fly. You can also use Cricket Draw's freehand drawing tool to extend lines you've created with the pen tool and vice versa.

Cricket Draw provides a full range of manipulation tools for skewing, rotating, and reflecting objects, and it has a Transform command, which lets you apply transformations gradually as you create multiple copies of an object. This powerful feature is particularly valuable, given Cricket Draw's inability to create blends between two or more selected objects.

By allowing objects to act as either stencils or hole punches, Cricket Draw greatly simplifies the task of masking.

---

It's a graphics program. It's a business program. Is not.
and creating compound objects. In addition, the program’s unique Align Objects command lets you decide whether object borders are to be aligned with respect to either their centers or their edges.

That’s Odd
Despite these strengths, Cricket Draw’s interface suffers from some oddities. For example, you must select an object before double-clicking on the tool you want to use with it. In addition, the program lacks support for multiple drawing layers, and some aspects of its text handling are disappointing. It provides sophisticated paragraph-level formatting, but you can’t link text from box to box or wrap it around or inside objects. You can set leading, character spacing, indents, superscripts and subscripts, and tab stops as well as kerning pairs or ranges of characters, but you can’t apply blend fills to text or convert text into outlines. You can bind text to a path, but you can’t see bound text on-screen — you must print the document to see the text. In addition, formatting information such as kerning is disregarded for bound text. Three-dimensional shadows are supported, however.

Another problem is the limited nature of Cricket Draw’s interaction with other programs. It can import and export EPS and PICT files, but because it lacks support for an editable PostScript format, you can’t edit EPS files imported from other programs or edit EPS files exported from Cricket Draw. In addition, although you can specify process colors, Cricket Draw can’t separate them. To separate colors, you must save files in EPS format and print them from another application that supports color separation.

The Bottom Line
With a list price of $249, CA-Cricket Draw III is a bargain if you’re in the market for your first drawing program. Its PostScript drawing tools and some interface elements are first-rate, and the fountains and 3-D shadows let you create sophisticated and unique effects (if you don’t mind lengthy screen redraws). However, if you require professional-level features or already own Canvas, Illustrator, or FreeHand, you probably won’t need Cricket Draw, considering its lack of support for multiple layers, the limitations on its interaction with other PostScript drawing programs, and its inability to convert text to outlines.

— Eric Taub

Get Info

CA-Cricket Draw III

Published by: Computer Associates International, Inc.,
One Computer Associates Plaza, Islandia, NY 11788; 516-342-5224.
Version: 1.0.
List Price: $249.

New Aldus SuperPaint 3.0.

Let’s put this argument to rest. It’s both. SuperPaint® is the all-in-one program that makes it easy to do it all—combining paint, draw, and image enhancement—saving you time and money.

As you can see, its range of capabilities makes it perfect for either business users or graphic designers. And now with the added color capabilities, EPS import and export, textures, and gradients, it gives you even more creative options (by the way, it still works great in black and white).

Of course, the best way to settle any argument over SuperPaint is to try it. See your Aldus dealer or call 1-800-685-3632 for more information.
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QUICK CLICKS

**Persuasion 2.1**

With its recent upgrade, version 2.1, Aldus Persuasion has begun making good use of System 7's capabilities — and Aldus has added other new features to enhance Persuasion's standing as one of the top presentation programs around.

One of the most eye-catching System 7-related improvements is the ability to import QuickTime movies. You'll need the QuickTime extension (available from Apple, user groups, and on-line services); once it's installed, you can easily place movies in Persuasion slides. You import a QuickTime movie just as you would any PICT or EPS graphic. You can move, resize, copy, and paste movies and control the sound as well as the playback from within Persuasion. Publish-and-subscribe capability is another System 7-related new feature; if you import Persuasion slides into another program or presentation, they'll be updated automatically when you modify the source slides.

Additional enhancements to Persuasion include 55 new AutoTemplates and some new background masters. Some of these won't win any design awards, but others are quite professional-looking. All include a recommended color palette for those of us whose color choices tend to make people wince.

Users in cross-platform environments will appreciate the work Aldus has done to improve Windows compatibility. With some limitations, you can transfer a presentation back and forth between the Macintosh and the Windows versions of Persuasion. And by packaging the appropriate Persuasion Player with your presentation, you give others the ability to view your slides on Macs or IBM PCs or PC-compatible systems without the Persuasion application.

Although all these improvements put more distance between Persuasion and its closest competitor, Microsoft PowerPoint, we'd still like to see a cropping tool, the ability to rotate text or graphics, kerning, and direct support for Pantone colors. (Fortunately, Aldus has improved its leading-specifications box, which now lets you enter point values as well as percentages.) These high-end features would give Persuasion even more of an edge for professional designers.

— Shelley Cryan

**Easy Alarms**

You may think the last thing you need is another Mac program that sends you pop-up reminders of impending events in your busy schedule. But Easy Alarms, with its new scripting feature, can potentially go beyond reminding and do what you want done at a specific time.

Easy Alarms' scripts work similarly to the way time-dependent macros do. You specify the particular functions you want your reminder to perform (for example, sending Apple events, launching applications, typing text, auto-saving your work in an application, or restarting or shutting down your Mac) and when you want them to occur. Because Easy Alarms supports Ex Machina's Notify! application, you can also write scripts for sending messages to remote pagers. Sample scripts are included with the program — an important consideration, given that the manual's coverage in this area is skimpy and assumes that its readers are familiar with concepts such as conditional branching.

In addition to scripting, Easy Alarms has a solid set of traditional reminder features, including advance notifications, a snooze button, sound attachments to reminders, flexible repeating-alarm settings, and pop-up menus for viewing reminders. New features in version 1.5 include to-do items, a single-day display window, and expanded System 7-compatible network options for accessing and editing remote calendars.

Although Easy Alarms has some scheduling capabilities, it's not meant to compete with heavyweight programs such as Now Software's Now Up-to-Date and Pastel Development's DayMaker. Easy Alarms' calendar view doesn't display reminder text or indicate a reminder's scheduled time. There are limited printing options, no category or priority filters, and no options for weekly or yearly calendar views. However, the $99 version 2.0, scheduled for release by the time you read this, promises to address most of these concerns with a more flexible calendar view, better reminder displays, and a wider range of printing options.

Closer competitors exceed Easy Alarms in some areas but lag behind in others. For example, Visionary Software's First Things First has category and priority filters but has no function that's equivalent to Easy Alarm's advance-notification feature. Team Building Technologies' AgentDA 2.0 has a superior calendar display but lacks to-do lists. The strongest direct challenger to Easy Alarms is CE Software's Alarming Events, which still has the best selection of reminder options but can't match Easy Alarms' scripting capabilities.

Which program is best in this category? That depends on your needs. Easy Alarms, although it has some network options, is primarily aimed at individuals who are interested in reminder alarms and simple to-do lists. For such users, Easy Alarms' unparalleled scripting options put it among the top contenders.

Essential Software, 28 Mulford Avenue, Staatsburg, NY 12580; 914-889-8365. Version 1.5.1. $59.95.
— Ted Landau

**Rise of the Dragon**

The year is 2053. The air is thick with pollution. Los Angeles has entered the Age of Decay. The mayor's daughter has been murdered with a dose of bad drugs, and she isn't the only victim. The mayor needs you to save the day.

If you're a fan of sci-fi movies such as Blade Runner, Rise of the Dragon will knock your socks off. Hand-painted 256-color graphics and stunning animation combine with an original soundtrack for a compelling interactive experience.

You portray William "Blade" Hunter, a private investigator whose callous disregard for procedure and property rights make him the perfect candidate for this assignment. The game begins with a dramatic, movielike introduction (optional in subsequent sessions) that sets the tone for your adventure.

Rise of the Dragon uses a very satisfying point-and-click interface. You'll never see such messages as "Syntax Error" or "I don't understand that." Play involves three straightforward actions: look (Shift-click), operate (click), and move (click and drag). Innovative smart cursors provide feedback that tells you
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CIRCLE 126 ON READER SERVICE CARD.
when you’re pointing at a doorway, a person you can converse with, or an item you can zoom in on.

You travel around L.A. via the Em-Way train system — just click on a location on the Em-Way map, and you’re there, ready to interview suspects or informants, search for clues, or do both. A multiple-choice interface makes conversation easier than in many other interactive games. To make things more realistic, time actually matters — offices close at night, things happen with or without Blade, and he sometimes needs some shut-eye. For physical realism, the game includes two arcade sequences in which you control Blade as he fights bad guys hand-to-hand or with weapons.

Rise of the Dragon has two annoying shortcomings. One is that the documentation assumes you’re using a PC with a two-button mouse; Mac users get only a two-page Quick Reference card. A lesser annoyance is the occasional sluggish response to mouse clicks.

In spite of these shortcomings, Rise of the Dragon is one of the most impressive games we’ve seen recently, and its multiple story lines make it fun to play over and over. Dynamix has several other Mac titles under development; if Rise of the Dragon is any indication, they’ll be well worth waiting for.

Dynamix/Sierra, P.O. Box 485, Coarsegold, CA 93614; 209-683-8989. Version 1.0. $59.95.
— Bob LeVitus

Retriever II

The Mac flat-file-database market may be dominated by Chris’ FileMaker Pro, but it still has room for a database program of the small-and-quick variety. The 200K Retriever II (which comes as both a DA and an application) attempts to fill that niche, but its interface contains some major disappointments.

In its presentation aspect, Retriever II takes the database-as-spreadsheet approach a bit too far. The row/column setup is the only layout allowed; although this is convenient for scanning several records at a time, you can’t see much more than a name and a telephone number for a specific record, for example. Retriever’s ability to collapse and expand columns doesn’t really make up for this format restriction. Also, the program’s terminology wavers between spreadsheet (“insert column”) and database jargon (“add field”).

The window you open to access a text field for a given cell demonstrates the carelessness of Retriever II’s interface. When the window opens, all the text it contains is highlighted, as is the OK button, but if you press Return, a Return character replaces all the text — and Undo isn’t available (although a Cancel button is). You’re all right if you press Enter instead of Return to choose the OK button, but you shouldn’t have to deal with such a nonstandard procedure.

Even setting up your database can be awkward. A new file begins with the default number of fields (columns) you’ve set in the Preferences dialog box. You can add and delete columns, but once their characteristics have been set, they’re set in cement. You can’t change a field type (from numeric to text, say) or change formatting within a field.

On the more positive side, Retriever II has a clever telephone-dialing feature (it can automatically dial phone numbers you put in fields) and it provides icons for common commands such as Find and Sort. The Find function is nicely implemented, with pop-up menus for field names and comparison operators, but it finds only one matching record at a time; to work with a set of matching records (or any subset of records), you have to “mark” them all first and jump among the marked records.

If your database needs are limited and you’re not bothered by interface inconsistency, you may want to look at Retriever II. But we’re more inclined to wait for Retriever III.

— Sharon Zardetto Aker

4D Draw

If you’re a 4th Dimension user or application developer looking for a good drawing package, ACIUS has the answer. 4D Draw is an external module for adding object-oriented drawing capabilities to 4th Dimension databases. Although it’s an add-on, it begs comparison with stand-alone applications.

4D Draw’s basic tools allow you to create lines, rectangles, round-corner edges, and then lay them out in a variety of formats. You can then import a 4th Dimension database, marking individual records, and 4D Draw creates a drawing for each record. The result can be printed or saved as a WordStar file.

ACIUS, 41 Center Street, A-1, Columbus, OH 43215; 614-466-4242. Version 1.2. $299.95.
— Bob LeVitus

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rectangles, ovals, arcs, freehand objects, and polygons. A Smooth command lets you change jagged polygons into rounder, more subtle shapes. You can also paste bit-mapped images into 4D Draw documents. To help you work with all these objects, 4D Draw lets you select them by attributes such as shape, color, fill pattern, and text characteristics.

Like CAD applications, 4D Draw lets you scale drawings by defining a drawing scale such as "1 inch equals 10 feet." An optional coordinate panel indicates objects' projected sizes and reflects size changes as you drag or stretch objects. You can also change an object's size and rotation by changing the values in the coordinate panel.

Appropriately for a 4D add-on, 4D Draw lets you display database fields in a drawing. 4D Draw also supports the 4D hot-link architecture, which lets you share graphics and data with other 4D modules. Although this architecture isn't compatible with System 7's publish-and-subscribe architecture (ideally, 4D and the modules should support both), it does provide a solid foundation for applications that mix database, spreadsheet, text, and graphics capabilities.

Developers will appreciate 4D Draw's more than 200 commands for creating procedures that mimic every user action — procedures users can later trigger with such actions as clicking in the draw area. Using commands, you can disable many control elements of a 4D area and replace them with custom buttons and menus. You can also name objects for easy manipulation and lock object attributes such as name, color, and pattern. These features let you create graphical user interfaces that bear little or no resemblance to a drawing environment.

For additional power, you can use binding to connect object attributes to database fields so that changes to the fields are automatically reflected in the object and changes to the object change the corresponding fields.

Getting the best use out of 4D Draw's development options takes some practice, but the effort can pay off handsomely. We suspect that 4D Draw will be the basis for some of the most intriguing module-based 4th Dimension applications yet.

ACIUS, 10351 Bubb Road, Cupertino, CA 95014; 408-252-4444. Version 1.0. $295.

— Louis E. Benjamin, Jr.

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Video Training Becoming Most Popular, Least Expensive Way to Learn Macintosh Programs

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Product prices, hardware specifications, software features, and vendor addresses change quickly. To update the MiniFinder database, send written notification to MiniFinders, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

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4 Buyer's Guide August 1992 MacUser
Azmith  This is a cartographic powerhouse that teams sophisticated projection mapping with 2-D-CAD tools. Lets you build excellent perspective maps of the earth based on a view from space. No built-in data-analysis features, but allows detailed map annotation. Can export files in black-and-white, with or without titles, and with DTP and illustration programs. Includes outlines of all countries and states but not counties or city streets. Requires Mac Plus or later and a hard-disk drive. $395. Graphsoft, Inc., 8370 E. Hillsdale Blvd., Ste. 202, Elk Grove Village, IL 60007. (Feb '92) [MF#601]

Descartes  This is a flat-file database manager. It is ideal for novices but has the power to do anything you need. It is flexible. Requires Mac Plus or later. $295. Claris Corp., 5201 Patrick Henry Dr., Cupertino, CA 95014. 800-277-8227, or 408-373-5500. (Feb '92) * $80 Eddy [MF#617]

Filevision IV  This is a flat-file-database manager. The implementation of choice for text-integration projects but not for straight-text uses. Version 1.0 reviewed. Version 1.1 shipping, requires Mac Plus or later. $295. TSP Software, 4790 Irvine Blvd., Ste. 105-298, Irvine, CA 92720. 714-731-1368. (Nov '89) [MF#618]

FoxBASE/Mac  This powerful relational-database manager can read unmodified dBASE/DOS or FoxBASE/DOS files. Amazingly fast, regardless of database size. Steep learning curve, but worth it for professional applications. Supports multidisk databases. Version 2.0 reviewed. Requires Mac Plus or later. System 6.03 or later, and a hard-disk-drive. $495. Fox Software, Inc., 1770 Moriah Woods Blvd., Ste. 14, Memphis, TN 38117. 408-985-7400. (May '92) [MF#620]

MapInfo for Macintosh  This is a digital cartographer that displays demographic and marketing information graphically. Large library of maps and supporting data available (some at additional cost). Version 1.0 reviewed. Version 1.1 shipping, requires Mac Plus or later with 2 MB of RAM, $3995. Additional boundary files, and city-point files, starting at $95 each. Quantity discounts available; site licenses available. MapInfoCorp, 167 Grand, Troy, NY 12180. 800-327-8627 or 518-274-6000. (Mar '91) [MF#621]

Omnis Seven  Omnis Seven is a flat-file, yet easy-to-use relational-database manager. Offers stellar cross-platform compatibility between PC and Mac environments. Ideal for experienced database developers, yet also provides Short Menu mode and consistent, easy-to-use on-the-screen interface for beginners. Version 1.0 reviewed. Version 1.03 shipping, requires Mac Plus or later with 2 MB of RAM. System 6.03 or later, and a hard-disk drive. $5125. Blyth Software, Inc., 1065 E. Hillsdale Blvd., Ste. 300, Foster City, CA 94404. 800-346-6647 or 415-571-0222. (Jan '91) [MF#622]

Panorama II  Panorama is a powerful and classy flat-file-database manager. Stores databases in RAM to maximize performance, but file size is therefore limited by memory-partition size. Vulnerable to power interruptions. Version 2.0 reviewed. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive. $395. ProVUE Development, Inc., 11580 Transistor Ln., Huntington Beach, CA 92649. 714-892-8199. (Feb '92) * $80 Eddy [MF#623]

Quick-Cite  Quick-Cite is a complete database-management system for bibliography applications. Overly complicated and nonintuitive use of menu bar and dialog boxes. Version 1.3 reviewed. Version 2.0 shipping. Requires Macintosh Plus or later and System 6.03 or later, hard-disk drive recommended. $395. Personal Bibliographic Software, Inc., 2450, Ann Arbor, MI 48106. 313-996-1580. (Feb '89) [MF# 624]

Apple Display Systems & Video

Apple Display 8x+24  This 24-bit color display system combines the 13-inch AppleColor Hi-Res RGB Display with the Macintosh Display Card 8x+24. The screen may not be large enough for some professional applications, but the sharpness, focus, and color quality are superb. Requires Mac II series. $1,698. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (May '91) [MF#628]

Apple Display 8x+24 GC  This 24-bit color display system combines the 13-inch AppleColor Hi-Res RGB Display with the fastest Macintosh Display Card 8x+24 cc. The screen may not be large enough for some professional applications, but no one will ever have reason to complain about the display's sharpness, focus, and color quality. The 8x+24 cc video card provides the fastest Quick-Draw acceleration available. $2,498. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (May '91) [MF#629]

Apple Macintosh 12" Monochrome Display  This 12-inch monochrome monitor has good geometry. Due to the...
antiglare etching. Users can experience free motion problems that can easily be dim. Resolution is 74 dpi. Requires Mac II series with video card (optional with Mac IIci and IIi). Monitor only, $299. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Apr '90) [MF#630]

AppleMacintosh Portrait Display

This high-quality, full-page monitor is one of the best available. Its screen resolution is slightly below true WYSIWYG, so things appear a bit small. Can produce as many as 256 levels of gray, using a Macintosh Display Card 8-24. Requires Mac II series with video card (optional with Mac IIci and IIi). $1,099. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Feb '91) ★ 89 Eddy [MF#631]

Apple Two-Page Monochrome Monitor

21-inch monochrome display monitor is dim but has good focus and moderate glare protection. It has a small active-screen area. Requires Mac II series with video card. Monitor, $2,149. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Apr '90) [MF#632]

AppleColor High-Resolution RGB Monitor

The AppleColor High-Resolution RGB Monitor is the standard among 13-inch monitors. It's very bright but lacks built-in glare protection. Can support 24-bit color when used with the Macintosh Display Card 8-24 or 8-24 GC. Very reliable workhorse. Requires video card (optional with Mac LC, IIci, and II). $999. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (May '90) [MF#633]

CalComp ChromaVision QuickPlus

The ChromaVision QuickPlus is an accelerated 24-bit video card. Sold only with CalComp color monitors. Doesn't support 16-bit color. High power consumption. Resolution options limited to 1,024 x 768. Two-year warranty. Requires Mac II series or higher. $4,995. CalComp Display Systems Group, 65 River Rd., Cresskill, NJ 07625. 800-225-0065 or 603-885-8855. (May '90) [MF#634]

CalComp DrawingCard

This color monitor displays two A4 pages. Screen coloration is uneven. Has no bundled software. Requires Mac II series or higher. 8-bit ChromaVision, $5,995; 24-bit ChromaVision Plus, $6,995; accelerated 24-bit ChromaVision QuickPlus, $8,595. CalComp Display Systems Group, 65 River Rd., Cresskill, NJ 07625. 800-225-0065 or 603-885-8855. (May '90) [MF#635]

Computer Friends Colorsnap 32+ 24-

The ColorSnap 32+ is a NuBus card that digitizes single frames of video input. Above-average image quality. Software is powerful, complete, and easy to use on Macintosh. The video image cataloging as well as plug-ins for Photoshop and QuarkXPress. Video options include composite, RGB, and S-video. Live video display is slow and uses a small window; 24-bit images can be digitized, but resolution is 640 x 480 pixels, Version 1.1 reviewed. Version 1.21 shipping. Requires Mac II series. $995. Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229. 800-547-3303 or 530-626-2291. (July '91) [MF#636]

DTI SpeedView

The SpeedView is a full-page display that can show an entire actual-size page of type. Meant for professional publishers who need large-screenacre. Comes with monochrome or gray-scale card plus til/switch stand. Requires Mac II series. Monochrome, $2,495; gray-scale, $3,195. DTI (Digital Technology International), 500 W. 1200 St., Oreum, UT 84058, 801-226-2984. (Feb '91) [MF#667]

E-Machines ColorPage E16

This affordable 8-bit-color display system includes a PDS video card, a cable, and a 16-inch To­shiba shadow-mask monitor. Has poor display characteristics, and cable is poorly shielded. Resolution is WYSIWYG 72 dpi. Active screen size is 14 inches diagonally. Good software features. Requires Mac LC, $1,084. E-Machines, Inc., 5305 W. S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (May '92) [MF#668]

E-Machines ColorPage T16

This affordable 8-bit-color display system includes a PDS video card, a cable, and a 16-inch Sony Trinitron monitor. Has excellent display characteristics. Resolution is WYSIWYG 72 dpi. Active screen size is 14 inches diagonally. Only external monitor controls are power switch and vertical/horizontal convergence. Brightness and color are controlled by software. Automatic de­gaussing. Good software features. Cable is poorly shielded. Requires Mac LC, $1,228. E-Machines, Inc., 3905 S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (Feb '92) [MF#669]

E-Machines ColorPage T16/24

This 24-bit color display system combines the ColorPage T16 monitor with a 24-bit video card. Has excellent sharpness, focus, and color quality are outstanding. Required Mac SE/30 or II series with NuBus adapter. $3,298. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (May '91) [MF#670]

E-Machines ColorPage T16/68

The ColorPage T16/68 is a bright, top-quality 8-bit color monitor. The monitor is a razor-sharp Sony Trinitron, and the video card is also excellent. Requires Mac II series. With-Bit color, $2,987. E­ Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (May '90) ★ 88 Eddy [MF#671]

E-Machines Future MX 44

Future MX 44 is a accelerated 24-bit color video card that supports 38 virtual-screen sizes. Affordable but not as fast as similar products. Low power consumption. Supports 800 x 600, 640 x 480, and 640 x 384 pixels. Five-year warranty. Requires Mac II series or higher. $1,850. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (May '92) [MF#672]

E-Machines QuickView Studio

This NuBus card sequentially digitizes multiple frames of video input. Poor image quality but nice software interface. Video input options include composite, RGB, and S-video. Version 1.0 reviewed. Version QT shipping. Requires Mac II series or higher. $1,790. E-Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-344-7274 or 503-646-6699. (July '91) [MF#673]

E-Machines T19/24

This 24-bit color display system combines the E-Machines T19 monitor with a 24-bit video card. A high-quality, affordable combination that delivers very good overall performance. The 19-inch screen size is adequate for most professional applications. Brightness, sharpness, focus, and color quality are outstanding. Good 39­ page manual. Requires Mac II se­ries or higher. $4,198 (includes monitor and 24-bit video card). E­ Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-304-7274 or 503-646-6699. (May '91) [MF#674]

E-Machines TX/24

This 24-bit color display system combines the E-Machines TX monitor with a 24-bit video card. A high-quality, affordable combination that delivers excellent overall performance. The 16-inch screen size is large enough for nearly all professional applications. Sharpness, focus, and color quality are outstanding. Good 39-page manual. Requires Mac II series or higher. $4,198 (includes monitor and 24-bit video card). E­ Machines, Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005. 800-304-7274 or 503-646-6699. (July '91) [MF#675]

Lapis DisplayServer II-DPD

This monochrome NuBus video card lets a Mac II work with PC-compatible VGA monitors. The card has occasional problems with some Mac programs, and it isn't cost-effective if used with a small monitor. Requires Mac II series, $549. Lapis Technologies, 1100 Marina Village Pkwy., Ste. 100, Alameda, CA 94501. 415-274-2747 or 510-748-1600. (June '91) [MF#676]

MacProducts MagicView

This 19-inch monochrome monitor is bright and has fair focus. The phosphor is Bluish, Requires Mac II or later. MacProducts US, Inc., 608 W. 22nd St., Austin, TX 78705. 800-622-3475 or 512-472-8881. (Apr '90) [MF#677]
Mass Microsystems

ColorSpace III/FX...**

This second-generation 15-inch color monitor combines an 18-bit video input and an RGB output, allowing it to display virtually any color. It also features an internal color sync generator, eliminating the need for an external sync generator. The monitor is equipped with a 24-bit color lookup table, providing a high level of color accuracy. The monitor is designed for use with Macintosh computers and is compatible with a wide range of video formats and resolutions.

Mirage ProView 20"...**

This affordable 20-inch, high-resolution monitor features a 16-bit color lookup table and a 1024 x 768 pixel resolution. It is ideal for use with Macintosh computers and provides excellent color accuracy and contrast. The monitor is designed to be used with Mirage's software and hardware, including the Mirage ProView Cable and the Mirage ProView Navigation System.

PrecisionColor 24x...**

This 24-bit color display system combines a Sony Trinitron monitor with a 24-bit video card. The high-quality, affordable combination delivers excellent overall performance. The monitor is designed for use with Macintosh computers and provides excellent color accuracy and contrast. The monitor is also compatible with Mirage's software and hardware, including the Mirage ProView Cable and the Mirage ProView Navigation System.

For more information, circle the MiniFinder number (MF#) on the Reader Service Card.
with a tuner that can pick up broadcast and cable TV. Accepts audio from external sources, and video from players. Clear, accurate image quality. Limited software. Video in options include composite, RGB, and S-video. Supports NTSC or PAL. Limited software. Requires Mac SE series or higher. $1,699. Radius Inc., 1710 Fortune Dr., San Jose, CA 95131. 800-431-3410.

RasterOps 19” 8LC

This affordable 8-bit-color display system includes a PDS video card, cable, and a 19-inch Hitachi shadow-mask monitor. Active screen size is 17.8 inches. Has dim screen, large footprint, and uneven, with a yellowish center. Screen is reasonably glare-free. Video card provides some acceleration for all Macintosh


RasterOps ColorBoard 364

The ColorBoard 364 is a dual-purpose NuBus board—a digitizing and display board as well as a 24-bit display card for the Apple 13-inch monitor. Good but limited software. Requires Mac II series. $1,999. RasterOps, 2500 Walsh Ave., Santa Clara, CA 95051. 800-729-2656 or 408-562-4200. (July ’91) * 90 Eddy [MF# 674]

RasterOps Video Expander

The RasterOps Video Expander is an external component that accepts the Mac’s 15-pin RGB cable and outputs an NTSC composite, RGB, or S-video signal. Easy to use. Free software. Requires Mac SE series or higher. Version 2.0 reviewed. Requires Mac SE series. $599. RasterOps, 2500 Walsh Ave., Santa Clara, CA 95051. 800-729-2656 or 408-562-4200. (Aug ’91) [MF# 675]

Silko Instruments 14” Color

This high-quality, 24-bit-color display system combines a Sony Trinitron monitor with a 24-bit video card. The 19-inch screen is large enough for most professional applications. Excellent color quality. MTI sharpness is adequate, but this monitor is not a good choice for reading small type. Three-year warranty. Version 24L card reviewed. Requires Mac SE or later. For Illis and Illi, $399. Sigma Designs, 47900 Bayside Pkwy., Fremont, CA 94538. 800-845-8086 or 510-770-0100. (Feb ’91) [MF# 679]

Sigma Designs SilverView

This bright 21-inch monochrome monitor has good focus and fair geometry. Has minimal screen-navigation factors. Horizontal-centering control. Requires Mac SE or Mac II series. $1,999; with 8-bit card, $2,999. Sigma Designs, 47900 Bayside Pkwy., Fremont, CA 94538. 800-845-8086 or 510-770-0100. (Feb ’91) [MF# 679]

SuperMac 19” Dual-Mode Spectrum/8 24 PDQ si

This 8-bit or 24-bit-color display system includes a PDS video card, a cable, and a 19-inch Sony Trinitron monitor. Good software. Requires Mac SE or higher. $2,999. Sigma Designs, 47900 Bayside Pkwy., Fremont, CA 94538. 800-845-8086 or 510-770-0100. (Apr ’90) [MF# 680]

SuperMac 19” Platinum Display

This exceptional gray-scale display system has excellent focus, geometry, and lack-of-nuisance ratings. Above-average brightness and sharpness. Color-critical and hardware pan and zoom. Virtual desktop. Glare protection. Requires Mac II series or higher. Monitor, $1,999; 8-bit card, $399. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. 800-334-3005 or 408-245-2202. (Feb ’92) [MF# 681]

SuperMac 19” SuperMatch Spectrum/8 LC

This 8-bit-color display system includes a PDS video card, a cable, and a 19-inch Hitachi shadow-drive system combines a Spectrum/24 PDQ monitor with a fast Spectrum/24 PDQ Series III 24-bit video card. Excellent color quality. The 19-inch screen is large enough for most professional applications. Excellent software. Requires Mac II series. $4,698. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. 800-334-3005 or 408-245-2202. (May ’91) [MF# 682]

SuperMac Spectrum/24 PDQ Plus

The Spectrum/24 PDQ Plus is an accelerated 24-bit-color video card with good performance and features. Supports hardware pan and zoom and lets you change resolutions on the fly. High power consumption. Requires Mac II series or higher. $2,399. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. 800-334-3005 or 408-245-2202. (Mar ’92) [MF# 683]

SuperMac Thunder

The Thunder is a fast 24-bit-color accelerated-video-card with good software. High power consumption. Has four SIMM slots for a maximum 8 MB of GWorld RAM. Five-year warranty. Requires Macintosh II series or higher. $3,499. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. 800-334-3005 or 408-245-2202. (May ’92) [MF# 684]

Taxon Crystal View

This 19-inch monochrome monitor is bright and sharp but has poor subpixel addressing. Screen uneven, with a yellowish center. Screen resolution is 72 dpi. Requires Mac SE, SE/30, or Mac II series. $4,299. Spectrum/24 PDQ, 485 Potrero Ave., Sunnyvale, CA 94086. 800-263-4900. (Apr ’90) [MF# 685]
Truevision NuVista 

The Truevision NuVista is a NuBus card that overlays Mac graphics and text onto a video signal. Original software clutters to use, but new versions are available. NuVista can be controlled through... 

TV Producer Pro 

TV Producer Pro is a NuBus card that overlays Mac graphics and text onto a video signal. Original software clutters to use, but new versions are available. NuVista can be controlled through a video control panel. Software version 1.0 reviewed. Version 1.12 shipping. Requires Mac II, Apple IIgs, or later; 2MB of RAM, $49.95. Computer Friends, Inc., 45260 Northridge Ave., Chatsworth, CA 91311. 818-354-6850 or 800-949-7667. (July '91) * 88 Eddy [MF#691] 

VideoLogic DVA-4000 

DVA-4000 is a NuBus card that provides a complete set of audio/video features for multimedia. Excellent image quality. Software is powerful, complete, and easy to use. Provides stereo audio that's controllable through software. Video-in options include composite, RGB, and S-video. Requires Mac II series or higher; 2.3MB, $695. Computer Friends, Inc., 45260 Northridge Ave., Chatsworth, CA 91311. 818-354-6850 or 800-949-7667. (June '88) 5MB of RAM, $4,795. Truevision NuVista+! 

VideoSpigot 

VideoSpigot is a series of affordable software packages that include video cards for digitizing consumer-level NTSC and PAL video. Lets you create sharp, colorful video clips for multimedia projects. QuickTime movies at resolutions of up to 320 x 240 pixels (NTSC). Lacks S-video input capability. Sound recording uses built-in microphone on an LC or IIsi, or a sound digitizer such as Macmedia's MacRecorder. Requires LC or Mac II series or higher with 8MB of RAM and a high-capacity hard-disk drive. VideoSpigot NuBus (includes Premiere), $599; VideoSpigot NuBus for LC, $499; VideoSpigot for IIsi, $499. Computer Friends, Inc., 45260 Northridge Ave., Chatsworth, CA 91311. 818-354-6850 or 800-949-7667. (July '92) [MF#694] 

KidsMath 

KidsMath is a part of eight educational applications for ages 3 to 8. Quality ranges from adequate to superb. Supports color and large monitors. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. $49.95. Great Wave Software, 5533 Scotts Valley Dr., Ste. E, Scotts Valley, CA 95066. 408-438-1990. (May '90) * 88 Eddy [MF#697] 

NumberMaze 

NumberMaze is a package of five quality educational programs for ages 3 to 7. The programs teach the alphabet, basic music concepts, simple word-processing skills, use of a computer, and connect-the-dots doodling. Supports color. Version 1.0 reviewed. Version 1.3 shipping. Requires Mac Plus or later. $49.95. Great Wave Software, 5533 Scotts Valley Dr., Ste. E, Scotts Valley, CA 95066. 408-438-1990. (Oct '86) * 88 Eddy [MF#704] 

LXR*TEST 


Photography Workshop 

This seven-disk program teaches basic camera and darkroom techniques. Animated simulations and help text make learning black-and-white photography easy. Requires Mac Plus or later and MacSystem 9. Requires Mac Plus or later and a hard-disk drive. $85; ten-copy Lab Pack, $495. Intellimation Library for the Macintosh, 130 Cremona Drive, P.O. Box 1530 (Dept. GAFI), Santa Barbara, CA 93116. 805-346-8355 or 805-968-2291. (Sept '90) [MF#701] 

Mavis Beacon Teaches Typing 

Mavis Beacon Teaches Typing has more features than a S electric. Lots of diagnostics concerning typos. Incomplete documentation. Version 1.0 reviewed. Version 1.3 shipping. Requires Mac IIKe or later. $49.95. Software Toolworks, 60 Leveroni Ct., Novato, CA 94949-1949. 415-234-3088 or 415-884-1080. (Nov '88) [MF#702] 

Number Munchers 

Number Munchers is an educational arcade game for grades 3 to 12. Teaches variety of skills for multiplication, factors, primes, equalities, and inequalities. Version 1.0 reviewed. Version 1.2 shipping. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive; color display system recommended. $49.95. MECC, 6160 Summit Dr. N., Minneapolis, MN 55430. 800-688-6322 or 612-569-1500. (Oct '90) [MF#703] 

Computer Friends 

Computer Friends is a well-designed study aid. Covers numbers, algebra, and word problems in counting with the assistance of the computer's abilities instead of simply imitating a typewriter. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. $29.95. Broderbund Software, Inc., P.O. Box 6125, 50 Redwood Blvd., Novato, CA 94945. 415-521-6263 or 415-382-4400. (Nov '88) [MF#707] 

Where in Time Is Carmen Sandiego? 


Entertainment 

3 in Three 

This popular game is an endlessly fascinating, frustrating, fun-filled collection of 80 animated puzzles. Apeal equally to young kids of all ages. Nutty plot requires saving hapless number 3 after she falls off a spreadsheet into the Land of the Number Munchers. Version 1.0 reviewed. Version 1.2 shipping. Requires Mac Plus or later. $49.95. Inline Design, 308 Main Street, Dedham, MA 02026. 617-329-9300. (Sep '87) [MF#710] 

Mice Ratings 

[MF#700] Photography Workshop 

For more information, circle the MiniFinder number [MF#] on the Reader Service card.
Aqua Blower Piper

Aqua Blower Piper tests your plumbing skills when you’re confronted with a customer’s broken sewer, a moving conveyor belt delivers an assortment of straight, curved, or twisted pipe sections that you must connect without leaks. You are rewarded for the shortest run of pipe but for installing as much pipe as possible—without leaks. Version 1.1 reviewed. Requires Mac Plus or later and System 6.03 or later. $49.95. Casady & Greene, Inc., 22734 Portola Dr., Lakeville, CA 93098. 800-359-4920 or 408-484-9228. (Apr ‘88) ★ ★ 88 Eddy [MF#716]

Dark Castle

Dark Castle is an outstanding achievement in action games, integrating sound with superb animation and graphics. You need better-than-average hand-eye coordination, but it’s well worth the effort. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later. $49.95. Aldus Corp., 411 First Ave., Seattle, WA 98104. 800-333-2538 or 602-628-2350. (Apr ‘87) ★ ★ 87 Eddy [MF#717]

Darwin’s Dilemma

Darwin’s Dilemma provides intriguing, deceptively simple entertainment. You manage a game park called Darwin, which moves other icons to combine them within an invisible grid. These icons include genuine low life such as arbor vitae or panacea, and your progress in recombining realistic forms lets you graduate to jellyfish, octopi, and crabs. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. $49.95. Inner Design, 308 Main St., Lakeville, CT 06039. 800-453-7671 or 203-453-6995. (Mar ’91) [MF#718]

Falcon

Falcon simulates an F-16 fighter jet dogfighting with gun-tightening, sweat-inducing realism. Take on MiGs and dodge SAMs. Can be played via modem against other players. Version 1.0 reviewed. Version 2.2.1 shipping. Requires Mac Plus or later. $59.95. Bullseye Software, P.O. Box 7090, Sunnyvale, CA 94086. 800-353-2983 or 408-738-4311. (May ’90) [MF#725]

Mutant Beach

Mutant Beach leaves you happily stranded on an island of idols and mutated creatures run amok. Has gorgeous color and a pulsing reggae soundtrack. Animation and characters are first rate, but some sequences are overly repetitive. Version 1.0 reviewed. Requires Mac Plus or later with 2 MB of RAM and a hard-disk drive. Version 1.1 reviewed. Requires Mac Plus or later with 2 MB of RAM and a hard-disk drive. Color display system highly recommended. $59.95. Inner Design, 308 Main St., Lakeville, CT 06039. 800-453-7671 or 203-435-4995. (June ’92) [MF#726]

Pineapple

Pineapple demands a perfectly mixed paste of strategy and speed. You must build a pipeline fast enough to prevent the stuff in the line from running out—that’s it. Addictive. Has copy-protection. Version 1.0 reviewed. Version 1.2 shipping. Requires Mac Plus or later. $24.95. Lucasfilm Ltd., Games Division, 203 Main St., Lakeville, CT 06039. 800-782-7677 or 1-812-231-3000. (May ’90) [MF#727]

Pipe Dream

Pipe Dream demands a perfectly mixed paste of strategy and speed. You must build a pipeline fast enough to prevent the stuff in the line from running out—that’s it. Addictive. Has copy-protection. Version 1.0 reviewed. Version 1.2 shipping. Requires Mac Plus or later. $24.95. Lucasfilm Ltd., Games Division, 203 Main St., Lakeville, CT 06039. 800-782-7677 or 1-812-231-3000. (May ’90) [MF#727]

PlayMaker Football

This is an excellent combination of football and computer game. More of a coaching simulation than a play simulation, it gives priority to strategic skills rather than animation, but the animation is reasonably good. Version 1.0 reviewed. Requires Mac Plus or later. $49.95. Broderbund Software, Inc., P.O. Box 6125, 500 Redwood Blvd., Novato, CA 94948. 800-521-6263 or 415-382-4400. (May ’91) [MF#729]

Railroad Tycoon

This revolutionary environment revolves around building trains, schedules, and stations and laying miles of track. Includes natural objects such as trees and mountains, and a variety of geographic and time options. Provides fun animation and sound, which can be turned off for faster performance. Supports color. Version 1055.01 reviewed. Requires Mac Plus or later with 2.5 MB of RAM and System 6.03 or later. $99.95. MicroProse Software, 180 Lakefront Dr., Hunt Valley, MD 21030, 301-771-1511. (Jan ’92) [MF#730]

RoboSports

Billed as a manking’s shoot-em-up game, RoboSports is actually a battle-strategy simulation that pits teams of robots against each other. Choose from pre-designed battle scenarios, or program your robots’ actions. Version 1.0 reviewed. Version 1.1 shipped. Requires Mac Plus or later and System 6.03 or later; 2 MB of RAM and a hard-disk drive required for color version. $59.95. Maxis, 2 Theatre Square, Ste. 230, Orinda, CA 94956. 800-336-2947 or 510-254-9700. (Aug ’91) [MF#731]

SimCity

This animated game is also a city-planning simulator. Comes with eight scenarios. Evaluation window gives you instant feedback on your efforts. Version 1.0 reviewed. Version 1.3 shipping. Requires Mac Plus or later and System 6.03 or later; 2 MB of RAM and a hard-disk drive required for color version. $59.95. Maxis, 2 Theatre Square, Ste. 230, Orinda, CA 94953. 800-336-2947 or 510-254-9700. (Aug ’91) ★ ★ 89 Eddy [MF#732]

SimEarth

In SimEarth, you are the Supreme Being who guides an Earth-like planet as it species from evolution into civilization and finally to Exodus toward the distant galaxies before destruction. Version 1.0 reviewed. 

For more information, circle the MINIFINDER NUMBER [MF#] on the Reader Service Card.
I consider in a dicey situation. The game is part of a 4-part series. Version 1.0 reviewed. Requires Mac Plus or later with System 6.02 or later. $49.95. Casady & Greene, Inc., 22734 Portola Dr., Salinas, CA 93938. 800-359-4920 or 408-484-2928. (Oct '90) [MF#734]

Space Quest I 4

Space Quest I is a 3-D animated adventure in which you play a janitorial aide in search of your home planet. The goal is to get off your ship before it explodes and save the Emperor. The game is part of a 4-part series. Version 1.0 reviewed. Version 1.0 shipping. Requires Mac Plus or later. $49.95. Accolade, 500 Stevens Creek Blvd., San Jose, CA 95129. 800-245-7744 or 408-985-1700. (May '91) [MF#739]

Spectre 6

Spectre is a supremely well-designed arcade game that pits tank against tank in a futuristic version of Capture the Flag. Spectre employs an army of 32 officers, 1 spy, 6 bombs, and 1 flag. Has a copy-protection scheme. Version 1.0 reviewed. Requires Mac Plus or later. $49.95. Aclelade, 500 Stevens Creek Blvd., San Jose, CA 95129. 800-245-7744 or 408-985-1700. (May '91) [MF#739]

Tesserae 4

Tesserae has a simple premise: Clear the game board of colored tiles by jumping one over another. Version 1.0 reviewed. Exceptionally hard to master. Color is essential and governs which tiles you can jump and where you can land. In black-and-white mode, tiles have four different patterns. Gorgeous color with a satisfying pyrotechnic display once you've down to your last tile. Excellent sizing options, options for previewing shapes, and color or black-and-white versions. Copy-protected. Version 1.0 reviewed. Version 1.0 shipping. Requires Mac Plus or later. $49.95. Inline Design, 308 Main St., Lakeville, CT 06040. 800-453-7671 or 203-453-4995. (May '91) [MF#740]

Welltris 6

Welltris is an arcade game that is a sequel to Tetris. Maneuver falling shapes in 3-D. Has full accompaniment, options for previewing shapes, and color or black-and-white versions. Copy-protected. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later. $39.95. Spectrum Holobyte, 2061 Challenger Dr., Alameda, CA 94501. 510-252-3584. (Oct '90) [MF#741]

Financial Management

Accountant, Inc. 6

Accountant, Inc., offers a great deal of functionality, a high degree of conformance to the Mac interface, and solid accounting and bookkeeping fundamentals. Uses double-entry accounting. Compatible with AppleShare and MultiFinder. Version 1.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. $39.95. Spectrum Holobyte, 2061 Challenger Dr., Alameda, CA 94501. 510-252-3584. (Oct '90) [MF#741]

CheckFree 6

CheckFree is bill-paying software that works with a dedicated service. Bills are paid by printed draft or by electronic-transfer method. Your regular monthly bank statement shows all CheckFree electronic-transfers. The software works well but has problems with multiFinder. Terrible user interface. Version 1.5 reviewed. Requires Mac Plus or later. $195; upgrade to Multi-Ledger, $200. CheckMark Software, Inc., 15020 Mulberry St., Suite 200, Fort Collins, CO 80524. 800-444-9922 or 303-484-3541. (May '90) [MF#745]

Cashledger 6


General Ledger 6

General Ledger is an Excel-based integrated accounting system. Recommended for small- to medium-sized businesses that don't require a multiuser accounting system. Thorough, well-designed documentation. Version 1.0 reviewed. Requires 68030 CPU or higher with 2 MB of RAM, System 6.03 or later, and a hard-disk drive. $795. Satori Software. 2815 Second Ave., Ste. 295, Seattle, WA 98121. 206-443-0765. (Oct '91) [MF#749]

Components General Ledger

This part of an integrated accounting series provides state-of-the-art flexibility, integrity, and functionality. Reporter may be strong enough to entice you to import data and use it with other accounting systems. Especially useful for users who need to view spreadsheets or graphics backgrounds. Several optional modules are available. Version 1.0 reviewed. Requires 68030 CPU or higher with 2 MB of RAM, System 6.03 or later, and a hard-disk drive. $795; Job Cost/Time Billing, $1,495; Accounts Receivable, $795; Accounts Payable, $795; Satori Software. 2815 Second Ave., Ste. 295, Seattle, WA 98121. 206-443-0765. (Oct '89) [MF#750]

Components Classic Accounting

Components Classic Accounting is an Excel-based integrated accounting system. The spreadsheet interface is intuitive, working like traditional paper journals and ledgers. Version 1.5 reviewed. Version 3.0 shipping. Requires 68030 CPU or higher with 2 MB of RAM, Excel 3.0 or later, and a hard-disk drive. $195; Client Write-Up version for accountants.

Checkwriter 6

Checkwriter is a personal accounting package that uses your checkbook like a ledger. Limited financial planning, but features include an overhead calculator for specified categories, a transfer command that shifts funds between accounts, an address database, drawing tools for designing checks, a Quicken converter, good reporting options, and an updating function for recording transactions. Outputs checks on laser printers or inkjets. Version 3.1 reviewed. Version 4.0 shipping. Requires Mac Plus or later and System 6.05 or later; hard-disk drive recommended. $69. Atrix Software, Inc. The 5000 Building, 5000 Koenig Ave., Grand Forks, ND 58203. 800-426-0854 or 701-746-6801. (Sept '91) [MF#747]

Components Accounts Payable

This part of an integrated accounting series provides state-of-the-art flexibility, integrity, and functionality. The easy-to-use module sets up detailed account information, including bank data, payment terms, and expense items for disbursements. Version 1.0 reviewed. Requires 68030 CPU or higher with 2 MB of RAM, System 6.03 or later, and a hard-disk drive. $795; System 6.03 or later, and a hard-disk drive. $795; Accounts Receivable, $795; Accounts Payable, $795; Satori Software. 2815 Second Ave., Ste. 295, Seattle, WA 98121. 206-443-0765. (Oct '91) [MF#749]

For more information, circle the MiniFinder number (MF#) on the Readers Service card.
MINIFINDERS

$495; enhanced version, $695.

Mice Ratings

$695; enhanced version, $695.

Insight Expert Series

Insight is a high-powered accounting program for small or mid-sized businesses. Modules include Accounts Receivable, Accounts Payable, General Ledger, Inventory Control, Time Billing, and Payroll. Version 1.0 reviewed.

Requires MultiPlus or later. System 4.2 or later, and a hard-disk drive. $219.98. Meca Software, Inc., 327 Riverside Ave., Westport, CT 06880, 203-222-3300. (Sept '90) [MF#767]

Multi-user Desktop Accounting (MDA)

Multi-user Desktop Accounting uses Omnitech's Omnitaire manager. Sets the standard for multiuser functionality and accounting functionality in the off-the-shelf market. There are nine fully integrated modules and eight user-security classifications. Version 2.05 reviewed.

Requires MultiPlus or later. System 4.2 or later, and a hard-disk drive. $249. Multi-Software, Inc., 1755 Pavilion Pl., Norcross, GA 30093. 800-247-3224 or 404-564-5800. (Dec '89) [MF#756]

M.D.O. ******

Mind Your Own Business is an excellent value, functional enough for small-business accountants but accessible and intuitive enough for novices. It has integrated general-ledger, checkbook, accounts receivable, accounts-payable, and inventory modules. A wonderful integrated payroll, and it lacks the ability to break out data by department. Version 2.0 reviewed.

Version 3.0 shipping. Requires MultiPlus or later. System 4.2 or later, and a hard-disk drive. $249. Tealeware, Inc., 22 Hill Rd., Parsippany, NJ 07050. 800-322-5662 or 201-334-1154. (Apr '91) [MF#757]

Maccrnet ******

Maccrnet is an excellent tool for preparing federal and state tax forms. V eine and easy to use with all separate forms automatically interlinked for accurate recalculation. Accepts data from the existing federal financial programs. Displays in WYSIWYG format and then prints IRS accepted forms on PostScript laser or dot-matrix printers. Many state-name forms are also available. Provides logical Next Step feature, along with well-documented Better Balloon Help (for System 7 users). Version 2.0 reviewed.

Requires MultiPlus or later. System 4.2 or later, and a hard-disk drive. Federal, $99.95; state, $59.95 (state depends on state, $34.95). ChipSoft, Inc., 6330 W. Mulberry, Ste. 200, Ft. Collins, CO 80524. 800-444-9922 or 303-484-3541. (May '90) [MF#762]

Payroll ******

Payroll is a stand-alone, specialized application that can operate as a module within MDA or Cash Ledger. Version 3.5 reviewed. Version 1.0 reviewed.

Requires MultiPlus or later. $295. CheckMark Software, Inc., 1520 E. Mulberry, Ste. 200, Fort Collins, CO 80525. 800-444-9922 or 303-484-3541. (May '90) [MF#763]

Profitability Professional

This HyperCard-based single-entry-bookkeeping system, with its emphasis on ease of use and reporting, is ideal for small businesses that are looking for a do-it-yourself and bulk package. Handles general-ledger accounts, check printing, invoicing, price estimates, basic inventory control, time-and-material, and payroll (including federal taxes, FICA, and Medicare costs). Includes HyperCard 2.1. Version 1.4 reviewed. Requires MultiPlus or later with 2 MB of RAM. $249. Wetzel & Co., Inc., 147 E. Rocks Rd., Norwalk, CT 06851, 800-858-426-8426-204. (Jan '92) [MF#764]

Quicken ******

Quicken is an excellent program for home budgets, cash-flow management, and tax-record keeping. Its multiuser feature, so far tracking finances is easy and intuitive. Provides detailed, customizable reports supporting tax deductions, expenses, and sources of income. Also includes Federal and Canadian tax forms. Offers CheckFree electronic bill-paying support. Lacks standard accounting features but has a variety of advanced features for serious business use. Version 3.0 reviewed.

Requires MultiPlus or later. System 4.3 or later, and a hard-disk drive. $595. CheckFree Software, Inc., P.O. Box 3014, Menlo Park, CA 94026. 800-624-8742 or 415-322-0573. (Feb '92) [MF#765]

For more information, circle the MINIFINDER number [MF#] on the Reader Service Card.
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$795. Aperture Technologies, Inc., 84 W. Park Pl., Stamford, CT 06902; 203-975-7587. (Apr'90)[MF#789]

Ashlar Vellum [****]


VersaCAD [****]

VersaCAD is a powerful CAD program that doesn't show any of its DOS roots. Excellent element manipulation and full plotter support. Version 1.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. $1995. ComputerVision (PersonalCAD/CAM Business Unit), 100 Crosby Dr., Bedford, MA 01730. 800-458-7255 or 617-275-1800. (July '88)* 88 Eddy [MF#799]

GRAPHICS & DESIGN/CLIP ART

Artbeats [****]

Artbeats is a series of superb high-tech EPS backgrounds. Six packages are available. Images are well drawn and can be used with EPS packages. Each package has 20-page full-page backgrounds, saved as FreeHand and EPS files. Requires Mac II series or later with 2 MB of RAM and hard-disk drive recommended. $99.95 each. Artbeats, P.O. Box 20083, San Bernardin0, CA 92406. 800-444-9392 or 714-881-1200. (Nov '90)[MF#800]

Canned Art: Clip Art for the Mac [****]

Canned Art: Clip Art for the Mac is a printed catalog of more than 15,000 images available on disk. Most images are redrawn, so several fit on a page. Excellent detailed index saves hunting through disks. $29.95; sample disk, $10. PeachPit Press, 2414 Sixth St., Berkeley, CA 94710. 800-283-9444 or 510-527-6555. (Sept '90)[MF#801]

ClickArt [****]

The ClickArt series consists of numerous MacPaint-alone clip art packages. Themes include business, sports, animals and nature, holidays, religion, and cartoons. MacPaint packages, 59 pages each; EPS (PostScript) package, $12.95 each; Color Graphics for Presentations (PICT2 and EPS), $149.95. T/Maker Co., 1390 Villa St., Mountain View, CA 94041, 415-602-0195. (Nov '90)[MF#802]

Clipables: the EPS Library [****]

Clipables is an enormous collection of EPS artwork. The 1,100 images are well drawn and cover a wide range of topics. Favors business, sports, animals, and nature. Each EPS file contains several images. For Mac Plus or later and a hard-disk drive. $795. PowerDraw Translator, $275. Engineered Software, P.O. Box 18344, Greensboro, NC 27419. 919-299-8483. (Sept '91)[MF#797]

POWERDRAW [****]

PowerDraw is an easy-to-use 2-D-CAD program with a host of features, including an improved SNAP function that aids in geometry creation. Has complete drawing tools and excellent control over colors, true vector-oriented patterns, and Boolean operations such as joins and intersections and has full complement of dimensioning commands. Version 3.0 reviewed. Requires Mac Plus or later and a hard-disk drive. $795. PowerDraw Translator, $275. Engineered Software, P.O. Box 18344, Greensboro, NC 27419. 919-299-8483. (Sept '91)[MF#797]

Vellum 3D [****]

Vellum 3D is a highly-accurate 3-D drawing program with 2-D drafting capabilities. Doesn't offer hidden-line removal, and can't create shaded images as do surface and solid models. Not suited to mechanical drafting, engineering, and architectural tasks. Can create 2-D DIPCs animations of designed objects. Volume 1 reviewed. Requires Mac Plus equipped with 4 MB of RAM, System 6.03 or later, and a hard-disk drive. $2,495. Ashlar, Inc., 1290 Oakmead Pkwy., Ste. 218, Sunnyvale, CA 94086. 800-777-2745 or 408-746-1800. (June '90)[MF#798]

Clipables is a series of EPS clip-art packages comprising two business packages and one sports collection. Volume 1 reviewed. Requires Mac Plus or later. $129.95 per volume. DreamMaker Software, 925 W. Kenyon Ave., Ste. 16, Englewood, CO 80110. 800-876-5685 or 303-762-1001. (Nov '90)[MF#808]

MINIFINDERS

Mice Ratings: 1 2 3 4 5

For more information, circle the MINIFINDER number [MF#] on the Reader Service Card.

14 Buyer's Guide August 1992 MacUser
Graphics & Design/ Drawing

Canvas

Canvas is a rich QuickDraw drawing program, and an easy-to-use addition to your Mac's imaging arsenal. It supports full Bezier curves, the cutting and joining of polygons; skewing, perspective, and distortion capabilities; layer functions; a low-resolution image preview, and an area and perimeter calculator; black-and-white tracing of bit maps; and full-color support. Excellent complement to high-end PostScript programs. Creates and edits high-resolution bit maps to 2,540 dpi. Modular program design lets you install the features and tools you need. Supports QuickTime. Version 3.0 reviewed. Version 3.03 shipping. Requires Mac Plus or later and System 6.03 or later; $99. Åranea Software, 3305 N. 74th Ave., Miami, FL 33122, 800-622-6827 or 305-594-6965. (Jan '92) ★ ★ ★ 「91 Eddy [MF#814]

Artwork

Artwork is a comprehensive desktop publishing program, and a good value at $250 each; '90 [MF#815]

Graphics & Design/ Typesetting

Metro ImageBase Electronic Art


Professional Photography Collection, Volume 1

This CD-ROM contains 100-color TIFF images that come in three formats: 24-bit high-resolution color, 24-bit low-resolution color, and 8-bit black-and-white. Requires Mac II series or higher with color monitor and CD-ROM drive. $149 direct. discimagery, 18 E. 16th St., New York, NY 10003. 212-675-8500. (Sept '90) ★ ★ ★ ★ 「89 Eddy [MF#810]

SwivelArt

SwivelArt includes read-only version of Swivel 3D Professional, serif and sans-serif 3-D fonts, a HTML export tool, a renderable 3-D text, and more than a hundred 3-D maps, images of office equipment, and words and symbols commonly used in business presentations. Version 1.0 reviewed. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive; color work requires Mac II series or higher and 2 MB of RAM; $129.55; Maps I and II, $25.00 each; Viewpoint Collections (Cars, Air & Sea, Anatomy), $25.00 each. Macromedia, Inc., 600 Townsend St., Ste. 310W, San Francisco, CA 94103. 415-442-0200. (Aug '91) [MF#818]

Totem Graphics

Totem Graphics has 13 volumes selected objects. Tools adds a reviewed. Version 1.5 shipping. 824)

St. Ste. 31 OW, San Franci co. does exactscaling and dimension­ lation and -import capabilitie , mended. $99.95. Are Software, $125 per category; CD-ROM with media, Inc., 600 Townsend St .. [MF#8201 fonts. but crecn-font editor is

FreeHand

FreeHand is a professional color PostScript illustration package. Includes auto-trace, 100 levels of undo, freehand drawing, and power­ ers to get more out of your command. Version 3.0 improves text manipulation but relies on dialog box for input. Fast screen redraw. New tool pallets (Layers, Colors, and Styles). Can edit in Preview mode. Allows Pantone, spot, or CMYK process-color controls. Displays, separates, and prints 32-bit TIFF images. Can be used as a screen font. (Including gradient shading), and complex chaining. Version 1.01 shipped, 1.5 shipped. Requires Mac Plus or later with 4 MB of RAM, System 6.03 or later, and a hard-disk drive. $399. up; $299.95; from MacDraw II. 1280-F Capitol Blvd., Ste. 210, Austin, TX 75080. 214-680-2060. (Jan '90) ★ ★ ★ ★ 「91 Eddy [MF#820]

Streamline

This dedicated PostScript auto­ trace package can quickly produce nearly print-ready traces with little tweaking. Continuous-tone photos aren't usually worth the trouble. Version 1.0 reviewed. Version 2.0 shipped. Requires Mac II or later and System 5.0 or later; 2 MB of RAM recommended. $195. Adobe Systems, Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039. 800-833-6687 or 415-961-4400. (Nov '90) ★ ★ ★ Eddy [MF#820]

Fonts & Typography

ATM (Adobe Type Manager)

Adobe Type Manager is a must- have utility that creates smooth PostScript type fonts in any size on-screen and when printed on QuickDraw printers such as the ImageWright II. Version 1.01 re­ viewed. Version 2.0 shipped. Requires Mac Plus or later and System 6.03 or later. $99. Adobe Systems, Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039. 800-833-6687 or 415-961-4400. (Feb '90) ★ ★ ★ Eddy [MF#822]

FontMonger

FontMonger is a robust font manager that can browse fonts among PostScript Type 1, Type 3, and TrueType formats. Alternates include small caps; inferior, superior, and slanted characters; and combinations and other composite characters. Characters from different fonts can be combined into a single font, and EPS images can be converted as characters. Version 1.03 reviewed. Version 1.05 shipping. Requires System 6.03 or later and 2 MB of RAM; $295; from MacDraw II. 1280-F Capitol Blvd., Ste. 210, Austin, TX 75080. 214-680-2060. (Jan '90) ★ ★ ★ 「91 Eddy [MF#824]

Fontographer

Fontographer is an excellent PostScript-font generator that includes the latest screen, font editor, auto-tracing, a pen tool, and automatic hinting. Can create PostScript and TrueType fonts, and screen-font editor is strictly bare bones. Version 3.0 reviewed. Version 3.5 shipping. Requires Mac Plus or later and System 5.0 or later. $94.5. Allsys Electronics, 411 First Ave. S., Seattle, WA 98104. 800-333-2538 or 206-628-2230. (July '91) [MF#817]

Fontographer II

Fontographer II offers high-quality screen fonts of any downloadable PostScript typeface in sizes up to 96 points. Excellent utility for producing large-font sizes with true type, 1927-390-617-924­ MB vd.. Ste. 210, and perimeter calculation: auto­ tailed spreadsheet data as text, View. CA 94039. 800-833-6687 or 415-961-4400. (Feb '90) ★ ★ ★ Eddy [MF#822]
You haven't had this much back and forth since

cc:Mail for Macintosh, Version 2.0 is out. Pass it on.

Whether you use the new cc:Mail™ to deliver praise or disapproval, sales reports or sandwich orders for that big luncheon, you'll find it as enjoyable and fun to use as the Macintosh itself.

cc:Mail for Macintosh Version 2.0 looks, feels and performs like a Macintosh. So it's easy
uch fun passing a note

and, yes, fun to learn. Everything you need is right before your eyes. You just click on nail icons to check your in-box, prepare messages, store messages, or fire off that memo to the powers that be. And you can send and receive text, files, fax, QuickTime videos and voice annotations.

It also supports System 7 and all its capabilities, including Balloon Help, QuickTime, and AppleEvents.

Of course, all this simplicity doesn't mean cc:Mail for Macintosh isn't powerful. On the contrary, it lets you exchange messages with nearly every electronic mail system in the world. You can send messages effortlessly across all major platforms—Windows, DOS, and OS/2. And if your company were to grow from 5 people to 500,000 people overnight, cc:Mail's scalable architecture could accommodate such growth.

Like to save time preparing messages? With cc:Mail, simply type in a person's name. There's no need to know their address. What's more, with one click, you can instantly open an attached file, even if it was created in a DOS application.*

Setting up and maintaining e-mail systems is often a chore. But not with cc:Mail. It offers an impressive set of administration tools, such as Automatic Directory Exchange, a product that automatically collects any changes in the directory and updates the entire network. cc:Mail also expedites the not-so-fun task of finding messages, thanks to a new Message Finder utility. And it lets you search for messages according to subject, text, address, date, size, priority or item.

So for a free demo disk of the cc:Mail for Macintosh Platform Pack, call 1-800-448-2500.

cc:Mail. It makes passing a note to someone as much fun now as it was back then.

Lotus cc:Mail for Macintosh

* Message-oriented services required on Macintosh application. (C)1989 Lotus Development Corporation. All products or names of Mail in the trademarks of Mail Inc. A wholly-owned subsidiary of Lotus Development Corporation. Windows, a registered trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Windows is a trademark of Microsoft Corporation. The Apple logo is a trademark of Apple Computer, Inc. Used under license.
FontStudio
FontStudio provides a fully integrated environment for typography on the Mac. Can store character parts in a library and has an excellent bit-map editor and a strong key-pairs interface. Supports Adobe Type 1, Bitstream, Fontographer, LetraFont, and TrueType fonts. Can import Illustrator text. A comprehensive PICT and TIFF files as templates. Version 2.0 reviewed. Requires Mac Plus or later and System 6.0.2 or later: hard-disk drive recommended. $195. Eddy Corp., 269 W. Renner Rd., Richardson, TX 75080. 214-680-2060. (Nov '91) [MF#832]

KernEdit
KernEdit is an excellent kern-pair editor that lets you alter the kerning data for PostScript and TrueType fonts. Word View feature greatly simplifies and speeds up keyboarding. Maximum resolution is 1/1,000 em. $149. Additional kerning-table packages, $95 each. Agfa Divi­sion, 220 Ballardvale St., Wilmington, MA 01887. 800-227-2780 or 508-658-5600. (Apr '90) [MF#828]

Letterforms and Illusions
This set of fonts and figures leads you into exciting typographic explorations. Includes a limited version of MacPaint. Requires Mac Plus or later: $36.95. W. H. Freeman, 41 Madison Ave., New York, NY 10010. 212-576-9400. (Mar '90) [MF#830]

MacTypeFont Sample Type and Listing Type
The MacTypeFont Type Sample and Type Listing combination is a classic art director's type book that has samples of all PostScript Laser fonts. The printed version of Type Sampler is the more valuable part of this package. Requires Mac Plus or later; Type Listing requires System 6.0.2. $75. Letraset USA, Inc., 40 Eisenhower Dr., Paramus, NJ 07653. 800-343-8973 or 201-845-6100. (May '92) [**] 90 Eddy [MF#829]

Letterformers
Letterformers provides true object export EPS and PICT outlines of font characters. Version 2.01 reviewed. Version 2.03 shipping. Requires Mac Plus or later and System 6.0.2 or later: hard-disk drive recommended. $95. World Class Fonts, 269 W. Renner Rd., Richardson, TX 75080. 214-680-2060. (Nov '91) [MF#832]

SPECULAR
SPECULAR is a flexible type-sampler program that prints a variety of handy specimen sheets. Shows typefaces in one- and two-page/layouts. Adds a key-cap's table, a complete documentation. Version 1.1 reviewed. Version 1.2 shipping. Version 1.2 shipping. Requires Mac Plus or later and System 6.04 or later. $89.95 per volume. Dubl-Click Software, Inc., 9316 Deering Ave., Chatsworth, CA 91311. 818-262-6186. 714-542-5518. (Oct '86) [MF#838]

GRAPHICS & DESIGN/ MODELING & ANIMATION

ADDmotion
ADDmotion is an extension to the HyperCard development environment that provides a powerful set of animation tools. You create animations using Timelines (an editing window) and the Media Controller window (VCW), with cells, actors, props, and object paths. Provides its own color-painting and sound tools. Version 1.0 reviewed. Version 1.0 reviewed. Requires Mac II or III with 4 MB of RAM, 32-bit QuickDraw, and a hard-disk drive. $695. Pixar, 1001 W. Cutting Blvd., Redwood City, CA 94065. 800-343-2600. (Aug '91) [MF#843]

ModelShop II

Ray Dream Designer
This midrange 3-D design program offers fast ray tracing of 3-D models. An awkward interface and creation of multiple files hinders productivity, but speedy ray-traced renderings show detailed reflective surfaces, shadows, and transparency effects. Good PICT and texture mapping. Useful Preview mode. Resulting 24-bit PICT files are close to photo-realistic. Improvements in the most recent version with a Mac SE in the background. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac II series with 4 MB of RAM, 32-bit QuickDraw, and a hard-disk drive. $895. Specular International, P.O. Box 888, Amherst, MA 01004. 508-457-7650. (Sept '91) [MF#845]

StrataVISION
StrataVISION 3d brings mainframe rendering power to the Mac.
It's a modeling and visualization tool that can create complex, photo-realistic 3-D images and animations. Rendering and screen-redraw time have been significantly reduced with latest version. Networked Macs using optional RenderPro application can dramatically increase productivity. Supports Bézier splines for editable, smoothly curved objects. Many sophisticated texture and shape libraries are available. Supports multiple file formats. Version 2.5 reviewed. Requires Macintosh II series or higher with FPU, 4 MB of RAM, and a hard-disc drive. $995; RenderPro, $299 (group discounts available). Strata, Inc., 2W, St. George Blvd., Ascent, Ste. 210, St. George, UT 84770, 800-678-7282, or 801-628-5218. (July '92) ★ *91 Eddy [MF#846]

**Super 3D **** ****
Super 3D is a system of an excellent 3-D object-oriented drawing program. Powerful, easy to use features. Three solid-rendering modes are supported: wireframe, jointed-oriented-2-D snapshot in PICT and EPS formats. Version 2.0 reviewed. Version 2.5 shipping. Requires Mac Plus or later, System 6.03 or later, and a hard-disc drive; requires Mac II series or higher for color work. $495, Aldus Corp., 411 First Ave. S., Seattle, WA 98104, 800-333-2523 or 206-628-2320. (Mar '90) [MF#847]

**Swivel 3D Professional **** ****
Swivel 3D Professional is a color-modeling program that forms shaded solids speedily. Objects can be manipulated as jointed and sliding mechanisms without accidental dismantling. Can tween and animate objects through scenes, saving frames for playback. Missing some professional tools such as Bézier-curve editing and clipping, but otherwise very good. Version 1.58 reviewed. Version 2.0 and SwivelMan shipping. Requires Macintosh II series or higher with 5 MB of RAM, System 6.03 or later, and a hard-disc drive; requires Mac II series or higher for color work. $295, ElseWare Corp., 3201 Fremont Ave. N., Seattle, WA 98103, 800-662-3300. (Oct '91) [MF#851]

**Design Studio **** ****
Design Studio is based on Ready.Set.Go! but is more a beefed-up version of that program -- it has new layout-management features, and its handling of text, graphics, and color separations is good. It duplicates many of RSG's drawbacks, however. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac SE/30 with a hard-disc drive, or Mac II series. $295; upgrade from Ready.Set.Go!, $250. Manhattan Graphics Corp., 250 E. Hartford Ave., Ste. 23, Hartford, NY 10530, 800-572-6525 or 718-225-2048. (June '90) [MF#852]

**Fast Forms **** ****
Fast Forms is a modest, inexpensive layout application is easy to learn and packed with features. Versatile and well-engineered long-document processing. Includes Aldus PrePrint application for generating precise, high-resolution color separations. Features interactive, interruptible screen redraw, and a high-capacity hard-disc drive. $985. Aldus Corp., 411 First Ave. S., Seattle, WA 98104, 800-333-2523 or 206-628-2320. (July '92) ★ 85, 87, 88 Eddy [MF#861]

**PDQ! (Page Designs Quick!) **** ****
PDQ! (Page Designs Quick!) and PDQ! 5 (Page Designs Quick! 5) are PageMaker templates designed for newsletter and newspaper publishing. The quality of the templates is excellent, but they lack art. You can modify all layouts from within PageMaker. Version 1.0 reviewed. Requires PageMaker 3.0 or later. PDQ!, $89.95 direct; PDQ! 5, $199.95. PAR Publishing, 6355 Topanga Canyon Blvd., Ste. 307, Woodland Hills, CA 91367, 818-340-8165. (Aug '90) [MF#861]

**Personal Press **** ****
This budget page-layout program has good features, including basic word processing, design pages, and spot-color cutouts. Can have only one document open at a time. AutoCreate feature simplifies design and production of templates. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.03 or later, and a hard-disc drive. $199. Alone Co., 411 First Ave. S., Seattle, WA 98104, 800-333-2523 or 206-628-2320. (July '91) [MF#863]

Publish It! 1111 is a page-layout package designed for users with basic DTP requirements. Includes word-processing and text-editing, and painting tools. Version 1.1 reviewed. Version 2.0 shipping. Requires Mac Plus or later and System 6.03 or later, and a hard-disc drive recommended. $149.95. Timeworks, Inc., 625 Academy Dr., Northbrook, IL 60062, 800-525-6497 or 706-599-1300. (Dec '89) [MF#868]

**Publish III Easy **** ****
This budget DTP application has many innovative features, including a slide-show presentation and built-in File-It! database module. Menus
and dialog boxes are uncrowded and simple to use. Easy importing of text and graphics. Can’t do process-color separations. Has small disk and memory requirements. Requires system 6.03 or later, 32-bit RAM, and a hard-disk drive recommended. $89.59. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (Oct ’91) [MF#869]

**Color II++***

This affordable 2-bit paint program offers surprising strength in image processing. Delivers basic color-image-enhancement features for users who don’t need the high-end power of packages such as ColorStudio or Photoshop. Supports PICT, TIFF/Mac or TIFF/PC, PostScript, Paint, Photoshop, and CompSure GIF formats. Weak manual. Version 1.0 reviewed. Requires Mac II series or higher with 2 MB of RAM, System 6.0.5 or later, and 32-bit QuickDraw; 24-bit-color display system recommended. $119.95. MicroFrontier, Inc., 3401 101st St., Ste. E, Des Moines, IA 50322. 800-388-8109 or 515-270-8109. (Apr ’92) [MF#870]

**Color MacCheese***

Color MacCheese is an affordable, full-color painting program that is designed for artistic fun, not as a professional tool. Two nonrestrictive palettes are provided, resolution is limited to 72 dpi, and there are no rulers. Version 1.0 reviewed. $99. Delta Tao Software, Inc., 760 Harvard Ave., Sunnyvale, CA 94087. 800-827-9316 or 408-730-9336. (Mar ’91) [MF#871]

**ColorStudio***

Although decidedly more complex and difficult to learn than Photoshop, ColorStudio offers an unbeatable set of tools for professionals-quality color manipulation and high-end output. You can control color calibration, film separations, amazing special effects, and a wide range of image-editing tools. Version 1.1 reviewed. Version 1.5 shipping. Requires 24-bit color display system, $795. Fractal Design Corp., 335 Spreckels Dr., Ste. F, Palo Alto, CA 94303. 408-688-5300. (May ’91) ★ ★ 90 Eddy [MF#872]

**Digital Darkroom***

If you don’t need the color capabilities of more-expensive photo-manipulation programs, choose Digital Darkroom. Strictly for black-and-white or high-resolution grayscale images, but images can be colorized for use in other programs. Version 2.0 reviewed. Requires Mac Plus or later with 5.5 MB of RAM and a hard-disk drive and requires grayscale or color display system. $395. Aldus Corp., 411 First Ave. S., Seattle, WA 98104. 800-333-2338 or 206-626-2320. (Apr ’92) ★ ★ 90 Eddy [MF#873]

**Easy Color Paint***

Easy Color Paint is a low-cost 8-bit (256-color) painting program. Supports color QuickDraw printers and WACOM pressure-sensitive digitizing tablets. Good performance. Poor manual. Version 2.0 reviewed. Requires color-capable Mac. $89. MECC, 6160 Summit Dr. N., Minneapolis, MN 55403. 800-683-6222 or 612-569-1500. (Nov ’91) ★ ★ 90 Eddy [MF#874]

**Gallery Effects***

Enhance an affordable, 8-bit, grayscale image processor. Has many sophisticated graphics tools. Includes painting, filling, drawing tools. Can open TIFF, PICT, MacPaint, or EPS files. Has its own virtual-memory system for dealing with very large images. Tool palette is easily customized. Provides filters, masks, and anti-aliasing. Version 2.0 reviewed. Requires 68020 CPU or higher with 2 MB of RAM, System 6.0.3 or later, 32-bit QuickDraw, and a hard-disk drive; $735. MicroFrontier, Inc., 3401 101st St., Ste. E, Des Moines, IA 50322. 800-388-8109 or 515-270-8109. (May ’92) [MF#875]

**Image Studio***

Image Studio puts a complete black-and-white or grayscale photo-manipulation system in the Mac desktop. Editable brushlets let you modify digitized images in 256 grayscale levels. Version 1.0 reviewed. Version 1.7 shipping. Requires Mac Plus or higher with 2 MB of RAM, and a hard-disk drive; $199. Aldus Corp., 411 First Ave. S., Seattle, WA 98104. 800-333-2338 or 206-626-2320. (Feb ’92) ★ ★ 91 Eddy [MF#868]

**Kid Pix***

Kid Pix is a simple color painting program with entertaining sounds and attention-grabbing, animated special effects. Wacky Brushes includes drippy paint and soda-pop bubbles, and thrashes drawings, the Splash tool drops big blobs of paint, and Rubber Stamps gives you a choice of 80 images (such as frogs, birds, and ice-cream cones) and drops your choice wherever you click the cursor. Version 1.0 reviewed. Version 1.2 or Paint is a low-cost 8-bit (256-color) painting program. Supports color QuickDraw printers and WACOM pressure-sensitive digitizing tablets. Good performance. Poor manual. Version 2.0 reviewed. Requires color-capable Mac. $89. MECC, 6160 Summit Dr. N., Minneapolis, MN 55403. 800-683-6222 or 612-569-1500. (Nov ’91) ★ ★ 90 Eddy [MF#876]

**MacPaint***

MacPaint now supports multiple windows, design templates, and a magic eraser for corrections. A good starter package for kids, and a decent painting program if you only need a limited flooding capability. Version 2.0 reviewed. Requires Mac Plus or later; hard-disk drive recommended. $125. Color Studio, Inc., 1585 Charleston Rd., Santa Clara, CA 95052. 408-727-8227. (July ‘88) ★ ★ 85, ’87 Eddy [MF#878]

**Painter***

This affordable color-painting program imitates the behavior of natural media such as chalk, crayons, felt-tipped pens, airbrushes, and watercolors. Easy-to-use interface needs plenty of screen area. Comprehensive features allow extremely sophisticated control over brush texture, transparency, and simulated texture of canvas or paper surfaces. Supports Wacom pressure-sensitive digitizing stylus and tablet. Version 1.0 reviewed. Version 2.0 shipping. Requires 68020 CPU or higher with 2 MB of RAM, System 6.0.5 or later, a color display system, and a hard-disk drive. Digitizing tablet recommended. $349. Fractal Design Corp., 335 Spreckles Dr., Ste. F, Palo Alto, CA 94303. 408-688-5300. (Feb ’92) ★ ‘91 Eddy [MF#879]

**Photoshop***

This professional, 32-bit photo-retouching program combines powerful image-editing capabilities with an intimidating interface. Fast, reliable, and easy to use. Flexible file-convension options allow you to import images into Photoshop or in Macs using virtual file systems and JPEGs. Also includes CMYK editing, precise control of color separation, animation, and GCR (gray-component replacement). Can open and rasterize EPS files for use in continuous-tone images and offers a new QuickDraw Level 2. Version 2.0 reviewed. Version 2.0.1 shipping. Requires Mac II series or higher with 4 MB of RAM, a hard-disk drive (minimum of 150 MB), and a color monitor, $895. Adobe Systems, Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039-7900. 408-961-4400. (Sept ’91) ★ ★ 90, ’91 Eddy [MF#880]

**PixelPaint Professional***

PixelPaint Pro has significantly improved interface that allows multiple open documents and floating palettes. Offers extensive support for color-manipulation functions and provides an independent PostScript text layer. Includes several color-blending and manipulating tools as well as anti-aliasing capabilities. Version 2.0 reviewed. Version 2.0.1 shipping. Requires Mac II series or higher with 4 MB of RAM, a hard-disk drive (minimum of 150 MB), and a color monitor, $895. Adobe Systems, Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039-7900. 408-961-4400. (Sept ’91) ★ ★ 90, ’91 Eddy [MF#880]
What did it take to get the editors at MacWeek and MacUser to agree on the best Macintosh utility product? Unprecedented performance, compatibility, and value. In this case, a collection of 10 utilities that does for System 7 what products like SUM and Norton do for hard disks — only more so. As MacUser put it, "Now Utilities will make your Macintosh faster, easier, and more fun to use." For example:

- **StartUp Manager** provides complete extension management
- **Super Boomerang** finds files and folders instantly
- **WYSIWYG Groups** makes fonts in their own typefaces
- **Now Menus** makes the Apple Menu hierarchical
- **AlarmsClock** displays the time & reminders in the menu bar
- **NowSave** automatically saves files to prevent data loss
- **Screen Locker** keeps confidential information confidential
- **MultiMaster** launches applications and files
- **Profiler** analyzes system configurations
- **DeskPicture** puts color and B&W pictures on the Desktop

In fact, every utility in the collection is the best of its kind. As MacUser put it, "Now Utilities will make your Macintosh faster, easier, and more fun to use." For example:

- **StarUp Manager** provides complete extension management
- **Super Boomerang** finds files and folders instantly
- **WYSIWYG Groups** makes fonts in their own typefaces
- **Now Menus** makes the Apple Menu hierarchical
- **AlarmsClock** displays the time & reminders in the menu bar
- **NowSave** automatically saves files to prevent data loss
- **Screen Locker** keeps confidential information confidential
- **MultiMaster** launches applications and files
- **Profiler** analyzes system configurations
- **DeskPicture** puts color and B&W pictures on the Desktop

In every case, the utilities are designed, tested, and certified. With any utility you may have...even System 6. No wonder MacUser gave it a perfect five single user product, too.

Isn’t it time you got up-to-date?

With all this attention from the press it’s not surprising that Now Utilities is already one of the best-selling products on the Macintosh. Now Up-to-Date looks to be just as popular. Call Now at 1-800-237-3611 to learn more about both of these great products, and how they can help you get more out of your Macintosh.
MINIFINDERS

reviewed. Version 2.01 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.05 or later, and a hard-disk drive: $495. VividSys Corp., 651 Kendall Ave., Palo Alto, CA 94304. 415-494-2260. (Feb '91) ★ '88 Eddy [MF#889]

Macromind Director 7777

Macromind Director is unequaled for its combination of interactivity with animated playback of color animations. It’s a powerful, easy-to-use program that uses routines in Director’s scripting language, you can develop interactive animations and also construct multimedia presentations by CD-ROM drives, and video discs. Good for users familiar with HyperTalk scripting or similar programming. Version 2.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.05 or later, and a hard-disk drive: $495. Macromind, Inc., 60 Townsend St., Ste. 310W, San Francisco, CA 94103. 415-442-0200. (Mar '91) ★ '89 Eddy [MF#890]

Medi aMaker 3


Medi aTracks 3

MediaTracks (formerly called ScreenRecorder) is a utility for recording on-screen Mac activities. Ideal for presentations and training. Uses a tape-recorder model; "tapes" can include sounds recorded with applications such as MacRecorder and can be a fixed length or a loop. Version 1.0 reviewed. Requires Mac Plus or later: $295; Multimedia Pack, $595. Farallon Computing, Inc., 600 Townsend St., Ste. 301W, San Francisco, CA 94103. 415-442-0200. (Dec '90) ★ '90 Eddy [MF#891]

MicroMIND Director 77777


MacRecorder 777

MacRecorder is a powerful, complete desktop-presentation program. Templating and outlining capabilities have been improved considerably since the initial release, and slide shows are handled well. Version 2.0 reviewed. Version 2.1 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.05 or later, and a hard-disk drive: $495. Aldus Corp., 411 First Ave., Seattle, WA 98104. 411-333-2383 or 206-282-1200. (Nov '90) ★ '88 Eddy [MF#892]

PowerPoint 4


Appoint Thumbella Mac 777

This tiny trackball works well but is best used by the nimble-fingered because some abilities and practice. Occupies no more desk space than one Oreo cookie. Unlike larger desktop trackballs, the Thumbella Mac can be operated while supported in your hand. Requires Mac SE or later: $99. Appoint, 7026 Koll Ctr. Pkwy., Ste. 220, Pleasanton, CA 94566. 800-222-3222 or 510-417-0611. (May '92) [MF#896]

CalComp DrawingBoard 2300A 77

This high-end digitizing tablet lets you resize and reposition a drawing area. Six different input devices (pens and pucks) and several software packages are available. Requires Mac SE or II series, $495 to $2,995, depending on size. CalComp Digitizer Products Group, 14535 R. 82nd St., Scottsdale, AZ 85260. 800-345-5888 or 602-948-6540. (Oct '89) ★ '89 Eddy [MF#897]

CalComp DrawingBoard II 777

Part of CalComp’s 3300 series, this lightweight digitizing tablet has excellent control-panel software to customize response to any input. Tabletop model and pressure-sensitive design and connects to ADB port. Cordless pen and puck are battery-powered, easy to use, and accurate. The pressure-sensitive version of this tablet will use serial port. Requires Macintosh SE or later. With corded puck, $495; with cordless puck, $645.

MINICOMPUTERS

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22 Buyer’s Guide August 1992 MacUser
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SEE US AT MACWORLD EXPO BOOTH #5261
The Stingray trackball does resemble a marine creature. Low profile and simple operation may be just right for ham-fisted right- or left-handed users. Switch underneath the base lets you set the two wide, symmetrical buttons either to click and click-lock or so that both simply click. Attached ADB cord is too short to reach around Mac, so connection to keyboard port is required. Requires Mac SE or later. $129. CoStar Corp., 22 Bridge St., Greenwich, CT 06830, 800-426-7827 or 203-661-9700. (May '92) [MF#899]

Curist MVP Mouse $111

The Curtis MVP Mouse is actually a trackball, and it accepts an unusual option: a foot switch that can be used for clicking or to activate a keyboard command equivalent. The trackball has three buttons configured to suit left- and right-handed users. Requires Mac SE or later. $149.95; MVP Foot Switch, $20.95. Curtis-Magnetics Corp., Inc., 30 Fitzgerald Dr., Jaffrey, NH 03452, 800-548-4900 or 603-332-4123. (May '92) [MF#900]

EMAC Silhouette $111

The Silhouette trackball is ergonomically designed if you're right-handed. Curved base supports your hand to reduce fatigue while you hold the ball between thumb and finger. Comes with four colored balls, each with a different weight. Included software assigns keyboard-command equivalents to third button and varies speed of tracking and double-clicking. Requires Mac SE or later. $99.95. EMAC Corp., 4843 11th St., Milmont Dr., Fremont, CA 94538, 800-628-3837 or 510-498-1111. (May '92) [MF#901]

KeyTronic Turbo Mouse ADB $111

This trackball lets you reverse mousing and locking functions for left-handed users. Has a chording feature for user-specified keyboard-command-equivalent functions. Requires Mac SE or later for standard software, version 1.2, $169.95; Turbo Mouse Plus version for earlier Macs, $169.95. Kensington MicroWire Ltd., 2855 Campus Dr., San Mateo, CA 94403, 415-652-2700. (Oct '89) [MF#902]

Kurta IS $111

The Kurta IS is a digitizing tablet that is available in the IS/ADB configuration (for connection to an ADB port) or in the IS/ONE configuration (which uses the System 7.1 code). Both configurations work with corded or cordless pens and pucks, but accuracy may suffer if input pen is tilted. Complex documentation.

Logitech MouseMan $111

The MouseMan is a three-button, programmable mouse with a portable rounded design. Its MouseKey software controls speed, tracking, and sensitivity. Extra buttons can be programmed to activate different commands depending on the Mac's active application. $129. Logitech, Inc., 6505 Kaiser Dr., Fremont, CA 94555, 800-231-7717 or 510-795-8500. (Mar '92) [MF#903]

Logitech TrackMan $111

TrackMan is an elegant, practical trackball with versatile software. Ergonomic design has golf-ball-sized ball and three buttons in a rectangular base. Unusual setup uses thumb to move ball and fingers to activate buttons. Includes ability to change all assigned button settings, depending on the active application. Requires Mac SE or later. $149. Logitech, Inc., 6505 Kaiser Dr., Fremont, CA 94555, 800-231-7717 or 510-795-8500. (May '92) [MF#904]

MacPro Plus Keyboard $111

The MacPro Plus Keyboard is an easily customizable alternative to Apple's Extended Keyboard. Both the "touch" (resistance of pressure) and assigned characters of individual keys can be changed to suit different typing styles and special applications. ADB commands on the back of the keyboard prevent it from sitting flush against the Mac. Includes Tempo II macro utility, $179. Key Tronic Corp., P.O. Box 14687, Spokane, WA 99214, 800-262-6006 or 509-298-8000. (Sept '91) [MF#905]

MicroSpeed MacTrack $111

The MacTrack has three buttons located above the trackball. Light indicator signals that the lock button has been pushed. Powerful software lets you add more trackball options, including equal ease of use for right- and left-handed people. Version 2.0 reviewed. ADB version requires Mac SE or later. $99; ADB version, $119. MicroSpeed, Inc., 4400 Old Warm Springs Blvd., Fremont, CA 94538, 800-232-7810, 408-1403. (May '92) [MF#906]

Mouse Systems A3 Mouse $111

The A3 Mouse is an accurate, three-button, A/U/X-compatible input device. Has 300-dpi tracking, Adjustable scroll speed and special pad to provide smooth, responsive action. Control panel software extras include trackball move command for smooth, responsive action. Control panel software extras include trackball move command, a separate window to display mouse movement, and a scroll tool. The MouseMan is more accurate at higher resolutions. Requires Mac SE or later. $149.95. Mouse Systems, 4750 Seabridge Dr., Fremont, CA 94538, 510-656-1117. (Mar '92) [MF#907]

Mouse Systems Little Mouse $111

The one-button Little Mouse uses infrared light reflected from a special pad to track mouse movement. Compact, with no moving parts. Improved precision for small-on-screen objects. Use must include mouse pad. Tracking resolution is 300 dpi. $134.95. Mouse Systems, 4750 Seabridge Dr., Fremont, CA 94538. 510-656-1117. (Mar '92) [MF#907]

Advanced Gravis Computer Technology MouseStick $111

The MouseStick is a joystick with programmable buttons. Buttons can perform mouse-type functions or execute keyboard commands with single-, double-, or triple-clicking. Available in ADB and non-ADB versions. $99.95. Advanced Gravis Computer Technology Ltd., 7400 MacPherson, Ste. 111, Burnaby, British Columbia V5J 5B6, Canada, 604-431-5200. (Oct '89) [MF#908]

Numonics GraphicMaster $111

The GraphicMaster is a light, portable digitizing tablet that offers easy plug-and-play setup. Highly designed, accurate pen and puck. No cordless pointing devices are available. Requires Mac SE or later. $945. Numonics Corp., 101 Commerce Dr., Montgomeryville, PA 18936, 215-362-2766. (Apr '92) [MF#909]

Sophisticated Circuits PowerKey $111

The PowerKey is a well-made add-on for Mac or SEs, and SE/30s with a power key. Included software lets you program future events much as turning on the Mac or executing a specified keystroke combination. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Classic, SE, or SE/30. $119. Sophisticated Circuits, 19017 120th Ave. N.E., Ste. 106, Bothell, WA 98011. 206-485-7979. (Sept '90) [MF#910]

Voice Navigator II $111

This package offers wide-sophisticated speech-recognition software and the elegant Navigator, a microphone and attached SCPI-interface box that digitizes sound into patterns the Mac can recognize. Surprisingly accurate voice recognition after the software has adapted to a speaker's voice. Replicates many frequent keyboard commands and learns new ones easily. Version 2.0 reviewed. Requires Macintosh Plus or later.

MICE RATINGS

8$99.97. Articulate Systems, 600 W. Cummings Park, Ste. 200, Woburn, MA 01801, 800-443-7077 or 617-935-5566. (Sept '91)

9* 890 Eddy [MF#914]

Wacom SD-510C Cordless Digitalizer $111

The SD-510C Cordless Digitalizer is light and thin. Uses a pressure-sensitive stylus requiring neither a cord nor a battery. Connects to the modem port. Sensing area is 6 x 9 inches. Resolution is 770 lpi with high accuracy. Much more responsive than a mouse. Requires Mac Plus or later. $995. Wacom Technology Corp., 501 S.E. Columbia Shores Blvd., Ste. 300, Vancouver, WA 98661, 800-922-6613 or 206-750-8882. (June '90) [MF#915]

Wacom SD420E $111

The Wacom SD420E is a digitizing tablet that's simply constructed and maintenance-free. Pressure-sensitive in combination with included cordless pen but not with included cordless puck. Excellent software controls puck options and pen's pressure sensitivity. Mouse click is always a feather-touch effort, independent of click-and-drag sensitivity. Pen and puck don't require batteries. Includes basic stand-alone application called PressurePaint, along with plug-ins for SuperPaint and UltraPaint. Several programs, including FreeHand, ColorStudio, Oasis, Painter, Photoshop, and Studio32, include pressure-sensitive features. Requires Mac Plus or later. $995. Wacom Technology Corp., 501 S.E. Columbia Shores Blvd., Ste. 300, Vancouver, WA 98661, 800-922-6613 or 206-750-8882. (Apr '92) [MF#916]

Music & Sound

Alchemy $111


Apple MIDI Interface $111

The Apple MIDI Interface is a simple musical-instrument digital interface with a 1-MHz clock rate. Has only one MIDI input and one MIDI output. Requires Mac Plus or later. $99. Apple Computer, Inc., 17025 Mariani Ave., Cupertino, CA 95014, 800-776-2333 or 408-996-1801. (Oct '90) [MF#918]

Audiomedia $111

Audiomedia turns the Mac into a self-contained digital-recording studio. Can play back, edit, and record audio. Requires Mac Plus or later. $999.97. Articulate Systems, 600 W. Cummings Park, Ste. 200, Woburn, MA 01801, 800-443-7077 or 617-935-5566. (Sept '91) [MF#914]

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When it comes to printing in the background there are plenty of spoolers to choose from. So why have over 150,000 Mac users chosen SuperLaserSpool? Because it supports more printers than any other spooler? Or because it’s the only one that supports Apple’s Image Writers and HP Laserjets, Deskjets and DeskWriters? Is it because SuperLaserSpool is compatible with many more Macintosh configurations? Or because it’s compatible with virtually every Mac application? Because only SuperLaserSpool can spool color PostScript files? Or because it spools everything and anything faster than any other spooler? Could it be our exclusive LaserQueue desk accessory that lets you preview and prioritize documents, re-route them to another printer, or print to several printers simultaneously? How about our vaunted 24-hour toll-free technical support? How about our one-year, money-back guarantee? How about picking up the phone? Dial 1-800-666-2904. It’s the right thing to do.
mix sound files and subject them to a variety of special effects. Has CD-quality sound that occupies huge amounts of hard-disk space (10 MB of disk space per minute of sound). Version 1.0 reviewed. Version 2.02 shipping. Requires Mac Plus or later, a hard-disk drive, and a hard-disk drive. $995. DigiDesign, 1360 Willow Rd., Ste. 101, Menlo Park, CA 94025, 415-688-0600. (Feb '90) ★ 89 Eddy [MF#919]

Beethoven's String Quartet

Warner New Media's second Audio Notes CD-ROM provides an ideal introduction to Beethoven's String Quartet No. 14, Op. 131. The String Quartet is easy to install and navigate. The graphic design is well suited to HyperCard's intuitive style. Requires Mac Plus or later, HyperCard, a hard-disk drive, a CD-ROM drive, and speakers or headphones. $66. Warner New Media, 550 W. Olive Ave., Ste. 1050, Burbank, CA 91505. 818-955-9999. (Mar '91) [MF#920]

Beyond

Beyond is a competent music sequencer for advanced users. Does a good job of implementing the Mac interface. Excellent manual and tutorial. Version 1.5 reviewed. Version 2.0 reviewed. Requires Mac Plus or later, MIDI interface, and MIDI synthesizer. $149 direct. Dr. T's Music Software, Inc., 124 Crescent Rd., Needham, MA 02194. 617-455-1454. (Feb '91) [MF#921]

ConcertWare / MIDI

ConcertWare / MIDI is a composition and transcription program that can record multiple notes from a MIDI keyboard. Easy to use if you can read music. Handles eight tracks of MIDI data. Version 2.2 reviewed. $99. Great Wave Software, Inc., 1583 Willow Valley Dr., Ste. E. Scotts Valley, CA 95066. 408-438-1990. (Dec '87) [MF#922]

Cubase

This Mac MIDI sequencer has a good interface that lets you edit while a sequence is playing. Provides four windows for editing of different instruments at the MIDI event-level. Has intuitive toolbox-style control over sounds as well as a logical editor that fine-tunes compositions according to Boolean conditions. Timing resolution is only 192 ticks per quarter note. Includes driver for DigiDesign's SampleCell Nuendo. Requires Mac II or later with Apple's MIDI Manager. Copyrighted. Version 1.8 reviewed. Requires Mac II series or higher with 4 MB of RAM and a hard-disk drive. $495. Steinberg/Homes, 17700 Raymer St., Northridge, CA 91325. 818-993-4091. (Feb '92) [MF#923]

Cue: The Film Music System

This powerful and versatile assistant for scoring films automates spotting and logging cue points and searching for matching tempos. Version 2.0 reviewed. Version 3.0 optional shipping. Requires Mac Plus or later, a PostScript or QuickDraw printer, and a hard-disk drive; MIDI interface optional. Requires Finale, Inc., 100 Pine Stone Rd., Half Moon Bay, CA 94019. 415-726-2080. (May '90) [MF#929]

Deck

Deck is a completely software-generated recording system with an interface resembling the famous Tascam PortaStudio four-track cassette recorder. MIDI and acoustic input can be mixed and synchronized, producing CD-quality stereo that's easy to access and manipulate. Version 1.0 reviewed. Version 1.03 shipping. Requires DigiDesign's Media or Sound Tools card, $349. DigiDesign, 1360 Willow Rd., Ste. 101, Menlo Park, CA 94025. 415-688-0600. (Feb '91) ★ 90 Eddy [MF#923]

Deluxe Music Construction Set

Deluxe Music Construction Set lets you create as many as 48 voices on eight staves and play the music through the Mac's internal speakers and/or MIDI Cop-protected. Version 2.0 reviewed. Version 2.5 shipping. Requires Mac Plus or later; hard-disk drive recommended. $129.95. Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404. 800-245-4525 or 415-571-7171. (June '88) [MF#926]

DigiDesign MacProteus

The MacProteus is a Mac II NuBus card. The card operates as a MIDI-controlled playback device for desktop music production and can be controlled from Mac software that use Apple's MIDI Manager and PatchBay software. Can play 16-bit linear, 39-KHz mono or stereo samples that can be created with it. Version 1.02 reviewed. Requires Mac II series or higher. $895. DigiDesign, 1360 Willow Rd., Ste. 101, Menlo Park, CA 94025. 415-688-0600. (Feb '91) ★ 90 Eddy [MF#927]

Dr. T's Intro+

For beginning MIDI musicians on a budget, Dr. T's Intro+ is ideal. Includes Dr. T's Beyond 1.6 sequencing software, Great Wave Software's Music Writer 8.2 MIDI instrument and digital audio, and an Altech 1-in-3-out MIDI interface. Requires Mac Plus or later with 2 MB of RAM and a hard-disk drive. $399; upgrade to Beyond 2.0, $40. Dr. T's Music Software, Inc., 124 Crescent Rd., Needham, MA 02194. 617-455-1454. (Dec '90) [MF#928]

Encore

Encore is a quasi-rule-based music notation program with a nice interface. It supports multiple files and can deal with large scores. Good printing options. Version 1.1.6 reviewed. Version 2.5 shipping. Requires Mac Plus or later, a PostScript or QuickDraw printer, and a hard-disk drive; MIDI interface optional. Requires Finale, Inc., 100 Pine Stone Rd., Half Moon Bay, CA 94019. 415-726-2080. (May '90) [MF#929]

EZ Vision


Finalle

Finalle is a complex, revolutionary music notation program. Packs power and has a real-time improved interface. Provides absolute control over all the music elements in large-scale composition and/or publishing projects. Version 2.0 reviewed. Version 2.63 shipping. Requires Mac Plus or later, a MIDI interface and a hard-disk drive, and a printer. $749. Coda Music Software, 1401 E. 79th St., Bloomington, MN 55420. 800-434-2066 or 612-854-1288. (May '90) [MF#931]

Galaxy

Galaxy is a universal patch-library program for MIDI synthesizers. When instruments are organized in a hierarchy, an entire Galaxy setup can be loaded with one command. Has many features, is easy to use, and allows connections. Version 1.0 reviewed. Version 1.05 shipping. Requires Mac Plus or later, a hard-disk drive, and a printer, $749. Coda Music Software, 1401 E. 79th St., Bloomington, MN 55420. 800-434-2066 or 612-854-1288. (May '90) [MF#931]

Harmony Grid

Harmony Grid offers an experimental approach to harmony theory. Uses a grid to show scales and chords as repeating patterns. Users play tones by moving the mouse over the grid, resulting in improvisation without requiring any training or technique. Supports MIDI. Version 1.05 shipping. Requires Mac Plus or later, a MIDI synthesizer recommended. Requires Finale, Inc., 100 Pine Stone Rd., Half Moon Bay, CA 94019. 415-726-2080. (Dec '87) [MF#936]

Music Mouse

This program gives you instant music notation. Click a mouse and type on the keyboard, which controls tempo, vibrato, volume, and so on. Version 1.0 reviewed. Version 2.04 shipping. Requires Mac Plus or later. $49 direct. Dr. T's Music Software, Inc., 124 Crescent Rd., Needham, MA 02194. 617-455-1454. (May '87) [MF#938]

Performer

Performer is a full-featured MIDI sequencer that includes looping, EMIDI, built-in drum kits, and sound effects. Includes In's and Outs, unlimited overdubbing, and compatibility with Professional Composer for transcription. Version 2.2 reviewed. Version 3.0 reviewed. Version 3.01 shipping. Requires Macintosh Plus or later with 2 MB of RAM, System 6.03 or later, and MIDI interface, and two floppy drives; hard-disk drive recommended. $495; MIDI Time Piece interface, $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. 617-254-5234. (Aug '90) [MF#931]
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Circle 180 on Reader Service Card.
Practica Musica

Practica Musica uses an interactive game-and-practice approach to teach music theory and ear training. Excellent tool for serious music study as well as for developing a trained ear for intervals, chords, and melodies. Supports MIDI. Version 1.0 reviewed. Version 1.1 reviewed. Version 1.2 reviewed.

SampleCell

SampleCell is a sample-playing Mac Plus/II NuBus card. Excellent software with more than 3000 768x768 samples on a CD-ROM. Hardware comprises a SIMM-less NuBus card socketed for 8 MB of RAM. Card can store as much as 100 seconds of 16-bit sound samples at 44.1 kHz. Each card runs 16 MIDI channels. Supports MIDI keyboards, sequencers, and programs compatible with Apple's MIDI Manager. Version 1.1 reviewed. Version 1.3 shipping. Requires Mac Plus or later.

TurboSynth


UpBeat


Vision

This Mac software supports full SMPTE control, event-list and graphics editing; real-time and step recording; looping; tempo changes; and automatic standard MIDI files. Copy-protected. Version 1.0 reviewed. Version 1.2 shipping. Requires Mac Plus or later, MIDI interface, and MIDI synthesizer. $495. Opcode Systems, Inc., 3641 Haven Dr., Ste. A, Menlo Park, CA 94025. 415-369-8060. (July '91) [MF#948]

Networking & Connectivity

3Com EtherLink/SE

This Ethernet interface has very fast SE client, server, and raw performance. Version 1.0 reviewed. Requires Mac SE. $595. 3Com, 5400 Bayfront Plaza, Santa Clara, CA 95052. 408-638-3266 and 800-766-2500. (June '90) [MF#949]

AccessPC

AccessPC is an INIT that lets the Macintosh desktop mount DOS and floppy disks as well as PC-compatible removable cartridges. Assigns Macintosh and Type 1/2 channels to DOS files, which lets specified Mac applications open them automatically when opening through Apple File Exchange. Works with DOS floppy drives from Apple, PLI, and Kentec. Works well with Insignia Solutions' SoftPort running PC applications on a Mac hard-disk drive. Version 1.1 reviewed. Requires any Mac with a 9-pin MIDI SuperDrive, external DOS floppy drive, or PC-compatible cartridge drive. $99. Insignia Solutions, 526 Clyde Ave., Mountain View, CA 94043. 415-964-7000. (Aug '91) [MF#950]

AtisaTalk

AtisaTalk, a file server for networked Macs, provides numerous features for VAX, DOS, and Mac interoperability. Slew for AFP file sharing and requires knowledge of VMS. Version 3.3 reviewed. Requires VAX. Ten-user license unlimited, $4700. Atisa Systems, 221 E. Walnut St., Ste. 175, Pasadena, CA 91101. 818-792-9474. (June '91) [MF#951]

Apple Ethernet NB Card

This excellent performer in file-transfer tests has 3Com hardware and good raw performance. Requires NuBus and an available NuBus adapter required for use in II. $242. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 408-765-2355 or 800-966-1010. (June '90) [MF#952]

AppleShare Server

AppleShare is powerful, inexpensive file-server software. Fast and easy to configure. Lets network users protect files from other users at the folder level. Allows a maximum of 120 simultaneous users, and multiple applications can run on the server. Version 3.0 reviewed. Requires a dedicated Mac SE/30 or higher with 4 MB of RAM. System is an event-driven, fast hard-disk drive. $1,199. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-966-1010. (Apr '92) [MF#953]

AppleTalk Internet Router

This software router can create a large Internet with Ethernet and TokenTalk. Doesn't support dial-in access but supports AppleTalk Phase 2, mixed Phase 1 and Phase 2, and Token-ring networks. Version 2.0 reviewed. $399. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-966-1010. (Apr '91) [MF#954]

Quadralink

Asante MacCon+30i ET

In addition, this Ethernet device is a very fast AppleTalk Phase 1 server. Fast raw performance. Requires Mac SE/30 or higher. $299. Asante Technologies, Inc., 604 Tasman Dr., Sunnyvale, CA 94089. 800-662-9686 or 408-752-8388. (Sept '91) [MF#957]

Asante MacCon+ 30i LC

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, diagnostic software, and link-integrity LED. Five-year warranty. Requires Mac SE/30 or higher. $299. Asante Technologies, Inc., 604 Tasman Dr., Sunnyvale, CA 94089. 800-662-9686 or 408-752-8388. (June '90) [MF#958]

Asante MacCon+30i LC

This new card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, diagnostic software, and link-integrity LED. Five-year warranty. Requires Mac SE/30 or higher. $299. Asante Technologies, Inc., 604 Tasman Dr., Sunnyvale, CA 94089. 800-662-9686 or 408-752-8388. (Sept '91) [MF#959]

Asante MacCon+ LC

This PDS card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, diagnostic software, and link-integrity LED. Five-year warranty. Requires Mac SE/30 or higher. $299. Asante Technologies, Inc., 604 Tasman Dr., Sunnyvale, CA 94089. 800-662-9686 or 408-752-8388. (Sept '91) [MF#959]

**Carleton E6000 $$$$$**

Inexpensive and fast networking service is a very fast AppleTalk Phase 2 server. Optional fiber-optic-transceiver. Version 2.0 reviewed. Version 2.32 shipping. Requires Mac SE/30. $449 to $589. Cabletron Systems, 35 Industrial Way, P.O. Box 6257, Rochester, NH 03876. 603-332-9400. (June '90) [MF#962]

**Carleton Systems E6010 DNS $630**

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, diagnostics software, and link-integrity LED. Doesn't auto-configure. Good manual. Version 2.0 reviewed. Version 2.32 shipping. Requires Mac II series. $129 to $299. Cabletron Systems, 35 Industrial Way, P.O. Box 6257, Rochester, NH 03876. 603-332-9400. (Sept '91) [MF#963]

**Carbon Copy/Mac $**

This screening program lets you access another networked Mac for technical support, training, or file management. Supports network and modem connections in the same package. Version 2.0 reviewed. Requires Mac Plus or later and System 6.04 or later. Single user. $99; per AppleTalk zone. $299. Microcom, Inc., 500 River Ridge Dr., Norwood, MA 02062. 781-324-6500 or 800-761-5571. 1000. (Dec '91) [MF#965]

**Cayman GatorBox CS $$$$$$**

This EtherTalk/LocalTalk hardware router offers many gateway features, including TCP/IP connectivity. No battery backup. Supports AppleTalk Phase 2, mixed Phase 1 and 2 networks, SNMP and other protocols, but has only one LocalTalk port. With optional GatorShare software, a UNIX host looks like an AppleShare server. Untility software costs $395. Cayman Systems, 26 Ladesdowne St., Cambridge, MA 02139. 617-867-1988. (Apr '91) [MF#966]

**Cayman GatorCard E/II $$$$$$**

This very fast Ethernet interface uses top-notch Racial InterLAN hardware. Includes thicknet AUI capable Mac. $449. Cayman Systems, 26 Ladesdowne St., Cambridge, MA 02139. 617-494-1999. (June '90) [MF#967]

**cc:Mail Mac Platform Pack $$$$$$$**

cc:Mail is an E-mail application featuring keyboard loading of recipient names, message prioritizing, multiple enclosures, return receipt, diagnostics software and link-integrity LED, and archiving. Requires PC for setup, administration, and server-to-server traffic. Version 1.22 reviewed. Version 1.3 shipping. Requires Mac II Plus or later. System 6.03 or later, and network file server. $495: 8 users, $195 extra; 25 users, $395 extra. cc:Mail, 214 Landings Dr., Mountain View, CA 94034. 800-448-2500 or 415-961-8800. (Mar '92) [MF#968]

**Compatible Systems Ether/Route $$$$$$**

This hardware EtherTalk/LocalTalk router is easy to set up and use. Offers fast, solid performance. Includes 10BASE-T and 10BASE-2 cards. Requires Mac II series. $1,995. cabletron. Version 1.0 reviewed. Version 1.1 shipped. Requires Mac II series. $295. Cabletron Systems, P.O. Box 17220, Boulder, CO 80308. 303-252-0859 or 303-444-9532. (Aug '91) [MF#969]

**Compatible Systems Ether2 TP $$$$$$**

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, diagnostics software, and link-integrity LED. Doesn't auto-configure. Version 1.0 software reviewed. Version 1.1 shipped. Requires Mac II series. $295. Cabletron Systems, P.O. Box 17220, Boulder, CO 80308. 303-252-0859 or 303-444-9532. (Sept '91) [MF#970]

**DALL (Data Access Language) $**

DALL is an application-programming interface for client/server database access. Server operating systems include IBM MVS and VM as well as VAX, VMS, and MVS and VM. Version 1.2 shipping. Free with System 7. Client Toolkit, $695; servers, $5,000 to $20,000. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 408-776-2333 or 408-996-1010. (Jan '91) [MF#971]

**DataBank Classic $**

DataBank Classic is distributed file system management software with the look and feel of a dedicated AppleShare server. Requires an AppleTalk Phase 1 network or Phase 2 with only a router present. Incomplete manual. Version 1.1 reviewed. Version 2.0 shipping. Requires Macintosh Plus or later with 2 meg of RAM and System 6.0 or later. $175: three-user package, $395; ten-user package, $795. Novell, Inc., 122 E. 1700 S., Provo, UT 84606. 800-453-1267 or 801-429-7000. (Sept '91) [MF#972]

**Dayna DayaPORT E/LCT $**

This PDS card provides 10BASE-T Ethernet networking capability..Lacks additional ports. Comes with diagnostic software and link-integrity LED. FPU socket on board. Lifetime warranty. Version 1.0 software reviewed. Version 1.15 shipping. Requires Mac LC. With math coprocessor, $389. Dayna Communications, Inc., 50 S. Main St., Salt Lake City, UT 84144. 801-531-6600. (Sept '91) [MF#973]

**Dove FastNet SE $**

This EtherTalk interface has average performance. Good diagnostics. Version 2.2 shipping. Requires Mac SE. $299. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. 800-788-6833 or 919-763-7188. (June '90) [MF#974]

**EMAC SpeedLink/II TP $**

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port, thicknet Ethernet networking capability. Supports EtherTalk Phase 2, mixed Phase 2. Supports 10BASE-T and 10BASE-2 cards. Requires Mac SE. 299. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. 800-788-6833 or 919-763-7188. (June '90) [MF#975]

**EMAC SpeedLink/SE30 TP $**

This card provides 10BASE-T Ethernet networking capability. Requires Mac SE/30. $249. Farallon Computer Corp., 200 Powell St., Ste. 600, Emeryville, CA 94608. 510-959-9000. (Sept '90) [MF#979]

**Farallon PhoneNET (Mac II) Card for Ethernet $**

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port and link-integrity LED. Requires Mac SE/30. $249. Farallon Computing, Inc., 200 Powell St., Ste. 600, Emeryville, CA 94608. 510-959-9000. (Sept '90) [MF#979]

**Flash TP**

Flash TP is a DANNET combination that transfers files in the background. Uses Finder folders to send and receive files. Lets you create a dedicated server, which sends copies of a file to everyone in a group. Good performance. Version 1.0 reviewed. Version 1.1 shipping. $199.50 per zone. Beagle Bros, 6215 Ferris St., Ste. 100, San Diego, CA 92121, 619-452-5500. (Sept '90) [MF#980]

**GraceLAN $**

GraceLAN is a network-management software that collects detailed information about connected Macs. Version 2.0 reviewed. 50 users, $495; 200 or more users, $1,195. Technology Works, Inc. 4030 Braker Lane W., Ste. 350, Austin, TX 78759. 512-794-8533. (Oct '91) [MF#981]

**InBox Plus $**

This E-mail system runs on any HFS-compliant file server such as Macs, PCs, Superservers, or VAXes. Clients can be either Macs or PCs. Supports AppleShare, NetWare, 3.x, LAN Manager, and NetManage. There are only Menu and Phone message forms. Limited user-customizable features. Excellent manual. Allows unlimited number of file enclosures, but maximum number of users per server is 250. Version 3.06 reviewed. Requires Mac Plus or later and System 4.2 or later. 50 users, $995; 100 users, $1,595; 200 users, $5,995. Sitka Corp., 950 Marina Village Pkwy., Alameda, CA 94501. 800-445-8677 or 510-769-0073. (Mar '92) [MF#982] 86 Eddy [MF#983]

**InterPoll $**

This simple, reliable network-analysis program is suitable for small LocalTalk networks (5 to 20 nodes). Doesn't support EtherTalk, but can create simulated network traffic for analysis. $129.
Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Feb '92) [MF#986]

LapLink Mac III
t
LapLink Mac III is a Mac-to-DOS and DOS-to-Mac file transfer program that lets you have control from either computer. Use a special cable to provide 750-Kbps transfer. It has an INT that gives you the option of making remote Mac's files even when LapLink isn't running. Version 3.0 reviewed. Version 3.2 shipping. Requires Mac Plus or later and System 5.0 or later. $149.95. Traveling Software, Inc., 18702 N. Creek Pkwy., Bothell, WA 98011. 800-343-3800 or 206-483-6088. (Sept '90) [MF#985]

LocalSwitch
t
This network-protocol analyzer software can create simulated network traffic files and has many useful features. Supports AppleTalk and SNMP. Suitable for novices willing to learn basic protocols. Version 1.01 reviewed. Version 1.1 shipping. Requires Mac SE/30 or higher and System 6.05 or later. $495. AG Group, 2540 Camino Diablo, Walnut Creek, CA 94596. 510-937-7900. (Feb '92) [MF#986]

MacProducts Magic EtherNet II/10T
t
This bus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port. Lacks diagnostic software and link-integrity LED. Doesn't auto-configure. Lifetime warranty. Requires Mac II series or higher. $199. MacProducts USA, Inc., 608 W. 22nd St., Austin, TX 78705. 800-622-3479 or 512-472-8881. (Sept '91) [MF#988]

MacTopS
t
MacTopS is file-server software designed to work with Macs together on a computer platform. Slow for large networks but supports communication with DOS compatibles and UNIX machines. Files and subdirectories are accessed transparently as if they were Mac folders. Unlimited number of simultaneous users. 3.0 reviewed. Version 3.1 shipping. Requires Mac Plus or later and System 6.03 or later. $299 per node; three-user pack, $399; ten-user pack, $950. Sitka Corp., 950 Marina Village Pkwy., Alameda, CA 94501. 800-289-4572 or 415-769-9669. (June '91) ★ ★ ★ ★ 87 Eddy [MF#990]

MagnetLink 3000 CB
t
This hardware bridge is fast, offers excellent data compression, and provides comprehensive diagnostics. No LocalTalk interface, but does allow dial-up asynchronous link and supports virtual DNET, IDSN, and T1 links. Interfaces include RS-232, RS-449, V.35, and Ethernet. $7,900. MagnalinCom, Publications, 63 Nahatan St., Norwood, MA 02062. 617-255-9400. (Jan '92) [MF#990]

Microsoft Mail
t
This E-mail system offers excellent server architecture and performance. Efficient single-instance storage scheme used for messages (each with a limited number of enclosed images, text files, or sounds) to multiple addresses. Provides gateways to remote sites and diskless remote access. Simple to install, maintain, and use. Version 3.0 reviewed. Version 3.5 shipping. Requires each user and each server to run MultiServer, System 6.05 or later, and a hard-disk drive. 5 users, $395; 20 users, $1,349; Mail Server software, $395. MicroSoft Corp., One Microsoft Way, Redmond, WA 98052. 800-426-3000 or 206-882-8080. (Mar '92) ★ ★ ★ ★ 87 Eddy [MF#991]

MultiPort
t
Multi Port is an external device that provides six new serial ports and four ADB ports. Plugs in to the Mac's two serial ports and an ADB port. Although ADB bus standard can address as many as 16 devices, Apple discourages use of more than 3, so MultiPort's optional power supply is recommended to prevent a blown fuse or toasted ADB circuitry in your Mac. Version 1.0 reviewed. Requires Mac SE or later. $169; optional power supply, $395. Silicon Valley Bus Co., 25546 Summit Rd., Los Gatos, CA 95030. 408-353-6600. (July '92) [MF#992]

National Semiconductor EthernetNode+16 NB-T
This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port and good diagnostic software. Five-year warranty. Requires Mac II series. $399. National Semiconductor, P.O. Box 80990, Santa Clara, CA 95052. 800-538-8510 or 408-721-5020. (Sept '91) [MF#993]

NetFinder Ethernet
t
This network-protocol analyzer software has an intuitive, clean interface and excellent on-line help. Can't create simulated network traffic for analysis and doesn't support SNMP. Supports only AppleTalk protocols. Version 1.0 reviewed. Version 1.1 shipping. Requires System 6.03 or later and 2 MB of RAM. $995. Neon Software, Inc., 1009 Oak Hill Rd., Ste. 203, Lafayette, CA 94549. 510-283-9771. (Feb '92) [MF#994]

NetMinder LocalTalk
t
This network-protocol analyzer software has an intuitive, clean interface and excellent on-line help. Can't create simulated network traffic for analysis and doesn't support SNMP. Supports only AppleTalk protocols. Version 1.0 reviewed. Version 1.1 shipping. Requires System 6.03 or later and 2 MB of RAM. $995. Neon Software, Inc., 1009 Oak Hill Rd., Ste. 203, Lafayette, CA 94549. 510-283-9771. (Feb '92) [MF#994]

NetWare for Macintosh
t
NetWare for Macintosh lets Macs on LocalTalk or Ethernet networks connect to a NetWare file server, using AppleShare client software. Requires PC-based setup and administration, but offers extremely fast performance and provides connectivity to DOS, OS/2, Windows, and UNIX platforms. Powerful-data-security features. Version 3.0 reviewed. Version 3.0 shipping. Requires 386- or 486-based PC for server, plus another PC for administration, and NetWare 3.1 file-server software. 20 users, $895; 100 users, $1,995; NetWare 3.1, 20 users, $3,495; 100 users, $6,995. Novell, Inc., 122 E. 1700 S., Provo, UT 84606. 800-453-1267 or 801-429-7000. (Nov '91) ★ ★ ★ ★ 88, '91 Eddy [MF#995]

Network Supervisor
This network-management software collects detailed information for comparison of network performance and complex interfaces, but has been internal database manager with sophisticated analytical capabilities. Version 1.0 reviewed. Version 1.0.6 reviewed. Version 2.0 shipping. Requires Mac II series or higher with 4 MB of RAM, System 6.03 or later, and a hard-disk drive. $25 users, $495; 50 users, $795; unlimited license, $1,295; developer kit, $3,950. CSG Technologies, 330 William Penn Pl., Pittsburgh, PA 15219. 800-366-4622 or 412-471-7170. (Oct '91) [MF#997]

Nuvotech Nuvolink SC-T
t
This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port and link-integrity LED. Lacks diagnostic software. Doesn't auto-configure. Requires Mac II series. $395. Nuvotech, Inc., 2015 Bridgeway, Sausalito, CA 94965. 415-808-6833 or 415-351-7815. (Sept '91) [MF#999]

Oracle for Macintosh
Oracle for Macintosh is more a development tool kit than an end-user product. It allows the creation of powerful front-end Mac applications that can access Oracle databases on mainframes and mini-s, Version 1.1 reviewed. Version 2.0 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.03 or later, and a hard-disk drive. Single-user version, $299; NetWorkStation version, $299; database version, $699. Oracle Corp., 300 Oracle Pkwy., Redwood City, CA 94065. 800-343-3267 or 415-505-7000. (June '89) [MF#1000]

PacerForum
t
The PacerForum package is a groupware software package for a Macintosh-based file-server system for your Mac LAN. For large, networked organizations, provides a convenient way to communicate via groups, applications, and voice messages. Easy for novices to use. Flexible bulletin-board interface supports pop-up menus and flashing icons to alert you to new messages. Version 1.0 reviewed. Requires Mac Plus or later with 2 MB of RAM, System 6.04 or later, and a hard-disk drive. Five-user pack, $395; 20-user pack, $1,995. Pacer Software, Inc., 7911 Herschel Ave., Ste. 402, La Jolla, CA 92037. 619-454-0565. (June '92) [MF#1001]

PacerShare
PacerShare is a fast VAX server. Maximum number of simultaneous users is 500. Supports Ethernet file server. Requires VAX. 10 users, $2,100; 20 users, $3,750. Pacer Software, Inc., 7911 Herschel Ave., Ste. 402, La Jolla, CA 92037. 619-454-0565. (June '92) [MF#1002]

Pathworks for Macintosh
t
This file server for networked Macs provides self-installing extensive VAX connectivity. Bundled with Mail for Macintosh, MacTerminal 3.0, and MacX. Supports Ethernet but not LocalTalk. Cannot be administered from a Mac. Version 1.0 reviewed. Requires VAX. Client license, $308; media and documentation, $493. Digital Equipment Corp., 146 Main St., Maynard, MA 01754. 508-493-5111. (June '91) [MF#1003]

pCMACTERM II
pCMACTERM II lets your Mac take control of a DOS machine from the Mac keyboard. Allows DOS application or DOS game to share the Mac. Version 1.1 reviewed. Version 3.11e shipping. Requires Mac Plus or later, System 6.03 or later, printer, PC or later, DOS 2.0
QuickMail is an E-mail package that is compatible with a network that can extend up to 3,000 feet. Unused preinstalled phone cabing can be used for the network. A 10-user pack costs $395; a 50-user pack, $1,595. Farallon Computing, Inc., 2000 Powell St., Ste. 600, Emeryville, CA 94608. 510-596-9000. (Jan '92) [MF#1001]

PhoneNET Connector Series 300

PhoneNET is an AppleTalk-compatible network that can connect up to 300 users. A 10-user pack costs $2,995; a 50-user pack, $11,995. Racal Interlan, 155 Swanston Rd., Boxborough, MA 01719. 508-526-8259 or 508-263-9299. (June '90) [MF#1009]

Racal InterLAN MacConnect NICSIA-10-10BT

This fast Ethernet interface card is designed for Mac users. The Racal InterLAN MacConnect NICSIA-10-10BT is compatible with AppleTalk. It supports 10BASE-T Ethernet networking and link integrity LED. The warranty requires Mac II series. Version 2.4, 2.5. The unit costs $299. Shiva Corp., One Cambridge Center, Cambridge, MA 02142. 800-458-3550 or 617-252-6300. (Sept '91) [MF#1015]

Shiva FastPath

This hardware EtherTalk/LocalTalk router supports DECnet current software. It is a K-Star 8.0.1, can handle one LocalTalk and one EtherTalk network. Offers full support for TCP/IP. AppTalk Phase 2, or mixed Phase 1 and Phase 2 networks, but only one LocalTalk port is provided. Version 4.4 reviewed. Version 5 shipping. 2.799 Shiva Corp., One Cambridge Center, Cambridge, MA 02142. 800-458-3550 or 617-252-6300. (Apr '91) [MF#1017]

Shiva TeleBridge

This WAN router is a stand-alone hardware device that is faster than a software-only solution, but speed is still limited by the modem linked (via TeleBridge) to a LocalTalk No. EtherTalk interface. $599. Shiva Corp., One Cambridge Center, Cambridge, MA 02142. 800-458-3550 or 617-252-6300. (Jan '92) [MF#1018]

Send Express

This software is a complex DA/INIT combination that sends files or Clipboard content in the background. Version 1.0 reviewed. $299. Sonic Systems, Inc., 21211 Rainbow Dr., Cupertino, CA 95014. 408-725-1400. (Oct '91) [MF#1011]

Sequelink

This is an application-programming interface. Sequelink provides a faster alternative to Apple's DAL but is difficult to use. Server operating systems supported include VAX/VMS and SCO XENIX. Client operating systems supported include the Mac OS, Windows 3.0, and OS/2. Per user, $695; servers, $4,995. TechNosis, Inc., One Park Pl., 621 N.W. 53rd St., #340, Boca Raton, FL 33487. 800-725-7565 or 407-990-6620. (Sept '90) [MF#1013]

Shiva EtherGateway

This hardware/software route combination includes an Ethernet interface. Besides LocalTalk and LinkTalk, it supports asynchronous links to synchronous DDS, ISDN and T1 links. $1,899. Shiva Corp., One Cambridge Center, Cambridge, MA 02142. 800-458-3550 or 617-252-6300. (Jan '92) [MF#1014]

Shiva EtherPort ITT

This NuBus card provides 10BASE-T Ethernet networking capability. Includes thicknet AUI port diagnostic software, and link-integrity LED. Doesn't auto-configure. Requires Mac II series. $199. Sonic Systems, Inc., 21211 Rainbow Dr., Cupertino, CA 95014. 408-725-1400. (Sept '91) [MF#1020]

Sonic Systems EtherTalk/WP/LC

This PDS card provides 10BASE-T Ethernet networking capability. Lacks diagnostic software, and link integrity LED. Provides diagnostic software. FPU socket on board. Requires Mac LC. $199. Sonic Systems, Inc., 21211 Rainbow Dr., Cupertino, CA 95014. 408-725-1400. (Sept '91) [MF#1021]

Sonic Systems EtherTalk/WP/SE

This PDS card provides 10BASE-T Ethernet networking capability. Lacks diagnostic software, and link integrity LED. Provides diagnostic software. Requires Mac SE/30 or IIfi. $199. Sonic Systems, Inc., 21211 Rainbow Dr., Cupertino, CA 95014. 408-725-1400. (Sept '91) [MF#1022]

Sonic Systems EtherTalk/SE

This PDS card provides 10BASE-T Ethernet networking capability. Lacks diagnostic software, and link integrity LED. Provides diagnostic software. Requires Mac SE/30 or IIfi. $199. Sonic Systems, Inc., 21211 Rainbow Dr., Cupertino, CA 95014. 408-725-1400. (Sept '91) [MF#1023]

Sonnet Macintosh

This is an application-programming interface for client/server database access. Server operating systems include IBM MVS and VM, VAX/VMS, UNIX, and OS/2. Version 1.2 shipping. $209 per user. Oracle database for Mac, $699; server, $920 to $13,000. Oracle Corp., 500 Oracle Pkwy., Redwood Shores, CA 94065. 415-593-2045 or 415-506-7000. (Jan '91) [MF#1024]

Status Mac

Status Mac is a network management software that collects detailed information about connected Macs. Offers thorough, rapid performance and good interface. Version 2.5, 25 users, $449; unlimited users, $1,199. ON Technology, Inc., 155 Second St., Cambridge, MA 02142. 617-876-9000. (Oct '91) [MF#1025]

Technology Works NuBus 10T/Thin/AUI Ethernet card

This NuBus card provides 10BASE-T Ethernet networking capability. Includes BNC and AUI ports. Lacks diagnostic software, and link integrity LED. Does not auto-configure. Requires Mac II series. $429. Technology Works, Inc., 4030 Braker Lane W., Ste. 350, Austin, TX 78756. 512-794-8333 or 512-794-8333. (Sept '91) [MF#1026]

Turbomaker

This network configuration tool supports both LocalTalk and EtherTalk. It can create simulated network traffic for analysis and has intuitive interface. $695. Farallon Computing, Inc., 2000 Powell St., Ste. 600, Emeryville, CA 94608. 510-596-9000. (Dec '91) [MF#1027]

TrafficWatch II

This network traffic monitoring tool supports both LocalTalk and EtherTalk Phase 2. It can create simulated network traffic for analysis. $500. Farallon Computing, Inc., 2000 Powell St., Ste. 600, Emeryville, CA 94608. 510-596-9000. (Feb '92) [MF#1027]

TurboStar

The TurboStar distributes AppleTalk signals to devices on a network and provides network management and troubleshooting capabilities. It's very reliable, with excellent documentation and technical support. Requires PhoneNET StarController wiring kit. $1,295. Farallon Computing, Inc., 2000 Powell St., Ste. 600, Emeryville, CA 94608. 510-596-9000. (Jan '92) [MF#100]
**MINIFINDERS**

multiserver program has ambitious scope, but Heart of the Matter needs minor tweaking. Group scheduling and workgroup computing features are real benefits. User-customizable features are extensive. No remote dial-up capability. Version 3.0 reviewed. Version 3.02 shipping. Requires Mac Plus or later. System 6.03 or later, a hard-disk drive, and an AppleTalk network. $149. 20 users, $1.295; 100 users, $5,995. WordPerfect Corp., 1507 E. Franklin Ave., Nevada City, CA 95959. 800-225-4521 or 530-265-1000. (Feb '92) [MF#1033]

**Organizational Tools**

**Acta 7**

Acta 7 is an outlining application. Also comes with the Acta DA. Smart Paste lets you paste material from other applications into Acta outline format. Version 1.0 reviewed. Version 1.03 shipping. Requires System 6.0 or later. $19.5 Symmetry Software Corp., 8603 E. Royal Palm Rd., Ste. 110, Scottsdale, AZ 85258. 800-624-2485 or 602-959-9106. (Aug '89) ★ 89 Eddy [MF#1039]

**Aspects**

Aspects is the first Mac groupware product. Like multiserver datatransfer, the program allows several users with simultaneous access to multiple documents (limited by available RAM). Word-processing, drawing, and painting modes are provided, but there are no database or spreadsheet modes, outline or color support. Version 1.0 reviewed. Version 1.0 reviewed. Requires Mac Plus or later; hard-disk drive recommended. $299; 5 users, $895; 10 users, $1,295; 100 users, $7,995. Groupware Systems, 1408 N. Fillmore St., Ste. 10, Arlington, VA 22201. 800-476-8781 or 703-526-1555. (June '91) ★ 90 Eddy [MF#1040]

**ClarisWorks**

ClarisWorks is a superbly designed integrated-software package. Clean, accessible interface includes five modules for word processing, graphics, database management, spreadsheets (with charting), and telecommunications — their level of integration makes ClarisWorks a winner. Perfect for a PowerBook. Version 1.0 reviewed. Requires Mac Plus or later. MacPaint and a hard-disk drive, $299. Claris Corp., 5201 Patrick Henry Dr., Santa Clara, CA 95052. 408-727-8250. (June '92) ★ 91 Eddy [MF#1032]

**Client**

Client is an affordable, highly customizable contact manager in the form of a Card stack. Great for salespeople on a budget, especially if they're willing to learn a little HyperCard programming. Doesn't have automatic in

**DiagramMaker**

DiagramMaker is a multipurpose object-linking program. Forms a network of cross-referenced objects with connecting points at the centers, corners, or centers of sides. Customizes organization charts from text outlines. Version 1.1 reviewed. Requires Mac Plus or later and System 6.03 or later. $295. Action Software, Inc., 1507 E. Franklin Ave., Nevada City, CA 95959. 800-826-0550. (Jan '90) [MF#1034]

**Market Master**

This contact manager, based on Database Plus, is a highly automated approach to developing sales. Handles contacts with a highly customizable IF/THEN multiple-choice system and time-consuming to implement but streamlines interaction with contacts. Manages forms, envelopes, letters, and labels, but has weak mail-merge capability. Version 3.0 reviewed. Requires Mac Plus or later with 2 MB of RAM. System 6.03 or later, and a hard-disk drive. $395. Market Master, Inc., 27514. 800-826-0550. (Jan '90) [MF#1038]

**SuperClock!**

SuperClock! is a superb on-screen time indicator or clock. Has excellent timer and alarm functions.

**SuperFinder**

SuperFinder makes a ten-second call to Leitch Video's master-clock server (near the East Coast) or Macintosh's internal clock to within one-second accuracy. Version 1.81 shipping. Requires 200-bps or faster modem. Free from MacSoft, Inc., 1024 Technology Way, Orem, UT 84057. 800-451-5151 or 801-225-8613. (Feb '92) [MF#1044]

**QPID**

QPID is a contact manager, based on Database Plus, with a highly automated system for sale-lead tracking. Includes five modules for word processing, graphics, database management, spreadsheets, with charting, and telecommunications — their level of integration makes ClarisWorks a winner. Perfect for a PowerBook. Version 1.0 reviewed. Requires Mac Plus or later. MacPaint and a hard-disk drive required. $299; 5 users, $895; 10 users, $1,295; 100 users, $7,995. Groupware Systems, 1408 N. Fillmore St., Ste. 10, Arlington, VA 22201. 800-476-8781 or 703-526-1555. (June '91) ★ 90 Eddy [MF#1040]

**Desk**

Desk is a collection of seven powerful DAs: DeskPaint, DeskDraw, DeskWrite, DeskSecretary (appointment calendar), DeskCalc, and DeskFile (minidatabase program). Version 1.0 reviewed. Version 1.0 reviewed. Requires System 6.03 or later, and a hard-disk drive. $595. $195 additional user. Diamante Software, 11651 Plano Rd., Ste. 190, Dallas, TX 75243. 800-223-2165 or 214-341-6711. (Feb '92) [MF#1036]

**DiagoramMaker**

DiagramMaker is a multipurpose object-linking program. Forms a network of cross-referenced objects with connecting points at the centers, corners, or centers of sides. Customizes organization charts from text outlines. Version 1.1 reviewed. Requires Mac Plus or later and System 6.03 or later. $295. Action Software, Inc., 1507 E. Franklin Ave., Nevada City, CA 95959. 800-826-0550. (Jan '90) [MF#1034]

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Perfect for PowerBooks. Version 3.9 shipping. Requires System 4.1 or later. Free from on-line services. Steve Christensen, CompuServe, 7700 Old Pecos Trail, STEVEC (Nov '89) [MF#1048]

TeleMagic

TeleMagic is a speedy, flexible contact manager based on the powerful Personal Organizer database manager. Excellent, customizable search-and-sort features. Uses a simple notepad interface that automates the setup of all types of contacts, including those telephoned by the auto-dial feature. Plain interface and weak DTP features, but this program is for sales pros who like to drive fast. Version 1.0+ reviewed. Requires Mac Plus or later with 2 MB of RAM, System 6.03 or later, and a hard disk drive. $495; multituser network version, $9,995. Remote Control International, 5928 Fascal Ct., Carlsbad, CA 92008. 800-992-9952 or 619-431-4000. (Feb '92) [MF#1049]

Works Command

Works is an easy-to-use combination of word processor, mail manager, personal organizer, and telecommunication software. Works' spreadsheet component is a basic system that can perform most business analyses. The word-processing module is adequate for simple office needs. Version 2.0a reviewed. Requires Mac Plus or later. $249. Microsoft Corp., One Microsoft Way, Redmond, WA 98052. 800-426-9404 or 206-882-8080. (Jan '91) #86 Edy [MF#1050]

WorksPlus Command

WorksPlus Command lets you build and define macros for all Works modules. Version 1.0 reviewed. Requires Mac Plus or later and Microsoft Works. $149.95. Lundeen & Associates, 1000 Atlantic Ave., CA 94501. 800-233-6851 or 510-769-7701. (May '88) [MF#1051]

Organizational Tools/Personal-Info Managers

Address Book Plus

This handy name-and-address manager works easily as application, or included DA allows file access from other programs. Good sorting and indexing capabilities. No network capability. Version 2.0 reviewed. Requires System 6.03 or later. $99.95; upgrade, $59.95. Power Up Software Corp., 2929 Cambridge Dr., San Mateo, CA 94403. 800-851-2971 or 415-345-3900. (Feb '92) [MF#1052]

AgentDA

AgentDA is an appointment-and-reminder utility that handles most scheduling tasks quite well. The DA provides a handy function to create and maintain appointments. Unable to set up recurring appointments automatically. Version 2.0 reviewed. Requires Mac Plus or later. $119. Team Building Technologies, 836 Bloomfield Rd., Suite 205, Aquebogue, NY 11931. Canada, 514-278-3010. (Mar '92) [MF#1053]

Alerting Events

This DA provides an integrated electronic appointment book. Its interface resembles a monthly calendar, where the dates act as buttons and open up to your daily schedule. Version 1.0 reviewed. Requires Mac Plus or later, System 6.04 or later, and a hard-disk drive. $129.5. CE Software, Inc., 1801 Industrial Ct., P.O. Box 65380, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (Feb '91) [MF#1054]

Ca^T

Ca^T is a personal-information manager that tracks contacts, activities, and time. Features include capacity for an unlimited number of contacts, inserting up to 16 pages of notes, letter writing, drawing, simple math calculation, and even dialing the phone. Difficult to use. Version 1.0 reviewed. Requires Mac Plus or later. $495. Chang Laboratories, Inc., 3350 Scott Blvd., Bldg. 25, Santa Clara, CA 95054. 408-727-8096. (Oct '90) #90 Edy [MF#1055]

CalenDaR

CalenDaR is a reliable, innovative DA that manages appointments and important reminders. Offers a unified interface and excellent control of recorded or system sounds. Version 1.0 reviewed. Requires Mac Plus or later and System 6.07 or later. $60. Pysbron Systems, Inc., P.O. Box 431, Charleston, WV 25322. 800-866-sundial or 304-4260. (June '91) [MF#1056]

CalendarMaker

This utility creates a variety of calendars with excellent printing routines. Version 3.0 reviewed. Requires Mac Plus or later and System 6.04. Version 3.01 shipping. Requires Mac Plus or later and System 6.04 or later. $99.95. CE Software, Inc., 1801 Industrial Ct., P.O. Box 65380, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (Mar '92) [MF#1057]

DayMaker

DayMaker is a powerful personal-scheduling program with a clumsy interface you'll love to hate. Reliably handles nearly all the features needed for flexible time management. Has many options for alarms, reminders, and to-do lists. Includes HyperCard interface and phone directory with auto-dial support. Unable to automatically schedule repeating events and has unnecessarily complex routines for creating or deleting information. Version 1.01 reviewed. Requires Mac Plus or later. $99. Pastel Development Corp., 113 Spring St., New York, NY 10012. 212-941-7500. (May '92) [MF#1058]

DynodeX

DynodeX is a fast, powerful name-and-address manager. Complex, multifield data-entry screen is excessively customizable. Good phone-dialing features. Includes FiloFax-binder-sized paper for each entry. Other binder-paper formats are available. Imports data from tab-delimited text files and includes DA to access data when you're using other applications. No network capability. Version 2.0 reviewed. Requires Mac Plus or later and System 6.03 or later. $99; five-user pack, $99; ten-user pack, $599. North Star Computing, 319 S.W. Washington St., 11th Floor, Portland, OR 97204. 800-237-3611 or 503-274-2800. (July '92) [MF#1059]

QuickDEX II

This easy-to-use, intuitive name-and-address manager's interface resembles cards in a deck, with text entry permitted into fields in any order. A single card (record) can hold as much text as RAM will allow. Very fast. Lacks network capability. Version 1.0 reviewed. Requires Mac Plus or later; hard-disk drive recommended. $60. Casady & Greene, Inc., 22734 Portola Dr., Calabasas, CA 91302. 818-484-9228. (Feb '92) [MF#1060]

Rendezvous

This classy personal organizer has excellent performance and well-designed calendar, planner, diary, and to-do-list forms. Version 2.5 reviewed. Requires System 6.03 or later. Requires Mac Plus or later and System 6.03 or later. $200. PMC Telesystems, Inc., P.O. Box 3127, Vancouver, British Columbia V6B 3A9, Canada. 514-278-3010. (Mar '92) [MF#1058]

HyperCard

This HyperCard stack is a good genealogy program. Supports GEDCOM. Includes space for adding digitized photos, an index, and a birthday database. Includes HyperCard. Version 1.5 reviewed. Requires System 3.0 shipping. Requires Mac Plus or later and System 6.03 or later. $169. Leister Productions, P.O. Box 289, Mechanicsburg, PA 17055. 717-697-1378. (Oct '90) [MF#1066]

Smart Alarms and Appointment Diary

Smart Alarms and Appointment Diary are two bundled DAs that provide separate electronic appointment book and alarmUND REMINDER features. Let's set you simple, reliable reminders for events (including recurring projects), and these reminders pop up no matter what application you are using. Requires Mac Plus or later. $125; multituser licenses...
available. JAM Software, P.O. Box 4036, Meriden, CT 06450. 203-630-0055. (Feb '91) [MF#1067]

TouchBASE •••••

TouchBASE is a fast DA tool that provides sophisticated multiliteracy search capabilities in personal-address-book databases, supports phone numbers, mailing addresses, and permissive printing options and templates for labels, envelopes, and double-sided address books. Works well in networked multituser mode.

Version 2.0 reviewed. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive; network use requires dedicated server. $125 per user. After Hours Software, 5636 Van Nys Blvd., Ste B, Van Nuys, CA 91401. 818-780-2220. (Apr ’92) [MF#1068]

WillMaker •••••

WillMaker is a valuable program for creating wills. Not elegant but does the job reliably.

It presents a series of straightforward questions to answer or gives full information screens that explain legal issues. Its excellent manual covers the software, will creation, and professional advice. Version 4.0 reviewed. Requires Mac Plus or later and System 4.1 or later. $69.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. 800-922-6656 or 510-549-1976. (Apr ’91) [MF#1069]

ORGANIZATIONAL TOOLS/PROJECT PLANNERS & ORGANIZERS

AEC Information Manager •••••

This dedicated database program for managing project information is easy to use with Mac-Job II or MicPlanner. Helps manage data needed to make decisions and monitor status. Alarm keeps track of critical dates. Version 1.2 released. Version 1.2 reviewed, requires Mac Plus or later and a hard-disk drive. $945. AEC Software, 22611 Markay Ct., Bldg. 113, Sterling, VA 22170. 703-450-1980. (Oct ’89) [MF#1070]

Business Plan Toolkit •••••

This is the most detailed Excel spreadsheets and templates with HyperCard-based text making creating business plans and forecasts relatively easy. Version 4.0 reviewed. Requires Mac 512K or later and System 4.2 or later. $149.95. Palo Alto Software, 260 Sheridan Ave., Ste. 219, Palo Alto, CA 94301. 800-593-7526 or 415-325-3190. (Sept ’89) [MF#1071]

FastTrack Schedule •••••

FastTrack Schedule is a flexible Gannt-based project scheduler that uses a hierarchical outline format. Provides high degree of functionality and excellent on-screen and printed-graphics abilities.

Lacks spreadsheet and graphing tools as well as capabilities for reporting slipped start or completion dates. Version 1.5 reviewed. Requires Macintosh Plus or later and a hard-disk drive. $235. AEC Software, 22611 Markay Ct., Bldg. 113, Sterling, VA 22170. 703-450-1980. (June ’91) [MF#1072]

FlowMaster •••••

FlowMaster is a flowcharting package that charts your ad dol­

tion cards in innovative terms. Includes bar-chart and tabular output as well as a color-drawing environment for touching up charts. Version 2.0 reviewed. Version 2.5i shipping. Requires Mac Plus or later and a hard-disk drive. $1,200 annual license fee. Telmar Information Services Corp., 902 Broadway, New York, NY 10010. 212-460-9000. (June ’90) [MF#1073]

HBUH•••

Formerly named STELLA Software for Business, this simulation tool for modeling complex business systems. STELLA 1.0 reviewed. Version 2.01 shipping. Requires Mac Plus or later and a hard-disk drive. $695; volume and academic discounts available. High Performance Systems, Inc., 45 Lynne Rd., Ste. 300, Hanover, NH 03755. 603-822-6303 or 603-826-9636, (June ’88) [MF#1074]

KeyPlan •••••

This outline/project planner lacks some powerful tools but is easy to use. Flexible, fast, and suited for managers who need quick project-planning help. Version 1.0 reviewed. Version 1.0 shipping. Requires Mac Plus or later and System 6.03 or later. $395. MACVONK-USA Inc., 313 Iona Ave., Lansdowne, PA 19050. 215-674-0606. (Apr ’90) * 89Edy [MF#1075]

MacFlow •••••

MacFlow is a specialized flowchart tool. Creates a variety of general business diagrams, including decision trees and project-schedule charts. Top-level chart objects work like buttons in HyperCard, revealing underlying details or even launching separate applications. Version 3.5 reviewed. Version 3.7 shipping. Requires Mac Plus or later and System 6.03 or later. $345. Mainstay, 3111-B Derry Ave., Agoura Hills, CA 91301. 818-991-6540. (July ’91) [MF#1076]

MacProject II •••••

MacProject II is a well-executed PERT and CPM project-manage­


MacSchedule Plus •••••

MacSchedule Plus is a powerful Gantt-based project planning and Gantt system for advanced Gantt users. Offers project-time scaling. Limited color, graphics, and printing capabilities. Useful spreadsheet and graphing tools. Tracks slipped start or completion dates. Can calculate financial information and cost schedules. Version 1.0 reviewed. Requires Mac Plus or later and System 6.03 or later. $345. Mainstay, 3111-B Derry Ave., Agoura Hills, CA 91301. 818-991-6540. (June ’91) [MF#1078]

MetaDesign •••••

MetaDesign is a powerful organi­

zational tool. Graphically depicts relationships among systems. Complex, detailed program. Ver­

sion 1.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later and a hard-disk drive. $240. Direct Meta Software, 125 Cambridge Park Dr., Cambridge, MA 02140. 800-227-4106 or 617-576-6920. (Apr ’88) [MF#1079]

Micro Planner and Project Exchange •••••

Micro Planner and Project Exchange provide full PERT and CPM implementations with advanced resource leveling and management reporting. Output can be used easily for management presenta­

tions. Latest versions are called Manager and KeyPlan. Micro Planner version 6.1. Project Exchange version 1.08 reviewed. Manager version 1.03, KeyPlan version 2.0 shipping. Requires Mac Plus or later and a hard-disk drive. Micro Planner Manager, 5854 E. Keyer Ave., Santa Monica, CA 90406. (Oct ’89) [MF#1080]

Microsoft Project •••••

This project-management tool is powerful and flexible but suffers from its DOS heritage. Provides excellent control of custom reports, scheduling algorithms, and PERT or Gantt charts. Has frus­

trating nonstandard interface and relies heavily on special codes and memorizing file pathnames. This is a good choice only if you need a stand-alone version of your office. Version 1.1 reviewed. Requires Mac Plus or later and a hard-disk drive. $695. Microsoft Corp., One Microsoft Way, Redmond, WA 98052. 800-856-9800 or 206-882-8080. (Jan ’92) [MF#1081]

PERT & Critical Path Techniques •••••

PERT & Critical Path Techniques is a technically sophisticated project-management system. Has full function and charting capabilities, including all second-order slack and timing calculations. Doesn’t make good use of the Mac interface. Version 4.0 reviewed. Version 6.0 shipping. Requires Macintosh Plus or later. 614-455-1400. P.O. Box 379, Alburt, VT 05440. 802-932-4918. (Oct ’89) [MF#1082]

Project Scheduler •••••

This project-management software is frustratingly nonintuitive, but it has several advantages for full-time project planners. Requires that you need WBS or OBS codes. A variety of time lines and reports are possible. Version 4.0 reviewed. Version 5 shipping. $695. Seilor, 393 Vintage Park Dr., #140, Foster City, CA 94404. 415-757-7700. Jan (’91) [MF#1083]

Shift Worker •••••

Shift Worker is a quick, accurate program for organizing complicated work-shift schedules. Uses expert-system logic well but has a relatively easy-to-use interface. Handles a maximum of ten work shifts, defined by start time, meal breaks, and end time for each business. Version 1.0 reviewed. Requires Mac Plus or later and a hard-disk drive. $595. ExpertSYS­

tems, Inc., 5450 Yonge St., Melbourne, FL 32935. 407-242-0140. (June ’92) [MF#1084]

Swing Shift •••••

Swing Shift is a powerful HyperCard-based tool for organizing complicated work-shift schedules. Has busy, complicated interface that obscures its many useful features. Handles as many as 250 employees and as many as 150 work shifts. Allows either automated or manual scheduling, and alerts user to schedule conflicts. Adequate for small businesses. Version 2.0 reviewed. Requires Mac Plus or later with 2 MB of RAM, HyperCard 2.0 or later, and a hard-disk drive. $595. Gromer Designs, Inc., P.O. Box 802, Temple City, CA 91780. 818-287-5496. (June ’92) [MF#1085]

TopDown •••••

TopDown is a strong flowchart and organization-chart tool with a choice of connection modes for each individual line. Can generate text-based reports with support for color output. Comes with complete set of ANSI flowchart symbols and a custom set of symbols that combines business icons with text boxes. Good choice for systems analysts, in­

MICE RATINGS •••••

For more information, circle the MiniFinder number (MF#) on the Reader Service Card.

34 Buyer’s Guide August 1992 MacUser
This PostScript laser printer is faster and cheaper than its predecessor, the LaserWriter IIF (June '90), but its complex font graphics files and high price ($4,999) are disadvantages.

### Apple Talk/compatible printer. $499. This Apple Talk/compatible printer offers 25-to-400-year-a-year performance. Smaller and lighter than LaserWriter IIF, this printer comes with QuickEnvelope and QuickSpool II. Requires Mac Plus or later and a hard-disk drive. $499. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154. 800-422-7777 or 617-890-0880. (Sept '91) [MF#1103]

### Hewlett-Packard DeskWriter C

This affordable 300-dpi color inkjet printer has good image quality. Can show on complex color layouts, because Mac does all imaging and styling. No built-in PostScript support. Easy to use, but switching between color and black-and-white is inconvenient. 300-dpi color inkjet printer. It's slow and expensive. Based on Canon ColorWave technology. Requires Mac Plus or later and a hard-disk drive. $1,095. Hewlett-Packard Co., 3501 Santa Clara Blvd., Customer Information Center (MS #51-LSD), Santa Clara, CA 95022. 800-752-0900 or 408-725-8900. (Sept '91) [MF#1104]

### Fujitsu RX-7100PS

This PostScript personal laser printer is slow with complex graphics files but is easy to set up. The RX-7100PS uses a single sealed cartridge. Based on a Canon laserengines, has 35 built-in Adobe fonts, and has a 250-sheet paper tray. $2,599. Apple Computer, Inc., 2025 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Feb '92) [MF#1087]

### Apple LaserWriter II LS

The Personal LaserWriter LS is a 300-dpi laser printer that does not support PostScript. Slow, and no PostScript upgrade is possible. Easy-to-install consumables. Comes with 13 TrueType fonts. Output quality is excellent with Adobe Type Manager. Performance is very good. Version 1.01 (driver) performance is very poor. Requires Mac Plus or later and a hard-disk drive. $799. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154. 800-422-7777 or 617-890-0880. (Sept '91) [MF#1096]

### Dayna EtherPrint

This EtherPrint is not an EtherTalk/LocalTalk router, but it lets Laser-Writers connected on AppleTalk act like Ethernet devices. Has Ethernet and LocalTalk ports. Needs Mac Plus or later, and requires AppleTalk version 1.6 shipping. Requires LocalTalk-compatible printer. $499. Dayna Communications, Inc., 50 S. Main St., Salt Lake City, UT 84111. 801-887-8000. (Sept '91) [MF#1067]

### Fujitsu RX-7100PS

This PostScript personal laser printer comes with a single sealed cartridge. Based on a Canon laserengines, has 37 built-in Adobe fonts, and has a 250-sheet paper tray. $2,599.
One look at this Lotus® spreadsheet, and it will all come back to you. All those feelings of power and control that surfaced when you first sat down in front of a Mac.

You see, this isn't just another version of Lotus 1-2-3. It's a spreadsheet that really grabs hold of the full computing power of Macintosh. So everything you've come to love about Mac computing is now available in 1-2-3.

Take our graphing tools. They're as easy to use as the Mac itself. With just a point and a click of your mouse, you can preview, create and change all graphs. And the icon palette offers you every type of graph imaginable—3D pie charts, bar charts, area and scatter graphs—literally hundreds of variations are available to you in an array of colors.

You probably first bought your Macintosh because it would make life easier for you. You'll buy this spreadsheet for the same reason. You see, 1-2-3 for Macintosh is the only Mac spreadsheet to provide true 3D technology. So, in addition to file linking, you can use 3D to consolidate data or create multi-page reports all in a single worksheet file.
You can view and work with up to 256 worksheets simultaneously. In short, 3D makes the job of analyzing and consolidating a snap. And after using it, you'll wonder how you got along so long without it.

1-2-3 for Macintosh also offers in-cell editing, a feature that lets you edit text, formulas and data directly in the cell. So you can focus on the worksheet, instead of the formula bar above. Makes sense, doesn't it?

Because the program captures the true spirit of Macintosh, it has recently earned the Editor's Choice Award from Computer Reseller News as well as praise from Apple Chairman and CEO John Sculley, who has called it, "a spectacular product."* (He doesn't throw comments like that around every day.)

So pick up a copy of 1-2-3 for Macintosh from your favorite dealer. Or call 1-800-TRADEUP, ext. 6683 for a free working model. (Excel users, be sure to ask about our special upgrade price.)

1-2-3 for Macintosh. It'll bring back fond memories.

Lotus 1-2-3 for Macintosh

*Boston Globe 6/4/91. **There is a $5.00 fulfillment/handling charge when ordering the working model direct from Lotus. Please have your credit card and product package ready when you call. In Canada, call 1-800-60-LOTUS.
### MINIFINDERS

<table>
<thead>
<tr>
<th>Date</th>
<th>Model Name</th>
<th>Manufacturer</th>
<th>Price</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb '92</td>
<td>Kodak Diconix Color 4</td>
<td>NEC Technologies, Inc.</td>
<td>$8,995</td>
<td>High performance and excellent text readability.</td>
</tr>
<tr>
<td>Mar '92</td>
<td>Kodak Diconix M150 Plus</td>
<td>Hewlett-Packard, Inc.</td>
<td>$7,190</td>
<td>Small, efficient color printer with high-quality color output.</td>
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<td>Kodak Dcsmap 7016</td>
<td>Hewlett-Packard, Inc.</td>
<td>$995</td>
<td>Efficient color printer with high-quality color output.</td>
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<td>Kodak Epslpos 1011</td>
<td>Eastman Kodak Co.</td>
<td>$2,495</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet XL</td>
<td>Hewlett-Packard, Inc.</td>
<td>$1,655</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>$2,750</td>
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<td>$3,000</td>
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<td>$4,000</td>
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<td>Hewlett-Packard, Inc.</td>
<td>$7,000</td>
<td>Efficient black-and-white printer with high-quality output.</td>
</tr>
<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 625</td>
<td>Hewlett-Packard, Inc.</td>
<td>$7,250</td>
<td>Efficient black-and-white printer with high-quality output.</td>
</tr>
<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 650</td>
<td>Hewlett-Packard, Inc.</td>
<td>$7,500</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 675</td>
<td>Hewlett-Packard, Inc.</td>
<td>$7,750</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 700</td>
<td>Hewlett-Packard, Inc.</td>
<td>$8,000</td>
<td>Efficient black-and-white printer with high-quality output.</td>
</tr>
<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 725</td>
<td>Hewlett-Packard, Inc.</td>
<td>$8,250</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 750</td>
<td>Hewlett-Packard, Inc.</td>
<td>$8,500</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 775</td>
<td>Hewlett-Packard, Inc.</td>
<td>$8,750</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 800</td>
<td>Hewlett-Packard, Inc.</td>
<td>$9,000</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 825</td>
<td>Hewlett-Packard, Inc.</td>
<td>$9,250</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 850</td>
<td>Hewlett-Packard, Inc.</td>
<td>$9,500</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 875</td>
<td>Hewlett-Packard, Inc.</td>
<td>$9,750</td>
<td>Efficient black-and-white printer with high-quality output.</td>
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<tr>
<td>Apr '92</td>
<td>Hewlett-Packard PaintJet 900</td>
<td>Hewlett-Packard, Inc.</td>
<td>$10,000</td>
<td>Efficient black-and-white printer with high-quality output.</td>
</tr>
</tbody>
</table>

### Mice Ratings

For more information, circle the MiniFinder number (MF#) on the Reader Service card.

38 Buyer's Guide August 1992 MacUser
The fast QMS PS-820 turbo is a good alternative to the LaserWriter INTXX PostScript printer and produces excellent output. Comes with two 200-page sheet trays. A SCSI hard-disk drive can be attached for font storage. $6,495; 40 MB hard-disk drive, $1,495. QMS, Inc., One Magnum Pass, Mobile, AL 36618. 800-523-2696 or 205-633-4300. (Sept '91) [MF#1131]

QMS PS-820 turbo ****
The fast QMS PS-820 turbo is a good alternative to the LaserWriter INTXX PostScript printer and produces excellent output. Comes with two 200-page sheet trays. A SCSI hard-disk drive can be attached for font storage. $6,495; 40 MB hard-disk drive, $1,495. QMS, Inc., One Magnum Pass, Mobile, AL 36618. 800-523-2696 or 205-633-4300. (Sept '91) [MF#1131]

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QMS PS-820 Turbo ****
The QMS PS-820 Turbo is a fast, high-performance PostScript printer. The printer is fast, produces excellent output, and is compatible with a wide range of applications. It is priced at $7,995. QMS, Inc., One Magnum Pass, Mobile, AL 36618. 800-523-2696 or 205-633-4300. (Sept '91) [MF#1131]
MINIFINDERS

This full-height cache card fits into the Ileci’s processor-direct slot. It has 128K of 25-nanosecond static RAM that increases the Ileci’s overall performance by approximately 30 percent. Requires Mac Ileci. $329. Micron Technology, Inc., 2805 E. Columbia Rd., Boise, ID 83706. 800-662-7661 or 208-368-3800. (June ’91) [MF#1156]

MicroNet NuPORT-II 11 111


Newer fx/Overdrive 11 111

This CPU-socket board boosts performance on an Ileci about 20 percent. Includes a 50-MHz 68030 CPU (clock speed can be reselected in software) and 68882 CPU. Uses 60-nanosecond RAM SIMMs. Not compatible with all Ileci motherboards. Money-back guarantee. Version I reviewed. Version II shipping. Requires Mac Ileci. $850. Newer Technology, 7803 E. Ontario St., 105, Wichita, KS 67207. 800-678-3736 or 316-685-4904. (June ’92) [MF#1158]

Novy Systems QuicKache Plus 11 111

This accelerator card can boost a Classic’s performance to nearly four times its normal processing speed. Performance with optional 68882 FPU chip installed is nearly double that of a Classic II.0’s equivalent to that in SE/30. Affordable alternative to Apple’s Classic II upgrade for those who don’t need color support and 32-bit graphics. Requires Mac Ileci or II.0 or later. Viewed. Requires Mac Classic. $529; with optional FPU chip, $599; optional video port (for monochrome monitors) also available. NewLife Computer Corp., 603 March Rd., Kanata, Ontario K2K 2M5 Canada. 800-663-6395 or 613-592-5080. (May ’92) [MF#1159]

Novy Systems QuicX30/Plus-33MHz 11 111

This accelerator gives Mac 512Kc, plus, or SE owners Ileci computing power. Limited SCSI throughput. Requires Mac IIx, Ileci, Ileci, or Ileci; Ileci requires NuBus adapter. $2,195. Impulse Technology, 210 Dalonge St., Ste. 204, Cumming, GA 30130. 404-889-8294. (June ’91) [MF#1154]

Impulse Performance/040 11 111

This NuBus card that can almost triple a Mac’s Ileci’s normal performance. Some software is incompatible with the 25-MHz 68040 CPU, but included software can disable acceleration. Includes the Ileci’s overall performance by approximately 30 percent. Requires Mac Ileci. $325. Impulse Technology, 210 Dalonge St., Ste. 204, Cumming, GA 30130. 404-889-8294. (June ’91) [MF#1154]

Micron Xcceed Ileci 11 111

Total Systems GemIn0 020 111

This accelerator has fast 6830/ 
This adapter installs as a Fast SCSI-2 PDS card for the 
This full-height cache card fits into the Ileci’s processor-direct slot. The full-height cache card has 32K of 25-nanosecond static RAM that increases the Ileci’s overall performance by approximately 30 percent. Requires Mac Ileci. $325. Impulse Technology, 210 Dalonge St., Ste. 204, Cumming, GA 30130. 404-889-8294. (June ’91) [MF#1154]

IBM/Apple Bu cksch 30FX 1 111

This cache card fits into the Mac II’s processor-direct slot. It has 128K of 25-nanosecond static RAM that increases the Mac II’s overall performance by approximately 30 percent. Requires Mac II, Ileci, Ileci, or Ileci; Ileci requires NuBus adapter. $2,195. Impulse Technology, 210 Dalonge St., Ste. 204, Cumming, GA 30130. 404-889-8294. (June ’91) [MF#1154]

IMAP Cache LP32 11 111

This accelerator is a speedy upgrade for the Mac Ileci II or Ileci. Retains older CPU to allow downshift to unaccelerated mode. INIT provided enables proper floppy operation. Requires Mac II or Ileci. Without FPU, $1,799; with FPU, $1,999. SiIicone Sales and Engineering, 1072 Saratoga-Sunnyvale Rd., Bldg. A-107, Ste. 434, San Jose, CA 95129. 408-539-1742. (Aug ’90) [MF#1164]

SiIicone 3SIOS50 11 111

This accelerator is very fast. INIT enables proper floppy operation. Requires Mac II or Ileci. Without FPU, $2,499; with FPU, $2,999. Silicone Sales and Engineering, 1072 Saratoga-Sunnyvale Rd., Bldg. A-107, Ste. 434, San Jose, CA 95129. 408-539-1742. (Aug ’90) [MF#1165]

This adapter installs as a Fast SCSI-2 PDS card for the Ileci. Relatively slow and has no documentation. $1,995. Sigma Designs, 47900 Bayside Pkwy., Fremont, CA 94538. 800-545-8086 or 510- 731-0100. (June ’92) [MF#1166]

Sixty Eight Thousand dash 30fx 11 111

More than just a CPU accelerator, the 30fx is a factory-installed rebui1d of your Ileci. Finished package is in a lockable, upright metal tower case. Includes 40-MHz 68030 FPU, both running at 50 MHz clock speed. Has Fast-SCSI-2 card and 8 MB of RAM. Performance boost is about 20 percent. Requires Mac Ileci, $3,995 direct; more-advanced configurations available. Sixty Eight Thousand, Inc., 160 Technology Cir., Scotts Valley, CA 95066. 408-338-1777. (June ’92) [MF#1167]

Storage Dimensions Data Cannon PBS/FX 111

This Full SCSI-2 PDS card is built for the future (when the Mac will take better advantage of multi- 
This full-height cache card fits into the Ileci’s processor-direct slot. The cache card has 128K of 25- 
This full-height cache card fits into the Ileci’s processor-direct slot. The cache card has 64K of 25- 
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Mice R a t i n gs 1 1 1

For more information, circle the MiniFinder number [MF#] on the Reader Service Card.
## Power Up To Maximum Ram

<table>
<thead>
<tr>
<th>Memory Kits</th>
<th>SIMM Sizes Available</th>
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<tr>
<td>MACINTOSH PLUS</td>
<td>1MB, 2MB, 3MB, 4MB, 6MB, 8MB, 16MB</td>
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<tr>
<td>MACINTOSH SE</td>
<td></td>
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<tr>
<td>MACINTOSH II</td>
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<td>MACINTOSH 8/30</td>
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<td>MACINTOSH 12X</td>
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<td>MACINTOSH 12X+</td>
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<td>MAC CLASSIC</td>
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<td>MAC CLASSIC II</td>
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<td>MACINTOSH LC</td>
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<td>MACINTOSH llFX</td>
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<td>LaserWriter INTZ</td>
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<td>TI MICROLASER</td>
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<td>PORTABLE</td>
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<td>Cards</td>
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<td>MACINTOSH IIIC</td>
<td>512K VRAM + 1MB fpu</td>
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<td>MACINTOSH llS</td>
<td>Adapter Card + adapter card with fpu</td>
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<td>QUADRA 700/900</td>
<td>256K VRAM</td>
</tr>
<tr>
<td>MACINTOSH IIIC</td>
<td>Cache Card</td>
</tr>
</tbody>
</table>

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of 25-nanosecond static RAM that increases the IIci's overall performance by nearly 30 percent. Requires Mac IIci. $189. UR Micro, 1659 N. Forest Rd., Williamsburg, N.Y. 11422. 800-876-4276 or 716-689-1600. (June '91) [MF#1175]

**MINIFINDERS**

**Programming & Systems**

**AAlS Prolog**


**CompileIt!**

CompileIt! is an excellent Hyper­Talk compiler that creates and then either exports or installs XCMDs and XFCNs. Programming language is HyperTalk. Fast. Good manual. Requires some programming experience beyond HyperTalk. Version 2.0 reviewed. Version 2.1 shipping. Requires Mac Plus or later with 2 MB of RAM, HyperCard, and a hard-disk drive. $99. Heizer Software, P.O. Box 232019, Pleasant Hill, CA 94523. 800-888-7667 or 510-943-7667. (Feb '92) [MF#1181]

**ConvertIt!**

ConvertIt! does an excellent job of converting older, simple HyperCard­ stacks to a format usable by ToolBook, a Windows hyper­media product. Has some conversion problems with scripts, icons, bit-mapped graphics, type fonts, sounds, XCMDs, XFCNs, and field numbers. Version 1.2 reviewed. Version 1.3 shipping. Requires Mac Plus or later, a 386-based PC with 4 MB of RAM, and a way to perform Mac-to-PC text transfer. $199. Heizer Software, P.O. Box 232019, Pleasant Hill, CA 94523. 800-888-7667 or 510-943-7667. (June '91) [MF#1182]

**Debugger V2 and MacNoozy**

The Debugger V2 is a run-time debugger; MacNoozy is a well-es­tablished global interactive debugger. These painful tools are not for casual users. The Debugger is great if you have two screens available. Both parts of the package work well in common environments, including THINK Pascal and C and all fla­vors of MPW* and Confusing manual. Version 1.5 reviewed. Version 1.5 shipping. Requires 2 MB of RAM and System 6.03 or later; hard-disk drive recommended. $350. Jask Designs, 343 Trenton Way, Menlo Park, CA 94025. 415-322-1386. (July '90) [MF#1183]

**Dialoger Professional**

Dialoger Professional is a great HyperCard utility for non-HyperCard users. Easy-to-master palette-based interface lets you build complex dialog boxes. Virtually all the power of the Mac's Dialog Manager is available. Greatly improves appearance and function­ality of stacks. Version 1.02 Dialoger Pro reviewed. Version 2.0 WindowScript shipping. Requires Mac Plus or later, System 6.05 or later, and HyperCard 2.1; hard-disk drive recommended.

**HookUp!**

HookUp! is an iconic software­programming utility. It teaches the power of the Mac's Dialog Manager, simple animation, sound manipulation, and even a few more sophisticated functions. Version 1.0 reviewed. Version 1.01 shipping. Requires Mac Plus or later. $149. Heizer Software, P.O. Box 232019, Pleasant Hill, CA 94523. 800-888-7667 or 510-943-7667. (Feb '90) [MF#1184]

**HyperAnimator**

HyperAnimator lets you create talking heads for HyperCard stacks, using MachTalk or digi­tized sound resources. Version 1.0 reviewed. Version 1.5.2 shipping. Requires Mac Plus or later and HyperCard 2.0. $249. HyperPress Publishing Corp., P.O. Box 8243, Foster City, CA 94404. 800-633-2415 or 415-345-4620. (Nov '91) [MF#1185]}

**HyperBundle**

HyperBundle is a set of five HyperCard utilities. The handy SuperPalette manages floating windows and customized check boxes, radio buttons, menus, and other interface goodies. The other stacks provide sophisticated control for icons, scripts, and access to non-HyperCard files and applica­tions. Version 2.0 reviewed. Requires Mac Plus or later and HyperCard 2.0. $249. HyperPress Publishing Corp., P.O. Box 8243, Foster City, CA 94404. 800-633-2415 or 415-345-4620. (Nov '91) [MF#1186]

**HyperCard**

Although it lacks support for color and object graphics, HyperCard 2.0's text formatting, text han­dling, and picture capabilities sig­nificantly improved over earlier ver­sions. More than one stack can be open at a time, and windows can be resized. Version 2.1 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.05 or later, and a hard-disk drive. $99. Heizer Software, P.O. Box 232019, Pleasant Hill, CA 94523. 800-888-7667 or 510-943-7667. (June '91) [MF#1187]

**Initial Thiboud**

This developers' tool carefully monitors the startup process and reports exactly what transpires. A handy tool for eliminatin­g INIThound problems, version 1.1 reviewed. Version 1.2 reviewed. Requires Mac Plus or later. $59. 3201 Patrick Henry Dr., Santa Clara, CA 95052. 408-727-8227. (Dec '90) ★ 87 Eddy [MF#1188]

**Peacock**


**Prograph**

Prograph is a completely visual programming language. Each dif­ferent programming construct has a unique pictogram associated with it. Version 1.2 reviewed. Version 2.5 shipping. Requires Mac Plus or later and a hard-disk drive. $495. TGS Systems Ltd., 7245 Don Mills Rd., Ste. 100, North York, Ontario M3B 3P5. 416-693-9793 or 416-943-2044. (Feb '91) [MF#1192]

**Quintus MacProlog**


**ScriptEdit**

ScriptEdit is a HyperTalk utility that opens multiple script win­dows simultaneously from different stacks. Makes stack creation easier and more convenient than previously possible. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later. $79. Sonnax Software, Inc., 353 Encin­itas Blvd., Ste. 113, Encinitas, CA 92024. 800-842-3502 or 619-942­4166. (Feb '90) ★ 87 Eddy [MF#1194]

**ScriptExpert**

ScriptExpert is the HyperTalk helper for constructing scripts. A great way to construct and edit HyperTalk scripts. Version 2.0 shipping. Requires Mac Plus or later and HyperCard 1.2.5 or 2.0 (package includes software for both versions). $99.95. Hyper­press Publishing Corp., P.O. Box 8243, Foster City, CA 94404. 800-633-4252 or 415-345-4620. (Oct '88) [MF#1195]

**MICE RATINGS**

1. Good
2. Well
3. Fair
4. Poor
5. Yuck

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SuperCard offers capabilities that HyperCard lacks. An excellent tool for developing animated presentations and other graphically rich applications. Version 1.1 reviewed, Version 1.0 shipping. Requires Mac Plus or later and System 6.03 or later, $299, Aldus Corp., 411 First Ave. S., Seattle, WA 98104, 800-635-2362 or 206-232-6090. (Dec '90) [MF#1196]

THINK C

This object-oriented programming language features rapid turnaround for development and testing of programs through use of an integrated compiler, linker, and editor. Version 4.0 reviewed, Version 3.0 shipping.Requires Mac Plus or later and System 6.03 or later; hard-disk drive recommended. $299, Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014. 800-441-7234 or 408-253-9600. (Mar '90) * 88, '91 Eddy [MF#1379]

THINK Pascal

THINK Pascal is at the cutting edge of software development for the Macintosh. Has full support for object-oriented programming and has an exemplary development environment that includes integrated source-level debugging and extraordinarily fast compile-and-link times. Version 3.0 reviewed. Version 4.0 shipping. Requires Mac Plus or later and System 6.03 or later. $249; upgrade, $149, Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014. 800-441-7234 or 408-253-9600. (Sept '90) * 88, '91 Eddy [MF#1379]

TMON Professional

This popular low-level debugger displays memory in hexadecimal and ASCII, disassembles code (8086/80286), and displays all blocks in a heap. Sets breakpoints on specific instructions or on specific system calls. Lets you step through code one instruction at a time while watching registers change as the program executes. Configuration can be difficult, and learning curve will intimidate even experienced users. Documentation needs improvement. Version 3.0 reviewed. Requires 2 MB of RAM, $250, ICOM Simulations, Inc., 648 S. Wheeling Rd., Wheeling, IL 60090. 800-877-4266 or 708-520-4440. (Jan '92) [MF#1399]

V.I.P. Interactive Programming

V.I.P. is a unique visual-programming system for creating simple Mac applications. Programs are constructed in a flowchart-type manner. Easy access to most Toolbox routines. Translators are available for THINK C and Pascal, Turbo Pascal, and MWP C and Pascal. Version 2.0 reviewed. Version 2.5 shipping. Requires Mac Plus or later and System 6.03 or later. $149.95, Mainstay, 5311-B Derby Ave., Agoura Hills, CA 91301. 515-991-6540. (June '87) [MF#1200]

RESOURCES

Complete Works of Shakespeare

This CD-ROM presents all the Bard's sonnets and poems plus his plays in both Modern and Queen's English. Includes CMC's wickedly-fast, reader-access Disc-Page software. Uses only the unsophisticated Geneva font. Requires CD-ROM drive. $299.50, CMC ResSearch Inc., 514 N.W. 11th St., Ste. 203, Portland, OR 97209, 800-262-7668; 503-241-8351. (July '92) [MF#1210]

Correct Quotes

Correct Quotes is a useful-modifiable database of famous quotes. Good interface. Quick search by topic or by author. Not very comprehensive, but can incorporate new quotes from celebrities such as yourself. Version 1.0 reviewed. Requires Mac Plus or later, System 5.0 or later, and a hard-disk drive. $49.95, WordStar International, Inc., 201 Alameda del Prado, Novato, CA 94949. 800-523-3520 or 415-382-8000. (July '92) [MF#1202]

Edcorp CD-ROM

Edcorp CD-ROM presents approximately 600 MB of shareware, public-domain software, and demoware in 23 categories such as business education, music, and fonts. Version 3.0 reviewed. Version 6.0 shipping, $199 (two-disc set) includes HyperCard 2.1. Edcorp Computer Services, 734 Trade St., San Diego, CA 92112. 800-843-9497 or 619-536-9999. (July '92) [MF#1203]

Grolmer New Electronic Encyclopedia

This CD-ROM contains 33,000 articles (ten million words) covering lots of up-to-date information. Innovative design includes many high-quality color maps, famous paintings, photographs, and digitized sounds. Version 1.0 reviewed. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive. $49.95, WordStar International, Inc., 201 Alameda del Prado, Novato, CA 94949. 800-523-3520 or 415-382-8000. (July '92) [MF#1202]

Point of View

Point of View is a dynamic program that makes exploring American history interesting and fun. Excellent software is highly designed interface. Database needs more topics and better explanation of stack icons. Version 1.0 reviewed, Requires HyperCard. $39.95, Dayka Corp., 7074 N. Western Ave., Chicago, IL 60645. 312-465-4070. (July '92) [MF#1206]

Voyager, the Interactive Desktop Planetarium

Voyager, the Interactive Desktop Planetarium, lets you view the sky as a star chart, as a celestial sphere, or as seen from anywhere in the universe. Terrific learning tool. Requires Mac Plus or later and System 6.03 or later, $124.50. Carina Software, 512 Grant Ave., Alameda, CA 94577, 510-352-7328, (Sept '89) [MF#1211]

Webster's New Collegiate Dictionary

This CD-ROM includes a complete electronic version of the standard dictionary. Type can be viewed at any size. Has easy-to-use search engine. Version 1.0 reviewed. Requires CD-ROM drive. $199.95, Highlighted Data, Inc., 4350 N. Fairfax Dr., Ste. 200, Arlington, VA 22203. 703-516-9211. (July '92) [MF#1212]

Scanners

Abaton 8-bit Apple Scanner Upgrade

This upgrade greatly improves the gray-scale capabilities of the Apple Scanner. Requires Mac Plus or later and Apple Scanner. $595, Abaton (Everex Systems), 4843 Milford Dr., Fremont, CA 94538, 800-628-3837 or 510-498-1111. (Sept '90) [MF#1213]

Abaton Scan 300/GS

This 300-dpi color gray-scale scanner gives good halftone images. Includes ImageStudio software. Requires Mac Plus or later. $1,595, Abaton (Everex Systems), 4843 Milford Dr., Fremont, CA 94538, 800-628-3837 or 510-498-1111. (Sept '90) [MF#1214]

Afia Focus II S6000/GS

This 300-dpi, 6-bit gray-scale-only flatbed scanner has high resolution. Optional, excellent software is highly intuitive. Requires Mac Plus or later and Apple Scanner. $495, Afia Division, Miles, Inc., 200 Ballardvale St., Wilmington, MA 01887, 800-227-2780 or 508-658-5600. (Sept '90) [MF#1215]

Afia Focus S6000/GS

This 400-dpi, 6-bit gray-scale-only flatbed scanner simulates resolutions up to 800 dpi. Has superior resolution and good halftone quality. Professional-quality software has extensive editing features and printing options. Requires Mac Plus or later and Apple Scanner. $3,995; NC View software, $495, Afia Division, Miles, Inc., 200 Ballardvale St., Wilmington, MA 01887, 800-227-2780 or 508-658-5600. (June '89) * 88, * 90 Eddy [MF#1216]

AVR 3000/CL Plus

This 24-bit 300-dpi flatbed color scanner has a maximum magnification area of 8.5 x 14 inches. Colors are not saturated, and Easy Scan DA software is hard to use. Comes

For more information, circle the MiniFinder number [MF#] on the Reader Service Card.
They’re blindingly fast, and they’re unerringly reliable. And no matter what capacity you choose them in—from 100 MBs to 4 gigabytes—the new SledgeHammer® Arrays from FWB are the first and only drives that offer any Macintosh both speed and security in a single RAID® system.

When you need the high performance demanded by applications such as color prepress or multimedia, simply configure your SledgeHammer for data striping, which virtually doubles the unit’s speed by splitting the data onto two drives. And when you need fault-tolerant networking, just set the array for disk mirroring, in which the same data is written to two identical drives; if one fails, the other takes over on the fly.

When you need both at the same time, just configure different partitions within the drive exactly the way you want them, using FWB’s exclusive MatrixArray™ technology.

The SledgeHammers incorporate new SCSI-2 technology, and deliver sustained transfer rates as high as 8.3 MB/s, and seek times as low as 5 ms—without requiring separate cards or special hardware. And without forcing you to use up a valuable slot.

And, no matter which SledgeHammer you purchase—including the internal array for the Quadra 900 family—you also get FWB’s industry-leading Hard Disk ToolKit Professional™ software. As well as a two-year warranty and Hammer PremiumService™.

So if you’re thinking about getting other high-capacity drives, think twice. Because there’s only one drive you really need to have.
## MINIFINDERS

**MINIFINDERS**

with a SCSI interface and cable. External SCSI termination. Two-year warranty. Maximum software-interpolated resolution is 1,600 dpi for color scans and line art. Requires Mac with 24-bit color. ***$1,190***

Advanced Vision Research, Inc., 562 S. Milpitas Blvd., Milpitas, CA 95035. 800-544-6243 or 408-956-0145 (Dec '90) [MF#1218]

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**BarneyScan CIS 3515**

This slide scanner is easy to set up and has short scan times. Excellent software. Unit requires regular calibration. Requires Mac II series for color work. $4,945. Barneyscan Corp., P.O. Box 14467, Oakland, CA 94614. 510-562-2480. (Sept '90) [MF#1218]

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**Complete PC Half-Page Scanner/400**

This half-hand scanner has very good resolution. True 400-dpi scanning. Requires Mac Plus or later. Software interface. In serial and external SCS. 24-bit color. Requires Mac Plus or later. ***$1,495***

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**Perfect Scan/400**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 11.7 inches. Color scanned from Epson scan engine, but powerful software provides complete in-mac controls. Requires Mac Plus or later with 4 MB of RAM. Bundled with either Photoshop or ColorStudio; $1,799; with Color It!, $3,199. La Cie Ltd., 8700 S.W. Creek- side Pl., Beaverton, OR 97005. 800-999-0143 or 503-520-9000. (Dec '91) [MF#1223]

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**Hewlett-Packard ScanJet SIE Icet**

The ScanJet Icet is a fast, affordable, 400-dpi color flatbed scanner. Provides accurate color rendition and can interpolate to a resolution of 1,600 dpi. Standard resolution is excellent for use in OCR. Bundled DeskScan II software. Handsy, self-install and makes calibration or contrast correction a breeze. Requires 24-bit color-system representation. $1,955; automatic sheet feeder, $695. Hewlett-Packard Co., 5001 Santa Clara Blvd., Customer Information Center (MS #51-LSD), Santa Clara, CA 95052. 800-752-0800 or 408-268-8900. (Apr '92) [MF#1220]

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**Howtek Personal Color Scanner**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 11 inches. Has fast-scan mode for preliminary setup before final scan. Normal-scan mode has better quality but is very slow. Comes with a Centronics NuBus interface and cable. Maximum software-interpolated resolution is 600 dpi for color scans and line art. Software has color-preserve mode. Requires NuBus-capable Mac and 24-bit color-display system. Requires Mac Plus or later. ***$1,385***

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**Howtek Scanmaster**

This color flatbed scanner is very large and slow. Scans at up to 300 dpi in half-tone and 120 dpi in software. Poor OCR. Includes interface kit and Photoshop. Version 1.0 reviewed. Version 3 (400-dpi resolution) shipping. Requires Mac II series or higher with color monitor. $8,195. Howtek, Inc., 21 Park Ave., Hudson, NH 03051. 800-444-6983 or 603-882-5200. (Sept '90) [MF#1222]

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**La Cie Silverscanner**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 11.6 inches. Good color-scan quality, with accurate conditions. Comes with GP1 NuBus card and cable for Mac interface. Maximum software-interpolated resolution is 300 dpi for color scans and line art. Requires Mac Plus or later. $2,095. La Cie Ltd., 8700 S.W. Creek- side Pl., Beaverton, OR 97005. 800-999-0143 or 503-520-9000. (Dec '91) [MF#1223]

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**Microtek ScanMaker 600ZS**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 13.5 inches. Midrange quality, but bundled Photoshop 2.0 and other software makes calibration or contrast correction a breeze. Requires 24-bit color-system representation. $1,955; automatic sheet feeder, $695. Microtek Lab, Inc., 680 Knox St., Torrance, CA 90403. 800-643-0666 or 408-956-0144. (Sep '90) [MF#1224]

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**Nikon LS-3500**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 11.75 inches. Excellent 600 dpi. Requires Mac Plus or later. ***$1,395***

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**Nikon LS-35C10**

This slide scanner needs friendlier software, but it wins overall for resolution flexibility and for the wide range of controls offered. Focusing and calibration are automatic. High resolution and offers variable 1.32, reviewed. Requires Mac II series with 2 MB of RAM. Version LS-3500 reviewed. Version LS-350AF shipping. 8-bit version, $9,535; 12-bit version, $11,316. Nikon, 1300 Walt Whitman Rd., Melville, NY 11747. 800-526-4566 or 516-547-4355. (Sept '90) [MF#1224]

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**Nissan Spectra Mac**

This 24-bit 200-dpi portable flatbed color scanner allows a maximum image area of 4 x 6 inches. Compact and offers good scan quality for a portable scanner. Uses serial interface and modem cable. Extremely slow. Requires Mac Plus or later. ***$495***

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**Polaroid DataStation**

This scanner can merge as many as nine files. Can merge as many as 99 files. DataStation II, reviewed. Requires Mac Plus or later. 4 MB of RAM. ***$99***

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**PC Scan 3000**

This flatbed scanner has excellent 300-dpi resolution. Has very even illumination and 8-bit grayscale capability. Requires Mac Plus or later. Scanner with imaging software. Only $1,795. Published Pac and Recognize! OCR software. $3,195. DEST, 1015 E. broccoli Rd., San Jose, CA 95131. 808-656-2700. (Sept '90) [MF#1227]

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**Sharp JX-300 Business Color Scanner**

This 24-bit 300-dpi flatbed color scanner has a maximum image area of 8.5 x 11.6 inches. Good color-scan quality, with accurate conditions. Comes with GP1 NuBus card and cable for Mac interface. Maximum software-interpolated resolution is 300 dpi for color scans and line art. Requires Mac Plus or later. ***$2,295***

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**Varityper 1200**

High-resolution 400-dpi scanner with excellent OCR capabilities. Powerful software controls. Price includes Mac IIx. Requires Mac IIx with 8 MB of RAM. ***$29,000***

Varityper, 11 Mt. Pleasant Ave., East Hanover, NJ 07936. 800-531-1334 or 201-877-8800. (Sept '90) [MF#1233]

## SPREADSHEETS & NUMERICAL ANALYSIS

**Biplane**

This budget spreadsheet program offers an incredible array of features and capabilities. Includes DA version. Perfect for basic number crunching if you already have or don't need integrated word-processing, database, and graphics. Version 2.0 reviewed. Version 2.07 shipping. Requires Mac Plus or later. $59 direct. Night Diamonds Software, P.O. Box 168, Huntington Beach, CA 92647. 714-842-2492. (Oct '91) [MF#1234]

**CA-Cricket Graph**

CA-Cricket Graph is an Excel-like graphing and charting program when it came out long ago. Still provides good quality-control charts and mathematical-manipulation capabilities. Version 1.3 reviewed. Version 2.0 shipping. Requires Mac Plus or later. System 6.03 or later, and a hard-disk drive. $129. Compu-Data Associates, 3601 19th Ave., One Computer Associates Plaza, Islandia, NY 11788. 800-531-5336 or 516-342-5224. (July '92) [MF#1255]

**Data Desk**

This business-statistics package, is excellent for sophisticated analyses. Features great exploratory interactive graphics and solid data handling. Easy to use. Version 3.0 reviewed. Requires Mac 512K or later and System 4.1 or later. $595. DataDesk, P.O. Box 4555, Ithaca, NY 14852. 607-257-1000. (Apr '90) [MF#1236]

**DataMerge**

DataMerge combines manipulating tabular data. It works with all major spreadsheet programs and can merge as many as nine files. The files can be larger than existing RAM. Excellent performance. Version 2.0 reviewed. Version 2.03 shipping. Requires Macintosh. Digital Equipment company, 389 39th Ave., S.W., Seattle, WA 98116. 206-322-3123. (May '90) [MF#1237]

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**For more information, circle the MiniFinder number [MF#] on the Reader Service Card.**

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**Mice Ratings**

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**0**...**10**...**20**...**50**...**70**...**100**...**120**...**150**...**200**...**250**...**300**...**500**...**750**...**1000**...**1500**...**2000**...**5000**...**10000**...**20000**

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**Buyer's Guide** August 1992 MacUser
"We still manage to find plenty of room for improvement,"

He said as he turned another page saturated with diskette specs and industry standards. At Kao, we don’t think specifications should mean limitations. In fact, our 70% clipping levels far exceed the industry standard of 45%. Maybe that’s why we’re already the USA’s #1 supplier of diskettes to the OEM market, with such notable customers as Microsoft® and Lotus®. And maybe it’s why we should be your leading manufacturer as well. For more information call 1-800-759-2590.
Minifinders

DataPivot

DataPivot is an intuitive, easy-to-use spreadsheet. 

GraphMaster

GraphMaster is a powerful cross-platform graphing and charting tool.

It can plot a variety of graphs, including line, bar, column, area, and scatter charts. It supports various file formats and is ideal for scientists and engineers.

GraphPLOT

GraphPLOT is a powerful plotting tool for scientists and engineers.

It supports a wide range of graph types, including line, bar, column, area, and scatter charts. It also allows for customization of graph elements.

MacCalc

MacCalc is a powerful calculator for Mac OS X.

It supports a wide range of mathematical operations, including basic arithmetic, algebra, calculus, and complex numbers. It also supports the creation of plots and graphs.

MacGraphX

MacGraphX is a powerful plotting tool for Mac OS X.

It supports a wide range of graph types, including line, bar, column, area, and scatter charts. It also allows for customization of graph elements.

MacMath

MacMath is a powerful mathematical application for Mac OS X.

It supports a wide range of mathematical operations, including basic arithmetic, algebra, calculus, and complex numbers. It also supports the creation of plots and graphs.

MacDisk

MacDisk is a powerful disk management tool for Mac OS X.

It allows for the efficient management of disks, including file copying, deleting, and moving.

MacTable

MacTable is a powerful spreadsheet tool for Mac OS X.

It supports a wide range of mathematical operations, including basic arithmetic, algebra, calculus, and complex numbers. It also supports the creation of plots and graphs.

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When C. David Piña created the graphics for the 63rd Annual Academy Awards, he cast his NewGen™ printer to play a vital supporting role.

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The NewGen line offers a complete cast of PostScript®-compatible printers to fill any role. With resolution from 300 to 1200 dpi plus IET. A range of speeds from 4 to 12 pages per minute. Even paper sizes of up to 11" x 17" for simply unequaled graphics and pre-press capability. All at prices that will make you a star with accounting.

Piña summed up his choice eloquently, "The NewGen was the only printer that offered everything I needed — with features I couldn't get from anyone else."

To learn more, or for your nearest NewGen Dealer, call 1-800-756-0556. We'll be happy to show you just how well our high-resolution printers can play a leading role in your business.
MINIFINDERS

310W, San Francisco, CA 94103.
415-442-0200. (July '90) [MF# 1259]

Minitab

Minitab is a fast, high-end statistics package that can share data with MS-DOS, Macintosh, PC, mainframe-based systems and mainframe versions of this program. Broad range of statistical procedures should satisfy almost all statistical needs. New spreadsheet interface is significantly improved over previous versions, but scrolling session window and character-based command structure still dominate. Adds standard Mac menus and dialog boxes for accessing all the program’s most complex functions. New spreadsheet-like Data Editor facilitates data entry and editing. Creates adequate graphs and charts, but they are not as technically useful as source data changes. Version 8.2 reviewed. Requires Mac Plus or later with hard-disk drive; Mac II or series higher recommended. $695. Occasional discounts available. Minitab, Inc., 3081 Enterprise Dr., State College, PA 16801. 800-448-3555 or 814-238-3230. (June '92) [MF#1256]

Risk

This add-in for Excel provides Monte Carlo simulation. Risk analysis functions and a series of new menus give you an overview of picture of how even the most uncertain estimates and projections are likely to affect your business. Generates summary Excel worksheets with statistical information for all output cells. Charting capabilities are adequate. Interface is difficult but offers integration with standard Excel environment. Version 1.01 reviewed. Requires Excel 3.0 or higher. $395. Palisade Corp., P.O. Box 159533, New York, NY 10015. 800-432-7475 or 607-277-8000. (April '92) [MF#1260]

SuperANOVA for the Macintosh

SUPERANOVA is a slick linear modeling program with a great interface, feature-laden and powerful. Version 1.0 reviewed. Version 1.11 shipping. Requires Macintosh Plus or System 6.03 or later. $495. Abacus Concepts, 1984 Bonita Ave., Berkeley, CA 94704. 800-666-7288 or 510-540-1499. (April '90) [MF#1261]

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MUSE

MUSE blends elements of spreadsheet and database software into a unique program that explores multidimensional data in a variety of ways. Searching for specified information and subsequent manipulation of data is easy. Natural language use makes English-like commands in a script-writing window. Built-in dictionary enables program to interpret user queries. Interface is often confusing. Provides basic charting and simple animations. Imports files in many formats, including Excel 3.0, 4.0, MicroFocus, SYLK, and text files using standard database delimiters. Proper organization of data before importing is crucial and may require expert efforts. Good documentation. Version 1.0 reviewed. Requires Mac Plus or later with 2 MB of RAM and a hard-disk drive. $395. Palisade Corp., Box 159533, New York, NY 10015. 800-432-7475 or 607-277-8000. (April '92) [MF#1260]

Parameter Manager Plus

PARAMETER MANAGER PLUS analyzes data in real time, using a spreadsheet-like interface. Handles both hand-entered and imported data. Includes statistical analysis, equation fitting, predictive maintenance, histograms, drawing, and presentation. Version 3.0 reviewed. Version 3.5 shipping. Requires Mac Plus or later. $795. BlackHawk Technology, P.O. Box 1320, Morgan Hill, CA 95038. 808-766-1106. (July '89) [MF#1258]

Resolve

Resolve is a spreadsheet program that offers an elegant interface and accessible 3-D-charting features. Lacks a few sophisticated features such as style tips found in Excel 3.0 but uses a straightforward scripting language unlike Excel’s complex macros. Includes MacDraw-like drawing tools. Auto-Save option can back up worksheets automatically. Supports wide variety of file formats for importing and exporting. Good documentation and on-line context-sensitive help. Despite some tedious limitations, ideal for custom-built applications and for re-taught and Claris products. Version 1.0; reviewed. Version 1.1 shipping. Requires Macintosh Plus or later, System 6.02 or later, and a hard-disk drive. $399. Claris Corp., 5201 Patrick Henry Dr., Santa Clara, CA 95052. 408-727-8227. (June '92) [MF# 1259]

StatView II


SuperANOVA

SuperANOVA is a slick linear modeling program with a great interface, feature-laden and powerful. Version 1.0 reviewed. Version 1.11 shipping. Requires Macintosh Plus or System 6.03 or later. $495. Abacus Concepts, 1984 Bonita Ave., Berkeley, CA 94704. 800-666-7288 or 510-540-1499. (April '90) [MF#1261]

Systat for the Macintosh

This statistics program has a good Macintosh interface. Some slow and awkward data- and variable-handling features are likely to affect your business. Generates summary Excel worksheets with statistical information for all output cells. Charting capabilities are adequate. Interface is difficult but offers integration with standard Excel environment. Version 1.01 reviewed. Requires Excel 3.0 or higher. $395. Palisade Corp., P.O. Box 159533, New York, NY 10015. 800-432-7475 or 607-277-8000. (April '92) [MF#1260]

Theorist

Theorist is an elegant equation solver that’s versatile, full-featured, and powerful. No procedures everything is done with user-created propositions that are easy to build. Superb. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later. $399.5. Science Corp., 939 Howard St., San Francisco, CA 94103. 800-827-6824 or 415-543-2252. (June '90) [MF#1261]

Wingz

Wingz is a high-end spreadsheet program with 3-D-charting features. HyperScript language lets you change menus, options, and functions by editing the master script file. Requires a lot of custom macro programming to perform linking operations. Version 1.0 reviewed. Version 1.0 shipping. Requires Mac Plus or later with 2 MB of RAM and a hard-disk drive. $399. Informix Software, Inc., 4100 Bohannon Dr., Menlo Park, CA 94025. 800-438-7672 or 415-926-6300. (July '90) [MF#1261]

WorkBenchMac

WorkBenchMac is an icon-based application generator for general-purpose data acquisition, control, and analysis. Users create flow charts to make interactive color plots. Powerful and easy to use. Version 3.0 reviewed. Version 3.0.6 shipping. Requires Mac SE or later. $995. Strawberry Tree, Inc., 160 S. Wolfe Rd., Sunnyvale, CA 94086. 408-736-8800. (July '90) [MF#1260]

Storage Systems

ATT0 SiliconDisk Pro

This large high-performance dedicated RAM disk has access times 300 times as fast as an average SCSI hard-disk drive. Easy to hook up and use. Extremely fast for applications requiring intensive throughput from SCSI drive. Data disappears when power is turned off, so a reliable power supply may be advisable. Requires Macintosh Plus or later. $4,995. ATTO Technology, Inc., 1576 Sweet Home Rd., Amherst, NY 14228. 716-688-4259. (Feb '90) [MF#1269]

DiskTwin

DiskTwin simultaneously and transparently writes data to two SCSI drives, thereby providing up-to-the-nanoscond backup. Consists of proprietary software and Macintosh Plus or II and SCSI hardw are. Operates independently of Mac’s SCSI chain. Version 2.0 reviewed. Version 2.0b shipping. Requires Mac Plus or II and SCSI hardware. $595. Golden Triangle Computers, Inc., 4849 Ronson Ct., San Diego, CA 92111. 800-326-1858 or 619-270-2100. (Nov '91) [MF#1270]

Technology Works 3-Meg Static RAM Card

This 3-Meg Static RAM Card is an excellent and affordable addition to every Mac Portable. With true static RAM, the Portable’s battery lasts longer in Sleep mode. Easy to install. Lifetime warranty. Requires Mac Portable. $995. Technology Works, Inc., 4030 Braiker Lane W., Ste. 350, Austin, TX 78757. 512-474-6675 or 512-794-8323. (Oct '90) [MF#1217]

Storage Systems/Hard-Disk Drives

Apple Hard Disk BOSC

The Apple Hard Disk BOSC is a superbly designed and well-built 80-MB unit. $1,099. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 800-776-2333 or 408-996-1010. (Feb '90) [MF#1272]

APS 1 Gigabyte

The APS 1 Gigabyte hard-disk drive has a formatted capacity of 980 MB and an average seek time of 15 milliseconds. Based on the Seagate ST41200NM mechanism. Includes 18 MB of shareware. $2,099 direct. APS (Alliance Peripher al Systems), 200 S. 9th Hwy., Independence, MO 64057. 800-235-2750 or 816-748-8300. (July '91) [MF#1273]

ATAO SiliconDisk Pro

This affordable SCSI hard-disk drive is well built, includes good SCSI cable, and has good documentation. Average performance.
Internal mechanism is Maxtor LXT-2135Y. Actual capacity with included Alliance Power Tools formatter is 200.6 MB. Bundled with 18 MB of shareware. Two-year warranty. Version 2.06 software is available. $699 direct. APS (Alliance Peripheral Systems), 2900 S. 291 Hwy., Independence, MO 64057, 816-243-478-830. (Apr '92) [MF#1274]

APS Quantum 210 Portable 511

This affordable, compact SCSI hard-disk drive includes good SCSI cable and has good documentation. Good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Alliance Power Tools formatter is 197.3 MB. Bundled with 18 MB of shareware. Two-year warranty. Version 2.06 software is available. $699 direct. APS (Alliance Peripheral Systems), 2900 S. 291 Hwy., Independence, MO 64057, 816-243-478-830. (Apr '92) [MF#1275]

APS Quantum 210 ZFP 511

This affordable, well built SCSI hard-disk drive includes good SCSI cable and has good documentation. Good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Quantum LP105S formatter software is 200.6 MB. $1,119. Cutting Edge, 97 S. Red Willow Rd., P.O. Box 1259, Evanston, WY 82931, 307-789-3830. (Apr '92) [MF#1280]

Cutting Edge 210 MB 511

This Scsi hard-disk drive is well built. Poor formatting software. Good performance. Internal mechanism is Maxtor LXT-2135Y. Actual capacity with included CE HDD Formatter software is 200.6 MB. $1,119. Cutting Edge, 97 S. Red Willow Rd., P.O. Box 1259, Evanston, WY 82931, 307-789-3830. (Apr '92) [MF#1280]

Deltax Server 1000 511

This external hard-disk drive uses a Quantum LP105S internal mechanism. Average performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included CE HDD Formatter software is 100 MB. Formatting utility is Deltaxa System Installer 201. $699 direct. Deltax Systems, 1701 Junction Ct., Ste. 202, San Jose, CA 95112, 800-745-1240 or 408-441-1240. (Nov '91) [MF#1282]

Deltax Server 2000 511

This affordable SCSI hard-disk drive is well built but has an unshielded power supply. Good documentation and performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Deltaic System Installer formatter is 197.3 MB. Two-year warranty. Version 2.06 software is available. Deltaic Systems, 1701 Junction Ct., Ste. 202, San Jose, CA 95112, 800-745-1240 or 408-441-1240. (Nov '91) [MF#1282]

DynaTek HDA 234 511

This fast SCSI hard-disk drive is well built but has an unshielded power supply. Internal mechanism is Hewlett-Packard C2333. Actual capacity with included Com- Pass Utilities formatter is 221.6 MB. Two-year warranty, $1,239. Dimensions, 3028 W. Fourth St., Ste. 215, San Francisco, CA 94110, 415-474-8055. (Dec '90) [MF#1289]

FWB PowerHammer 100 511

This portable hard-disk drive uses a Quantum LP105S internal mechanism and offers fast performance. Actual formatted capacity is 100 MB. Bundled with Hard Disk Partition and Hard Disk Deadbolt software. Formatting utility provided is Hammer Install 1.4. $929. FWB, Inc., 2040 Polk St., Ste. 215, San Francisco, CA 94110, 415-474-8055. (Nov '91) [MF#1290]

FWB PocketHammer 200 511

This compact SCSI hard-disk drive is well built and has excellent documentation. Good performance. Actual capacity with included Hammer Install 1.4 formatter is 221.6 MB. Two-year warranty, $1,239. Dimensions, 3028 W. Fourth St., Ste. 215, San Francisco, CA 94110, 415-474-8055. (Dec '90) [MF#1289]

GCC UltraDrive 1DDMB 511

This external hard-disk drive uses a Quantum LP105S internal mechanism and offers good performance. Actual formatted capacity is 100 MB. Bundled with MacTools Deluxe, QuickEnvelope, and 3.5 MB of shareware. Formatting utility is GCC Drive Manager. $739 direct. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154, 800-422-7777 or 617-890-0880. (Nov '91) [MF#1291]

GCC UltraDrive 450S 511

This external hard-disk drive uses a Quantum LP105S internal mechanism and operates at 450 MB. High-throughput rate. Average seek times. Includes QuickCard, CES SUM II, 3.5 MB of public-domain software, formatter, and envelope-printing utility. $1,949 direct. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154, 800-422-7777 or 617-890-0880. (Dec '90) [MF#1292]

HDI PowerDrive 100EIMC 511

This hard-disk drive has a formatted capacity of 990 MB and an average seek time of 15 milliseconds. Based on the Micropolis 1598-15 mechanism. Provides good performance with the Disk Manager Mac 2.23 SCSI driver. Actual capacity is 1050 MB. $679 direct. HDI (Hard Drives International), 1912 W. Fourth St., Tempe, AZ 85281, 800-488-0001 or 602-350-1128. (July '91) [MF#1295]

HDI PowerDrive 100MB Quantum 511

This affordable external hard-disk drive uses a Quantum ProDrive 105S internal mechanism. Slow. Actual capacity is formatted at 1050 MB. $399 direct. HDI (Hard Drives International), 1912 W. Fourth St., Tempe, AZ 85281, 800-488-0001 or 602-350-1128. (Nov '91) [MF#1296]

HDI PowerDrive 200 (Maxtor) 511

This affordable SCSI hard-disk drive is well built but has an unshielded power supply. Good performance. Internal mechanism is Maxtor LXT-2135Y. Actual capacity with included Hammer Install 1.4 formatter is 197.3 MB. Bundled with Hard Disk ToolKit software. Two-year warranty. $749. FWB, Inc., 2040 Polk St., Ste. 215, San Francisco, CA 94110, 415-474-8055. (Apr '92) [MF#1291]

HDI PowerDrive 200 (Quantum) 511

This affordable SCSI hard-disk drive uses a Quantum LP105S internal mechanism and offers fast performance. Actual formatted capacity is 100 MB. Bundled with MacTools Deluxe, QuickEnvelope, and 3.5 MB of shareware. Formatting utility provided is GCC Drive Manager. $739 direct. GCC Technologies, Inc., 580 Winter St., Waltham, MA 02154, 800-422-7777 or 617-890-0880. (Nov '91) [MF#1291]
drive is well built but has an
unshaded power supply. Good performance
mechanism is Quantum ProDrive 210S.
Actual capacity with included Disk Manager
Mac formatter is 197.3 MB. Two-year
 warranty. $1,499 direct. MacProducts USA, Inc.,
608 W. 22nd St., Austin, TX 78705. 800-622-
3475 or 512-472-8881. (Apr '92) [MF#1310]

**MacProducts MagicDrive**

**10GLP External**

This affordable hard-disk drive
uses a Quantum LP105S internal
mechanism and offers fast perfor-
ance. Actual formatted capacity is
101 MB. Bundled with SCSI bus
software. Software: Norton Disinfect-
tant, and 10 MB of shareware.
Formatting utility provided is Disk
Manager Mac 2.24. $39 direct.
MacProducts USA, Inc., 608 W.
22nd St., Austin, TX 78705. 800-
622-3475 or 512-472-8881. (Nov
'91) [MF#1311]

**MacTel Index 105MB**

This affordable external hard-disk
drive uses a Quantum LP105S internal
mechanism. Provides very good performance.
Actual formatted capacity is 101 MB. Bundled with
BackMagic, AutoSave, and 14 MB of shareware.
Formatting utility provided is Index HD Utilities.
$49 direct. MacTel Technology, 3007 N.
Lamar Blvd., Austin, TX 78705.
800-893-8411 or 512-451-2600.
(Apr '92) [MF#1312]

**MacTown DataStor 210 MB**

This affordable SCSI hard-disk
drive has adequate construction quality
but poor documentation. Good perfor-
ance. Internal mechanism is Quantum
ProDrive 210S. Actual capacity with
formatted capacity is 210 GB. $1,999 direct.
MacTown DataStor, 3381 S. Cherryvale Rd.,
Boulder, CO 80303. 800-338-4273 or 303-
442-4747. (July '91) [MF#1313]

**MicroNet MS3200**

This affordable hard-disk drive is poorly built but includes
good SCSI cable and good docu-
mentation. Adequate perfor-
ance. Requires Mac II series.
Maxtor LXT-2135Y. Actual
capacity with included MicroNet Utilities 5.17 formatter is
200 MB. Also provides good support.
MicroNet Technologies, Inc., 20 Mason, Irvine,
CA 92718. 714-837-6033. (Apr '92) [MF#1316]

**MicroNet SB-100DNP**

This fast 1-gigabyte hard-disk
drive has a formatted capacity
of 987 MB. Average seek time of
15 milliseconds. Based on the
Seagate ST14010NM mechanism.
Provides good performance with
the MicroNet Utility 5.03 SCSI
driver. Software allows password-
protection, backup, and an A/UX-
compatible-partitioning function.
Included software is A/UX
NuPort card optimizer.
MicroNet Technologies, Inc., 20 Mason, Irvine,
CA 92718. 714-837-6033. (July '91) [MF#1317]

**MicroNet SB-128DNP**

This very fast 1-gigabyte hard-
disk drive has a formatted capaci-
ty of 1,266 MB. Average seek
time of 13 milliseconds. Based on a
pair of Seagate ST4100NM
mechanisms. Provides good per-
formance with the MicroNet Utili-
ty 5.03 SCSI driver. Software allows
password-protection, backup, and
A/UX-compatible-partitioning func-
tions. Included software is
NuPort card optimizer.
MicroNet Technologies, Inc., 20 Mason, Irvine,
CA 92718. 714-837-6033. (July '91) [MF#1318]

**MacPhyte EUROPA 40**

The elegant MacPhyte Europa 40
is a 40-MB external SCSI hard-
disk drive based on the fast, reli-
able Quantum ProDrive 210S.
Average performance. Five-year
warranty. $569. MicroPhyte Inter-
national, Inc., 158 Commerce St.,
East Haven, CT 06512. 800-626-
4276 or 203-468-6223. (Apr '91) [MF#1319]

**MicroTech N320**

The MicroTech N320 is a compact hard-disk drive with a formatted capacity of 300 MB.
Average seek times and throughput rate. Good software and support. $2,239. MicroTech International, Inc., 158 Commerce St., East Haven, CT 06512. 800-626-4276 or 203-468-
6223. (Dec '90) [MF#1320]

**MicroTech Nova 40**

This excellent zero-footprint 40-
MB hard-disk drive has a sturdy
case, a five-year warranty, and
automatic head parking.
MicroTech International, Inc., 158 Commerce St., East Haven, CT 06512. 800-626-4276 or 203-468-
6223. (Feb '90) [MF#1321]
Microtech Nova N1000  ****
This hard-disk drive’s formatted capacity is 988 MB. Average seek time of 15 milliseconds. Based on the Seagate ST41200NM mechanism. Provides good performance with the DiskInit 2.1 SCSI driver. Software provides partitioning, formatting, and file recovery capabilities. $3,995. Optima Technology, 17526 Von Karman, Irvine, CA 92714, 714-476-0460 (Dec ‘91). [MF#1309]

Optima Diskcovery 200  ****
This SCSI hard-disk drive is poorly built. Has good SCSI cable and good documentation. Good performance. Internal mechanism is Maxtor LXT-213STY. Actual capacity with included Optima DiskMount formatter is 200.6 MB. Bundled with disk-mirroring software. $1,895. Optima Technology, 17526 Von Karman, Irvine, CA 92714, 714-476-0460 (Jan ‘92). [MF#1329]

Optima MiniPak 300  ****
This compact SCSI hard-disk drive is poorly built and has an internal fuse but includes good SCSI cable and documentation. Good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Hard Disk Formatter is 200.6 MB. Bundled with disk-mirroring software. $1,895. Optima Technology, 17526 Von Karman, Irvine, CA 92714, 714-476-0460 (Apr ‘92). [MF#1330]

PCP MacBottom 50MB  ****
This well-designed, inexpensive hard-disk drive is based on the Quantum LP525 mechanism. The low-profile case fits well under a Mac Classic. Unfortunately, this single SCSI connector has no nondetachable cable and the SCSI ID switch allows "illegal" numbers 7 through 9. $359. PCP (Peripheral Computing Corporation), 4710 Eisenhower Blvd., Bldg.A, Tampa, FL 33633, 800-622-2885 or 813-884-3092. (Apr ‘91). [MF#1331]

PLI PL 1.2 Gigabyte  ****
This hard-disk drive’s formatted capacity is 990 MB. Average seek time of 15 milliseconds. Based on the Seagate ST41200NM mechanism. Provides good performance with the PLI Formatter 3.0 SCSI driver. Includes Redux software for partitioning, password protection, encryption, and backup. $699 direct. Relax Technology, Inc., 3101 Whipple Rd., Ste. 22, Union City, CA 94587, 510-471-6112. (July ‘91). [MF#1337]

Relax Vista 210  ****

Rodime Cobra 1000e  ****
This hard-disk drive’s formatted capacity is 990 MB. Average seek time of 15 milliseconds. Based on the Seagate ST41200NM mechanism. Provides good performance with the Cobra 1.3 SCSI driver. Includes Redux software for partitioning, password protection, encryption, and backup. $8,899. Rodime Systems, Inc., 10210 Camino Real, Boca Raton, FL 33433, 800-227-4144 or 407-391-7533. (July ‘91). [MF#1338]

Sature Academy 200  ****
This affordable hard-disk drive is fast and well built and has good documentation. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Dataframe formatter is 197.3 MB. Two-year warranty. Version 2.01 software reviewed. $699 direct. Sature Corp., 484 Richmond Avenue, Cambridge, MA 02140, 800-373-3063 or 617-661-8166. (Apr ‘92). [MF#1340]

Sature Proline 200  ****
This hard-disk drive is fast and well-built and has good documentation. Internal mechanism is Hewlett-Packard C2233. Actual capacity with included Dataframe formatter is 221.6 MB. Five-year warranty. Version 2.01 software reviewed, $799 direct. Sature Corp., 484 Richmond Avenue, Cambridge, MA 02140, 800-373-3063 or 617-661-8166. (Apr ‘92). [MF#1341]

Storage Dimensions MacinStor 1020-1S1  ****
This hard-disk drive’s formatted capacity is 999 MB. Average seek time of 15 milliseconds. Based on the Seagate ST41200NM mechanism. Provides good performance with the MacinStor 3.0 SCSI drive. Includes MacTools Deluxe software. Also has a two-year warranty. Excellent manual. $6,799. Storage Dimensions, Inc., 1565 McCarthy Blvd., Milpitas, CA 95035, 408-944-0710. (July ‘91). [MF#1342]

Storage Dimensions MacinStor 205  ****
This hard-disk drive has adequate construction quality and includes good SCSI cable and good documentation. Good performance. Internal mechanism is Maxtor LXT-213STY. Actual capacity with included MacinStor formatter is 200.7 MB. Fuse is internal. Two-year warranty. Version 3.02 reviewed. $1,599. Storage Dimensions, Inc., 1565 McCarthy Blvd., Milpitas, CA 95035, 408-944-0710. (Apr ‘92). [MF#1343]

Third Wave 210 MB Hard Drive  ****
This affordable hard-disk drive is poorly built but has good documentation and good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Disk Manager Mac formatter is 197.3 MB. Two-year warranty. $7,999. Third Wave Computing, Inc., 1826-B Kramer Ln., Austin, TX 78758, 800-284-0486 or 512-832-8282. (Apr ‘92). [MF#1344]
This affordable hard-disk drive is Pluss or later and a hard-disk drive, $1,499 direct. APS (Alliance Peripheral Systems), 2900 S. 291 Hwy., Independence, MO 64057. 800-235-2730 or 816-478-8300. (Oct '91) [MF#1301]

APS SyQuest 88 MB Drive

Based on the SyQuest SQ510 mechanism, this magnetic-cartridge drive offers good construction. Poor SCSI-cable design. Driver software formats cartridges at 85-MB capacity and supports partitioning, backup, password protection, data encryption, data recovery, disk optimizing and diagnostics. Requires Mac Plus or later. $1,499. ADM 495. ADIC (Advanced Digital Information Corp.), 14727 N.E. 87th St., Redmond, WA 98075. 800-336-1223 or 206-881-8004. (Oct '91) [MF#1305]

APS Archive Python

This hard-disk drive has a formatted capacity of 900 MB. Average seek time of 15 milliseconds. Based on the Micropolis 1598-15 mechanism. Has good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Spot On formatter is 197.2 MB. Bundled with 26 MB of shareware. Two-year warranty. $749 direct. APS, TMS Peripherals, 1120 Holland Dr., Ste. 16, Boca Raton, FL 33487. 800-275-4867 or 904-998-9958. (Apr '92) [MF#1346]

Tulip A-Hive Hard Drive 16B

This hard-disk drive is properly built and has good documentation. Good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Spot On formatter is 197 MB. Warranty not specified with packaging. Tulip Technology, 2156 H’O’Toole Ave., San Jose, CA 95131. 408-432-9057. (July '91) [MF#1346]

Tulip Hive Jr 210 MB

This hard-disk drive is poorly built and has poor documentation. Good performance. Internal mechanism is Quantum ProDrive 210S. Actual capacity with included Spot On formatter is 197 MB. Warranty not specified with packaging. Tulip Technology, 2156 H’O’Toole Ave., San Jose, CA 95131. 408-432-9057. (Apr '92) [MF#1347]

Wholesale 54 1050

This affordable external hard-disk drive uses a Quantum ProDrive 105S internal mechanism. Adequate performance. Actual formatted capacity is 105 MB. No software bundled. Formatting utility provided is Disk Manager Mac 2.24, $389 direct. Wholesale 54, 241 Tennyson, San Mateo, CA 94403. 650-85282, 800-659-0054. (Nov '91) [MF#1348]

Storage Systems/Removables

ADIC MacBack DAT

The ADIC MacBack DAT includes MacBack-network-backup server software, client software, and the solidly built ADIC MacBack DAT cassette drive. Can restore to clients over the network and allows client-controlled file selection. Slow and heavy, and requires both client and backup server running. Software supports other tape drives. Version 2.02 software reviewed. Requires Mac Plus or later, and ADIC MacBack DAT cassette drive. $4,995. ADIC (Advanced Digital Information Corp.), 14727 N.E. 87th St., Redmond, WA 98075. 800-336-1223 or 206-881-8004. (Oct '91) [MF#1349]

APS Archive Python

APS Archive Python includes the fast, compact Archive 4330 DAT cassette drive and Retrofit 1.2 backup software. Requires Mac Plus or later and a hard-disk drive, $1,499 direct. APS (Alliance Peripheral Systems), 2900 S. 291 Hwy., Independence, MO 64057. 800-235-2730 or 816-478-8300. (Oct '91) [MF#1301]
La Cie 660R Magneto-Optical Drive

This erasable optical drive has fast performance. Bundled with Silverlining, with cartridge, $3,368 direct. La Cie Ltd., 700 S. Foothill Blvd., Beaverton, OR 97005. 800-999-0143 or 503-520-9900. (Nov '90) [MF#1379]

Liberty 112MB-MO Drive

This affordable, portable magneto-optical-carry disc drive uses 3.5-inch optical discs. Comes with a carrying case. Internal mechanism is a MOST RMD-5100-S Cartridge capacity after formatting is approximately 119 MB. Poor documentation. No bundled software. Formatted: SCSI Direc, $1,499 direct. Liberty Systems, Inc., 160 Saratoga Ave., Ste. 38, Santa Clara, CA 95051. 408-983-1127. (July '92) [MF#1380]

Liberty 88MB Removable Drive

Based on the SyQuest SQ5110 mechanism, this affordable magnetic-cartridge drive offers good design and construction. Driver software formats cartridges at 88-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. S$99 direct. MacTel Technology, 3007 N. Lamar Blvd., Austin, TX 78705. 800-950-8411 or 512-451-2600. (Feb '92) [MF#1384]

MacTel Index 88R

Based on the SyQuest SQ5110 mechanism, this magnetic-cartridge drive offers good design and construction. Driver software formats cartridges at 88-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. S$99 direct. MacTel Technology, 3007 N. Lamar Blvd., Austin, TX 78705. 800-950-8411 or 512-451-2600. (Feb '92) [MF#1384]

MacTown DataStor 88 removable drive

Based on the SyQuest SQ5110 mechanism, this magnetic-cartridge drive offers good design and construction. Driver software formats cartridges at 88-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. S$99 direct. MacTown Technology, 1381 S. Cherryvale Rd., Boulder, CO 80303. 303-427-4727. (Jan '92) [MF#1386]

Mass Microsystems DataPak 88 drive

Based on the SyQuest SQ5110 mechanism, this magnetic-cartridge drive offers good documentation and bundled software. Driver software formats cartridges at 85-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. S$1,799. Mass Microsystems, Inc., 810 W. Maude Ave., Sunnyvale, CA 94086. 800-522-7979 or 408-522-1200. (Jan '92) [MF#1387]

Mass Microsystems DataPak MO/128 drive

This magneto-optical cartridge drive uses 3.5-inch magneto-optical cartridges and offers good documentation and bundled software. Construction is an internal mechanism is a Sony SMO-P301. Cartridge capacity after formatting is approximately 119 MB. Bundled with SuperDisk and DiskDoubler. Formatting utility is DataPak MO/128. Formattter: S$1,799. Mass Microsystems, Inc., 810 W. Maude Ave., Sunnyvale, CA 94086. 800-522-7979 or 408-522-1200. (July '92) [MF#1388]

MicroNet 88 MB Removable drive

Based on the SyQuest SQ5110 mechanism, this magnetic-cartridge drive has limited bundled software. Good SCSI-cable design. Driver software formats cartridges at 85-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. S$1,395. MicroNet Systems, Inc., 810 W. Maude Ave., Sunnyvale, CA 94086. 800-522-7979 or 408-522-1200. (July '92) [MF#1388]

MicroNet CPKD-2000

This magneto-optical cartridge drive is solidly built product has complete hardwares. Excellent software includes BackMate and Drive Support A/UX partitions and comes with one cartridge that has a capacity of about 44 MB. $499 direct. MacTech Technology, 3007 N. Lamar Blvd., Austin, TX 78705. 800-950-8411 or 512-451-2600. (Feb '92) [MF#1384]

MacTel Index 45 Removable drive

Although not the fastest SyQuest removable-cartridge drive, this solidly built product has complete hardwares. Excellent software includes BackMate and Drive Support A/UX partitions and comes with one cartridge that has a capacity of about 44 MB. $499 direct. MacTech Technology, 3007 N. Lamar Blvd., Austin, TX 78705. 800-950-8411 or 512-451-2600. (Feb '92) [MF#1384]

Mice Ratings

For more information, circle the MiniFinder number (MF#) on the Reader Service Card.
Ocean Tidalwave 650 tttt


PLI Infinity 88 tttt

Based on the Syquest SQ5110 mechanism, this magneto-carctridge drive uses 3.5-inch optical discs. Includes PC/PCB (Peripheral Computer PeripheralCards), 471100055841Blaisdell Blvd., Bldg. A, Tampa, FL 33612. 813-884-4392. (Oct '91) [MF#1403]

Peripheral Vision PV-DAT tttt


Pinnacle Micro REO 1300 tttt

This portable magneto-optical-cartridge drive uses 3.5-inch optical discs. Includes audio software. $1,299. Pinnacle Micro, Inc., 19 Technology, Irvine, CA 92718. 800-553-7070 or 714-727-3300. (July '92) [MF#1406]

Pinnacle Micro REO-6500 tttt

This REO-6500 optical jukebox combines a Sony magneto-optical disc drive with a robotic media changer that can handle ten cartridges containing 650 MB each. Users can mount each cartridge as a separate volume, and volumes can be combined up to 2 GB. All disc-changer operations are automatic and transparent to users. Jukebox Admin software simplifies cartridge handling. Version 2.0 reviewed. Requires Mac Plus or later and 3.5-inch optical discs. Internal mechanism is a Sony SMO-P30. Formatted cartridge capacity is approximately 119 MB. Good documentation. No bundled software. Includes basic formatting utility, REO Formatter. $1,995 direct. Pinnacle Micro, Inc., 19 Technology, Irvine, CA 92718. 800-553-7070 or 714-727-3300. (July '92) [MF#1406]

Pinnacle Mini Jukebox Junior tttt

The Jukebox Junior optical jukebox combines a Sony magneto-optical disc drive with a robotic media changer that can handle ten cartridges containing 650 MB each. Users can mount each cartridge as a separate volume, and volumes can be combined up to 2 GB. All disc-changer operations are automatic and transparent to users. Optional built-in hard disk drive boosts performance. Version 1.0 reviewed. Requires Mac Plus or later and a hard disk drive. $9,999; hard disk drive and cache software, $1,999; ten cartridges, $1,999; PLI peripheral land, Inc., 47421 Bayside Pkwy., Fremont, CA 94538. 800-288-8754 or 510-657-2211. (Aug '91) [MF#1414]

PLI Condor CD-ROM tttt

This solidly built CD-ROM drive offers good performance. Version 1.0 reviewed. Requires Mac Plus or later. A stand-alone hard disk drive. $9,999; hard disk drive and caching software, $1,999; ten cartridges, $1,999; PLI peripheral land, Inc., 47421 Bayside Pkwy., Fremont, CA 94538. 800-288-8754 or 510-657-2211. (Aug '91) [MF#1414]

Procom MCD 650 tttt

This solidly built CD-ROM drive has good performance, but volume control is limited and there's no preamp output. $895. Procom Technology, Inc., 2181 Dupont
Procom MDAT1300/M

This document reviews the Procom MDAT1300/M, which includes the WangDAT 1300 DAT-drive, a backup software. With Mac Plus or later and a quiet fan, and built-in surge protection. Comes with a cartridge drive, which has limited features. Version 4.06 software reviewed. Requires Mac Plus or later and a hard-disk drive. $299; requires Mac Plus or higher and 2 MB of RAM, System 6.0.3 or later, and a hard-disk drive. $850. Cypress Research FaxPro.

Relax Optical 600 Plus

This optical cartridge drive uses 3.5-inch optical discs. Offers good construction and documentation. Internal mechanism is a Sony SMO-P301. Fuse is internal. Formatted cartridge capacity is approximately 119 MB. Comes with Procom formatter. $1,959. Procom Technology, Inc., 2181 Dupont Dr., Irvine, CA 92715. 800-800-8600 or 714-549-9449. (Oct '91) [MF#1416]

Procom ME0128

This magnetic-optical cartridge drive uses 3.5-inch optical discs. Offers good construction and documentation. Internal mechanism is a Sony SMO-P301. Fuse is internal. Formatted cartridge capacity is approximately 119 MB. Comes with Procom formatter. $1,959. Procom Technology, Inc., 2181 Dupont Dr., Irvine, CA 92715. 800-800-8600 or 714-549-9449. (July '92) [MF#1417]

Procom MRD 80

Backed by a 1-year warranty, the QSS110 mechanism, this affordable magnetic-optical cartridge drive offers limited software and minimal support. Driver software formats cartridges at 85-MB capacity and supports partitioning and password protection. Requires Mac Plus or later. $899. Procom Technology, Inc., 2181 Dupont Dr., Irvine, CA 92715. 800-800-8600 or 714-549-9449. (Jan '92) [MF#1418]

Relax 1.2 Gig Tape Vista

Includes the fast Archive452ONT DAT-cassette drive and Soft-BackupII 4.06 backup software, which has limited features. Version 4.06 software reviewed. Requires Mac Plus or later and a hard-disk drive. $1,369 direct, Retail $1,396 direct. Relax Technology, Inc., 2181 Dupont Dr., Irvine, CA 92715. 800-800-8600 or 714-549-9449. (Oct '91) [MF#1419]

Relax Mobile 44 Vista

The Mobile 44 Vista is a Syquest removable cartridge drive with an auto-switching power supply, quiet fan, and built-in surge protection. Comes with a cartridge. The formatting software is powerful but difficult to use. $429. Relax Technology, Inc., 3101 Whipple Rd., Ste. 22, Union City, CA 94587. 510-471-6112. (Feb '91) [MF#1420]

Relax Optical 600 Plus

This optical cartridge drive is an erasable optical drive with built-in power control, surge protection, noise filtering, and a compact case. Supports fast 850-KB-per-second transfer rates. $1,990. Direct, Relax Technology, Inc., 3101 Whipple Rd., Ste. 22, Union City, CA 94587. 510-471-6112. (Nov '90) [MF#1421]

Relax Vista 88R

Based on the Syquest QS5110 mechanism, this magnetic-optical cartridge drive has poor design and a limited feature set. Version 4.06 software formats cartridges at 85-MB capacity and supports partitioning, password protection, and diagnostics. Good support. Requires Mac Plus or later. $799 direct. Third Wave Computing, 83-66 B Kramer Ln., Austin, TX 78758. 800-284-0486 or 512-832-8282. (Feb '91) [MF#1427]

Third Wave 85R

Based on the Syquest QS5110 mechanism, this magnetic-optical cartridge drive has poor design and a limited feature set. Version 4.06 software formats cartridges at 85-MB capacity and supports partitioning, password protection, and diagnostics. Good support. Requires Mac Plus or later. $799 direct. Third Wave Computing, 83-66 B Kramer Ln., Austin, TX 78758. 800-284-0486 or 512-832-8282. (Jan '92) [MF#1428]

Todd Enterprises TCDR6800

This CD-ROM drive offers good overall performance, even when used with Photoshop. No preamp audio output. $1,010. Todd Enterprises, 224-249 67th Ave., Bay­­side, NY 11364. 800-445-8633 or 718-543-1040. (June '91) [MF#1429]
MINIFINDERS

modems with MNP 5. In some instances, the Mac can be instructed to use these schemes let it approach 9,600-bps throughput. Software is easy to use and intuitive. $649; bundled with Smartcom II and Hayes Connect software. (Oct '91) [MF#1438]

Hayes V-series Smartmodem

The V-series Smartmodem 9600 is one of the fastest modems available for the Mac. Requires Mac 512K or later; Mac-to-modem cable, and communications software. $999; with cable. Smartcom II for the Mac, and HayesConnect software. $1,049. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348. 404-441-1617. (Jan '91) [MF#1439]

MicroPhone II

MicroPhone II supports virtually all protocols and modems, and many features can be heavily customized or automated. Program comes with very busy interface which can be drawbacks for novices. Version 3.0 reviewed. Requires Mac Plus or later. $295. Software Ventures, Inc., 207 Claremont Ave., Berkeley, CA 94705. 510-644-3232. (June '90) * 86 Eddy [MF#1440]

Navigator

Navigator provides an interface and telecommunications links for CompuServe. Designed primarily as an off-line task-management program. A must for online communication needs. Navigator provides complex message-handling and file-transfer tasks quickly. Version 3.1 reviewed. Version 3.11 shipping. Requires Mac Plus or later, a hard-disk drive, and a modem. $99.95. CompuServe Information Services, 3000 Arling­ton Court Blvd., Columbus, OH 43220. 800-848-8199 or 614-657-8600. (Mar '91) [MF#1441]

Prometheus ProModem 2400

Although this modem has only an average performance, its operation and bundled software are hassle-free. $299. Prometheus Products, Inc., 9525 S.W. Tualatin Sherwood Rd., Tualatin, OR 97062. 800-328-2373 or 503-692-6600. (Jan '92) [MF#1442]

Remote/WakeUp!!!

This slick hardware/software combination lets you turn an ADB-capable Mac on from any modem and also show the Mac a specified period of inactivity. Uses a special modem cable that plugs into the Mac's modem port and also shows the Mac the modem's activity level. Requires Mac with MNP 5. In some instances, the Mac can be instructed to use these schemes let it approach 9,600-bps throughput. Software is easy to use and intuitive. $649; bundled with Smartcom II and Hayes Connect software. (Oct '91) [MF#1438]

Smartcom II

Smartcom II balances power and ease of use. Capable of unattended operation and has a powerful command-line language. Faster than previous versions. Version updating available, which can work at 9,600 bps. Version 3.0 reviewed. Version 3.2 shipping. Requires Mac 512K or later. $1,499. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348. 404-441-1617. (Jan '91) [MF#1443]

TeleFinder Pro

TeleFinder Pro is an innovative telecommunications program with an interface resembling the Finder. Connects to the Hayes V-series and other TeleFinder BBs; other TeleFinder Pro users are easy, with remote volumes appearing as hard-disk drives within the interface. Version 1.02 reviewed. Requires Mac Plus or later, a hard-disk drive, and a modem. $79.95. Spider Island Software, 4790 Irvine Blvd., Ste. 105-34, Irvine, CA 92716. 714-730-5785. (Mar '92) [MF#1445]

TelePort/FAX 9600

This send-only miniature fax modem uses the ADB port and is compatible with many applications not recommended for use with databases. Version 3.0 reviewed. Version 2.0 shipping. Requires System 6.03 or later. $49.95. Magic Software, Inc., 2239 Franklin St., Berkeley, CA 94709. 510-540-5535. (Oct '92) [MF#1446]

AutoSave II

AutoSave II protects against system crashes. It saves your work at intervals up to 99 minutes. Requires Mac Plus or later. $149.95. Dobin Software, Kent, WA 98032. (July '91) [MF#1447]

ClickChange

ClickChange is a control panel that customizes your Mac’s interface by modifying various features such as the cursor, palettes, bars, text, menu background, sounds, and dialog boxes. Comes with a library of more than 40 custom settings. Extremely easy to use. Version 1.0 reviewed. Version 1.052 shipping. Requires Mac Plus or later and System 6.03 or later. $89.95. Dobi-Click Software, Inc., 9316 Deering Ave., Chatsworth, CA 91311. 800-266-9325 or 818-703-9525. (Aug '91) [MF#1448]

TelePort/FAX 9600

TelePort/FAX 9600 is a miniature fax modem that introduced display monitoring. The Zoom/Modem is a reasonably priced 2,400-bps modem with excellent performance, Uses V.42bis compression, which reduces transfer times. Transmits using Xmodem, Ymodem, and Zmodem protocols. Version 3.2 reviewed. Requires Mac Plus or later and System 6.1 or later. $139, FreeSoft Co., 105 Claymore Rd., Beaver Falls, PA 15010. 412-846-2700. (May '90) * 87 Eddy [MF#1450]

Zoom Telephonics

Zoom/Modem V.42bis

The Zoom/Modem is a reasonably priced 2,400-bps modem with excellent performance. Uses V.42bis compression, which reduces transfer times. Transmits using Xmodem, Ymodem, and Zmodem protocols. Version 3.2 reviewed. Requires Mac Plus or later and System 6.1 or later. $139. FreeSoft Co., 105 Claymore Rd., Beaver Falls, PA 15010. 412-846-2700. (May '90) * 87 Eddy [MF#1450]

Crash Barrier

Crash Barrier lets you recover from a variety of system crashes without always having to restart. Minimizes data loss when restarts are necessary. Works for about half the crashes you’re likely to encounter. Replaces the Mac’s standard bomb dialog box with one that identifies the problem and, if possible, offers various crash-recovery routes. Version 1.01 reviewed. Requires Mac Plus or later and System 6.03 or later. $79.00. Casady & Greene, Inc., 22734 Portola Dr., Salinas, CA 93905. 800-359-1920 or 408-484-9228. (June '92) [MF#1457]

Help

This technical-support software package analyzes Mac systems, highlights potential problems, and suggests troubleshooting solutions. Creates detailed diagnostic reports covering one or more hard drives, servers, or floppy drives. Configuration section of reports describes...
System Folder contents, applications, Utilities come in two sizes, video and other hardware setups, and a wide variety of software details. Version 1.0 reviewed. Requires Mac Plus or later with 2 MB of RAM, System 4.0 or later, and a hard disk drive. $149; quarterly Knowledgebase updates, $25.

Teknosys, Inc., 3923 Coconut Palm Lane, Orlando, FL 32808. 800-367-4220 or 407-382-3494. (Apr '92) [MF#1458]

Icon-III $149
Icon-III lets you create icons to use as alternatives to menu commands. Uses your 100 icon templates, or create your own. Version 2.0 reviewed. Version 2.2 shipping. Requires Mac Plus or later. $129.

Olduvai Corp., 7520 Redwood Rd., Ste. A, South Miami FL 33143. 800-873-4384 or 305-665-4665. (Feb '92) [MF#1459]

Kiwi POWER windows $59
Efficiently manages the placement and size of document windows for multiple applications under System 7. Uses the过程当中 Create and launch Window. Set, user-defined clusters of applications and files to be opened simultaneously. Provides a useful Window Selection menu that lists all document windows for all open applications. Version 1.0 reviewed. Requires System 7 or later. $79.95. Kiwi Software, Inc., 6546 Pardall Rd., Santa Barbara, CA 93117. 800-321-5494 or 805-685-4031. (May '92) [MF#1460]

LifeGuard $$$
LifeGuard is an INIT that acts like an electronic alarm clock, letting you know when a specified length of time has elapsed. You control the frequency of breaks as well as the interval allowed before it's time to begin a new work session. Version 1.0 reviewed. Version 1.02 shipping. $59.95. Visionary Software, Inc., P.O. Box 64947, Portland, OR 97224-0947. 800-321-5494 or 503-246-6200. (Feb '91) [MF#1461]

MacEKG $149.95
This system extension loads into RAM at startup to administer a suite of diagnostic tests and compare current system performance with a log of previous test results. Includes a control panel for customizing test procedures. Also includes Starter, which repeatedly boots the Mac and accumulates diagnostic information. Version 1.0 reviewed. Version 1.0 2.0 shipping. $150. MicroMAT Computer Systems, 7075 Redwood Blvd., Novato, CA 94945. 415-888-6227. (Nov '91) [MF#1462]

MasterJuggler $$$
This excellent resource-management utility is loaded with features. Tracks 1000 documents to hundreds of fonts, DAs, FKey, and sounds. Can link applications and then launch them with one command. Version 1.37 reviewed.

Requires Mac Plus or later with 3 MB of RAM, 1 MB free HD, 16 MB System 7.0.3 or later. $79.95. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523- 7638 or 515-224-1995. (Jan '90) [MF#1463]

Maxima $149.95
Maxima displays the 8-MB limit on your Mac SE/30 or Mac II. Lets your applications use as much as 14 MB of virtual hard-disk memory in a lightning-fast RAM disk. Elegant design. Automatic write-through or volume-size partitioning features. Version 2.0 shipping. Requires SE/30 or Mac II and hard-disk drive. $129.

Connectix Corp., 2655 Campus Dr., San Mateo, CA 94403. 800-950-3580 or 415-571-5100. (Sept '90) [MF#1464]

MockPackage Plus Utilities $149.95
This set of extremely powerful DAs includes a text editor, text printer (supports LaserWriter), chart, terminal, EZmenus, and several other useful tools. Version 2.0 reviewed. Requires Mac Plus or later and System 4.2 or later; hard-disk drive recommended. $499. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (Mar '87) [MF#1465]

MultiClip lets you have as many Clipboards as your hard-disk space allows, which makes managing text and page-layout applications even easier. Version 2.0 reviewed. Version 1.7e shipping. Requires Mac Plus or later. $149. Olduvai Corp., 7520 Redwood Rd., Ste. A, South Miami FL 33143. 800-873-4384 or 305-665-4665. (Oct '90) [MF#1468]

Now Utilities $149
Now Utilities offers a super public collection of system-enhancement tools: StartUp Manager, Super Boomranger (adds navigation features to Olduvai disks and the Apple menu), Profiler (hardware/software analysis), NowMenus (horizontal sub-menus), WYSIWYG Menus, MultiMaster (desktop and menu-bar management), DeskPicture (custom desktop background), AlarmsClock, NowSave (automatically saves documents at regular intervals), and ScreenLock (a moderately secure password system). Version 3.0 reviewed. Version 3.01 shipping. Requires System 6.03 or later. $129. Now Software, Inc., 319 S.W. Washington St., 11th Floor, Portland, OR 97204. 503-237-3611 or 503-274-2800. (Jan '92) ★ ★ ★ 91 Eddy [MF#1467]

POWERmenus $149.95
POWERmenus is two products: The first is a menu bar manager that allows you to动力电池 from anywhere on-screen, and the other includes a phone dialer, notepad, and useful launchers for DAs, control panels, and applications. Version 1.03 reviewed. Requires System 5.5 or later. $79.95. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (Jan '90) [MF#1468]

Pyrol $149.95
Pyrol is a screen saver with 12 user-selectable entertaining modes and a cool display of color, flower, handles background tasks well. Can automatically switch to simpler modules when the background load is too heavy. Version 1.0 reviewed. Version 4.0 shipping. Requires Mac Plus or later. $39.95. Fifth Generation Systems, 10049 N. River Rd., Baton Rouge, LA 70809. 800-873-8348 or 504-291-7221. (July '92) [MF#1469]

QuickKeys $149.95
QuickKeys lets you make full use of your Apple Extended keyboard. Assign any command (menu choices, DAs, and the like) or series of text blocks and/or commands to any key or key combination. Use it mainly to generate macros. Version 2.0 reviewed. Version 2.1 shipping. Requires Mac Plus or later, System 6.04 or later, and a hard disk drive. $149. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (May '91) ★ ★ ★ 87 Eddy [MF#1470]

QuickTools $149.95
QuickTools is a well-programmed set of eight simple utilities, which includes functions such as file launching, dialog boxes, menu-bar location, memory management, and extended-keyboard operations. Version 1.0 reviewed. Requires Mac Plus or later, System 6.03 or later, and a hard-disk drive. $79.95. Advanced Software, Inc., P.O. Box 62206, Sunnyvale, CA 94086. 800-346-5392 or 408-733-0745. (Feb '92) [MF#1471]

Screen Gems $149.95
Screen Gems is a package of five color utilities for the Mac II. Color Desk puts art onto your desktop. Dimmer dims the screen when the Mac is inactive, and Switch-a-stool lets you switch between any two color modes instantly. Globe is a neat demo, and TN-3 lets you customize the Finder's Color menu. Version 1.0 reviewed. Requires Mac II series with 2 MB of RAM, System 4.2 or later, and a hard disk drive. $149.5. Microcom, Inc., 2095 Rose St., Berkeley, CA 94709. 510-540-5353. (Oct '92) [MF#1473]

Suitecase II $149.95
Suitecase II has excellent resource-management control. You type open font and then save or activate a file.

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For more information, circle the MinFinder number [MF#] on the Reader Service card.

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AutoDoubler

AutoDoubler provides efficient, automatic, and completely transparent file compression and decompression from storage devices. Fast and reliable, Insalls as control panel, with many useful options for extent and frequency of compression. Can exclude designated files, folders, or entire volumes from compression. Version 1.0 reviewed. Version 1.05 shipping. Requires Mac Plus or later with 2 MB of RAM, System 6.03 or later, and a hard-disk drive. $79.95. Salient Software, Inc., 124 Shire Dr., Los Angeles, CA 90068. 818-446-7062. (Aug '90) [MF#1482]

Compact Pro

Written by Bill Goodman, Compact Pro (formerly Compressor) is a shareware application that quickly creates the smallest possible compressed files. It can also create self-extracting archives that open automatically when you double-click on their icons, even if Compact Pro isn't available. Version 1.21 reviewed. Version 1.32 Pro shipping. Requires Mac Plus or later and System 4.2 or later. Shareware, $25 (from online services); on disk from Cyclos, $30. Cyclos Software, P.O. Box 31417, San Francisco, CA 94131. 415-821-1448. (Apr '91) ★ 90 Eddy [MF#1484]

Copy II Mac

Copy II Mac is a collection of powerful yet easy-to-use disk utilities, including disk-cycling, file-ejecting, and searching capabilities. Version 7.2 reviewed. Requires Macintosh Plus or later. $59. Central Point Software, Inc., 15220 N.W. Greenbrier Dr., Portland, OR 97229. 503-660-8050, 800-324-6243 or 402-291-0670. (July '90) [MF#1480]

CanOpener

CanOpener is a search-and-retrieval utility that searches files for specified strings. Reads and displays text, MacPaint, PICT, Finder, and MacDraw II formats. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. $15. Abbott Systems, 62 Mountain Rd., Pleasantville, NY 10570. 914-747-4171. (Feb '90) ★ 89 Eddy [MF#1481]

Cataloger

This utility tracks the contents of floppy disks' contents and saves an index on your hard disk. Provides a comprehensive database for managing files. Can also index other removable media, hard disks, or file servers. Can print labels for disks. Version 1.1 reviewed. Requires Mac Plus or later and System 6.1. $125. Arborsoft, 8609 Ingalls Cir., Arvada, CO 80003. 303-422-0757. (July '90) [MF#1488]

DiskDoubler

DiskDoubler consists of an INIT and an application for file compression and expansion. The INIT provides a simple pull-down menu to the Finder and all your applications. Version 3.0 reviewed. Version 3.7 shipping. Requires Mac Plus or later and System 6.03 or later. Shareware, $79.95. Salient Software, Inc., 124 University Ave., Ste. 300, Palo Alto, CA 94301. 415-321-5375. (Apr '91) [MF#1490]

DiskExpress II

DiskExpress II is one of the best hard-disk optimizers (or defragmenters) available. Runs automatically in the background, at a preset time or manually. Version 2.10 shipping. Requires System 6.03 or later. $89.95. AlSoft, Inc., P.O. Box 927, Spring, TX 77383. 713-353-4093. (July '90) [MF#1490]

DiskTop

DiskTop is the quintessential Finder-replacement DA. It's easy to use and powerful and has an excellent interface. Launched applications and performs batch copies and moves. Version 4.0 reviewed. Version 4.02 shipping. Requires Mac Plus or later and System 6.04 or later; hard-disk drive recommended. $99.50. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7683 or 515-224-1993. (June '90) [MF#1491]

DOS Moun ter

DOS Moun ter is an INIT that lets the Mac desktop mount DOS floppy disks as well as PC-compatible removable cartridges. Assigns Macintosh Type and Version numbers and a DA to each DOS file or disk, and lets specified Mac applications open them automatically without going through Apple File Exchange. Version 2.03 reviewed. Version 3.0 on-line services. David Dunham. (Oct '90) [MF#1486]

DirRec Troy

DirRec Troy is a fast, excellent file-cataloging tool. Easy-to-use Finder-like interface. Good printed reports. Includes actual icons and version numbers and a DA that can find files both on your disks and in DirRec Troy catalogs. Version 2.0 reviewed. Version 4.01 shipping. $99. Seagull Engineering, Box 604, S-22000 Lund, Sweden. 011-46-46-12-54-64 or 914-747-4171. (Feb '90) ★ 89 Eddy [MF#1487]

Disk Ranger

Disk Ranger is primarily a file-sharing program. It offers superior filtering abilities, useful sorting options, and good reporting-printing capability. Disk Ranger prints hard disk directory labels, on IngramWriters only. Version 1.0 reviewed. Version 4.75 shipping. Requires Mac 512Ke or later. $59.95. Graham Software Co., 8609 Ingalls Cir., San Mateo, CA 94403. 800-950-5880 or 415-571-5100. (Feb '90) [MF#1497]

Fastback Plus

Fastback Plus is a backup utility that supports incremental and differential backups and offers a choice of compression levels. Based on compressed format, it can be saved as preference files. Non-standard dialog boxes are unclear. Version 2.0 reviewed. Version 2.0 shipping. Requires Mac 512Ke or later and System 4.2 or later. $119.65. Diskpart Technologies, Inc., 5387-3834 or 504-291-7221, (Oct '90) [MF#1493]

Fitchell

This INIT puts a pop-up menu on the right side of the small-icon and disk-name dialog boxes. This makes it easy to select your mounted drives or do other Finder-type operations. Version 2.01 reviewed. Version 3.0 shipping. Requires Mac Plus or later and System 6.03 or later. $40. CRA Z Software, P.O. Box 6379. Haverhill, MA 01831. 508-521-5262. June '90 [MF#1495]

File Director

File Director is an extremely easy-to-use, versatile, and powerful collection of utilities. It includes Disk Tools, File Director, Calendar, Phone Pad, and RPN Calculator and Scientific Calculator. Good if your hard-disk drives contain many different files and applications. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later. $129. Fifth Generation, Inc., 15220 N.W. Greenbrier Dr., Baton Rouge, LA 70809. 800-873-4384 or 504-291-7221. (Apr '91) [MF#1495]

Findswell

Findswell is a remarkably useful and indispensable utility that installs a new button in the Open dialog box of every Mac application. Click on the button, type a search string into the box, and Find; then Findswell searches for any files that match. Version 2.2 shipping. Requires Mac Plus or later. $29.95 direct. Working Software, Inc., P.O. Box 1844, San Diego, CA 92136. 619-776-1699. (Nov '87) ★ 87 Eddy [MF#1496]

HAND-OFF II

HAND-OFF II lets you launch documents, using applications different from the ones that created the documents. Works with a variety of document types (including graphics) and lets you simply double-click on documents created with earlier program versions. Version 1.1 reviewed. Version 2.25 shipping. Requires Mac Plus or later with 2 MB of RAM and System 6.03 or later. $99. Connectix Corp., 2655 Campus Dr., Santa Clara, CA 95050. 408-423-5696. (Nov '87) ★ 91 Eddy [MF#1497]

Hard Disk Toolkit

Hard Disk Toolkit is a powerful group of applications that let you format, partition, diagnose, and optimize SCSI cartridges or hard-disk drives. Not for casual users. Includes HDT Primer, HDT World Control, BenchTest, HDT Prober, HDT Extension, and HDD Util. Support manual. Version 1.0 reviewed. Version 1.1 shipping. Requires Mac Plus or later, System 6.03 or later, and a SCSI cartridge drive or hard-disk drive. $199.95. FWB, Inc., 2040 Polk St., Ste. 215, San Francisco, CA 94109. 415-474-8055. March '91 [MF#1487]

HFS Backup

HFS Backup is a top-class backup program. Quick and reliable. Includes everything from a virus
Once you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a system menu. Version 1.0 reviewed. Version 2.0 reviewed. Requires Mac Plus or later. $449. Symantec Corp., 10201 Torrey Pines Rd., Ste. A, South Miami, FL 33143. 800-877-4266 or 708-520-4401. (Sept '92) [MF#1510]

On Location 

On Location finds files and text strings. Once you’ve run the program, you can view file contents (for most common document formats); open a file in its native application; or copy, delete, rename, or move a file. Main asset is blazing speed. Version 1.0 reviewed. Version 2.0 reviewed. Requires Mac Plus or later. System 6.03 or later, and a hard-disk drive. $129.50. ON Technology, Inc., 155 Second St., Torrance, CA 90509. 800-441-7234 or 408-253-9600. (Dec '91) [MF#1510]

MultiDisk 

MultiDisk is an excellent software disk partitioner that allows you to break a hard disk into partitions. The partitions can be automatically opened by an application even if it didn’t create the file. Version 1.2 reviewed. Version 1.0 reviewed. Requires System 6.03 or later and 2 MB of RAM. $149. Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143. 800-822-0772 or 305-665-4665. (Dec '91) [MF#1505]

MultiFinder 

MultiFinder is a well-conceived program that comes as a DA and as an application, both of which let you navigate files and folders, using dynamically updated pop-up menus and scrolling lists of folders and files. Tools that were previously opened by an application even if it didn’t create the file. Version 1.2 reviewed. Version 1.0 reviewed. Requires Mac Plus or later with 2 MB of RAM. $149. Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143. 800-822-0772 or 305-665-4665. (Dec '91) [MF#1505]

NightHill 

NightHill provides network-backup and client applica-
tions. Fast. Easy to use and install. Limited file-selection features for System 6.03 or later. Version 1.5 reviewed. Requires Mac Plus or later and a hard-disk drive. Includes site license. $995, with TTI drive purchase. $495, TTI (Transitional Technology, Inc.), 5401 E. La Palma Ave., Anaheim, CA 92807. 714-693-7007. (Aug '91) [MF#1507]

Norton Utilities for the Macintosh

This highly recommended package provides complete tools for personalizing your Mac. Utilities that optimize hard-drive performance and speed up searches for missing files are included as well as an application that modifies the appearance of Finder windows. Version 1.0 reviewed. Version 2.1 reviewed. Requires the Plus or later and System 6.04 or later. $149. Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014. 800-441-7324 or 408-253-9600. (Mar '91) [MF#1508]

On Location!!!

On Location lets you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a system menu. Version 1.0 reviewed. Version 2.0 reviewed. Requires Mac Plus or later. $99.95. ICOM Simulations, Inc., 648 S. Wheeling Rd., Wheeling, IL 60090. 800-877-4266 or 708-520-4401. (Sept '92) [MF#1510]

On Location 

On Location finds files and text strings. Once you’ve run the program, you can view file contents (for most common document formats); open a file in its native application; or copy, delete, rename, or move a file. Main asset is blazing speed. Version 1.0 reviewed. Version 2.0 reviewed. Requires Mac Plus or later. System 6.03 or later, and a hard-disk drive. $129.50. ON Technology, Inc., 155 Second St., Torrance, CA 90509. 800-840-8021. (July '91) [MF#1512]

PicturePress 

This file-compression program shrinks photographic-quality color or gray-scale images. Allows wide range ofJPEG compression levels for 24-bit PICT or ColorSync images. Photoshop plug-in module uses Photoshop’s built-in virtual-memory capability. Allows selected areas within images to be compressed at different ratios. Optional accelerator card reduces compression/decompression times to a few seconds. Version 1.2 reviewed. Version 2.0 reviewed. Requires Mac II series or higher with 2 MB of RAM, a 24-bit display system, and a hard-disk drive. $199; with StormCard accelerator, $999. Storm Technology, Inc., 1616 Landings Dr., Mount View, CA 94090. 800-661-6600. (Sept '91) [MF#1513]
Silverlining is an advanced hard­disk utility set with excellent disk­or later. $79.95 . Aladdin Systems, Inc., 10062 Miller Ave., Ste. 201, Cupertino, CA 95014. 800-441-7234 or 408-253-6600. (Dec '89) + *88 Eddy [MF#1524]

SuperDisk! !!!!

This file-conversion program is fast and reasonably easy to use. Unlike Stufflt and Compact Pro, it doesn’t combine multiple files into one compressed archive. Decom­pression of compressed output is sped. All files placed in a designated folder can be automatically compressed. Compressed files automatically decompress without significant delay when opened by their cre­ator applications. Version 1.7 re­viewed. Requires Mac Plus or later and System 6.03 or later. $39. Alysia Software Corp., 1231 31st Ave., San Francisco, CA 94112. 415-566-2263. (Apr '92) [MF#1525]

Tiles! !!!!

Tiles is a Finder-enhancement util­ity designed to help frequently accessed files and applications at your fingertips. tile-­file-cabinet metaphor with drawers for files or applications, both of which are opened via scrolling windows of tile-tagged icons. Good for any­one who wants System 7’s alias feature without using System 7. Works well with QuickKeys se­quence macros. Version 1.0 re­viewed. Requires Mac Plus or later with 2 MB of RAM and a hard­disk drive. $99.95. CE Software, Inc., 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 800-523-7638 or 515-224-1995. (June '92) [MF#1526]

Word for Word/Mac !!!!

Word for Word/Mac is a straight­forward stand-alone DOS-to-Mac file­translation application. Does a good job of retaining original text formatting. Depending on your needs, a decompression program such as Apple Exchange to convert PC­format files to the Mac’s bi­nary format. Word for Word/Mac supports DOS-to-DOS translation as well as various graphics and spreadsheet formats. One of its strengths is that it tags formatting and will convert perfectly. Version 2.0 reviewed. Version 2.0shipping. Requires Mac Plus or later and System 6.03 or later. $599.95. Aladdin Systems, Inc., 165 Westridge Dr., Watsonville, CA 95076. 408-761-6200. (Sept '91) [MF#1523]

SUM II (Symantec Utilities for Macintosh) !!!!

SUM II is an upgraded, expanded version of the SUM data­recovery pack­age. Includes utilities for partitioning, backing up, defragmenting, and optimizing floppy and hard­disk drives. Straightforward and reliable for defragmenting and optimizing, but less easy to use for undeleting files. Version 1.0 reviewed. Version 1.2 reviewed. Version 2.1 shipping. Requires Mac Plus or later and System 6.03 or later. $149, Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014. 800-441-7234 or 408-253-6600. (Dec '89) + *88 Eddy [MF#1524]

Microsoft Word for Word/Mac!!!

Although it supports fewer print­ers and comes with fewer fonts than the full­­Ridge version, the Light version also lets you print PostScript­quality output on non­PostScript printers. The only limit to output quality is the maximum resolution. Supports Type 1 fonts and Adobe Type Manager. Background printing is possible when you’re running under MultiFinder. Version 3.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later with 2 MB of RAM, a hard­disk drive, and 2 MB of memory. $419. Custom Applications, Inc., 1001 Industrial Dr., Bldg. 8, Billerica, MA 01821. 800-873-4367 or 508-667-8858. (Feb '91) [MF#1532]

GDT’s Software PowerPrint !!!!

PowerPrint is a set of custom print­drivers for dot­matrix, inkjet, and non­PostScript laser printers. Doesn’t require control-panel soft­ware. Each Mac must have reg­istered copy to use networked printer. Requires Mac Plus or later and System 6.03 or later. $149. GDT Softworks, Inc., 4664 Loug­heed Hwy., Ste. 188, Burnaby, British Columbia V5C 6B7, Canada. 800-663-6222 or 604-291-9121. (July '92) [MF#1533]

JOeL Impress !!!!

JOeL Impress is a printer driver that allows you to print to non­PostScript or Adobe PostScript­qual­ity output on non­Postscript printers. The only limit to output quality is the maximum resolution. PowerPrint shipping. Requires Mac Plus or later. System 6.03 or later. $419. Custom application­s. Inc., 1801 Tech­nology Park Dr., Bldg. 8, Billerica, MA 01821. 800-873-4367 or 508-667-8858. (Feb '91) [MF#1532]

MacEnvelope! !!!!

MacEnvelope! is one of the best envelope­printing utilities available. Intended for small­business and group users who do substantial mailing. Can print envelopes automatically. Sorts and reports by ZIP code or carrier routes. Does everything necessary to make your mailings qualify for the lowest bulk­and­regular­mail rates. Op­eration is fairly stable and reliable. In­cludes a DA, so envelopes can be printed that fly from within other applications. Version 2.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. $350. Synex, 692 Tenth St., Brooklyn,

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flawless. Version 1.5 reviewed. Version 1.52 shipping. Requires Mac Plus or later and System 6.03 or later. $79.95. Aladdin Systems, Inc., 165 Westridge Dr., Watsonville, CA 95076. 408-761-6200. (Sept '91) [MF#1521]

Software Bridge for the Macintosh !!!!

Software Bridge is a collection of file translators for PC­to­Mac file conversion. Used with Apple Exchange, it provides translators for three Mac word­processing formats (Word, WordPerfect, and MacWrite) and more than 20 DOS formats. Version 1.0 reviewed. Requires Mac Plus or later. $129. Systems Compu­tional, Inc., 401 N. Wabash, Ste. 600, Chicago, IL 60611. 312-329-0700. (Mar '91) [MF#1521]

Stufflt Classic !!!!

Stufflt Classic is an advanced hard­disk utility set with excellent disk­or later. $79.95 . Aladdin Systems, Inc., 165 Westridge Dr., Watsonville, CA 95076. 408-761-6200. (Dec '89) [MF#1522]

Indy Deluxe !!!!

The commercial version of Stufflt is a powerful file­con­gregation­and­archiving utility. Quick and easy to use. Provides nearly every feature found in MacPlus or later. $599. Aladdin Systems, Inc., 165 Westridge Dr., Watsonville, CA 95076. 408-761-6200. (Dec '89) [MF#1523]

SUM II (Symantec Utilities for Macintosh) !!!!

SUM II is an upgraded, expanded version of the SUM data­recovery pack­age. Includes utilities for partitioning, backing up, defragmenting, and optimizing floppy and hard­disk drives. Straightforward and reliable for defragmenting and optimizing, but

MICE RATINGS

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FOR MORE INFORMATION, CIRCLE THE MINIFINDER NUMBER [MF#] ON THE READER SERVICE CARD.
SuperLaserSpool supports a wide range of fonts, including the HP DeskWriter. Excellent performance. Installation is a snap, and use is mostly transparent. Version 2.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. $159.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Ste. 210, Houston, TX 77056, 800-325-3587 or 713-522-5625. (Sept '89) [MF#1542]

Utilities/Security

DiskLock 44% DiskLock is an excellent security program that keeps the contents of your hard disk drive private. Includes protection against trashing locked files, folders, support for DES, and the ability to do background processing. A proprietary encryption scheme is also provided. It doesn't offer customizable user passwords, does not allow a hierarchy of privileges, however. Version 2.0 reviewed. Version 2.12 shipping. Requires Mac Plus or later. $129.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Ste. 210, Houston, TX 77056, 800-325-3587 or 713-522-5625. (Mar '92) [MF#154] Fl. Knox 84% Fl. Knox is an excellent, high-level security utility. Supports password protection and two forms of encryption. Files or volumes can be "sanitized" to use top-secret standards. Ideal for classified government environments or high-level corporate and research facilities. May be overkill for normal business use. Easy to use and includes good manual. Version 1.05 reviewed. Requires Mac Plus or later and a hard-disk drive. $195 direct. Transcend Systems Co., Inc., P.O. Box N, M.I.T. Branch Post Office, Cambridge, MA 02139. 617-969-9570. (June '92) [MF#1547] MaccassCard Reader 21% MaccassCard Reader is a magnetic-identity-card reader that operates as part of ADB circuitry and supports a card reader and software. Can prevent unauthorized access to a Mac's entire hard disk or to a specified selection of folders, applications, or partitions. Requires Mac SE or later and FileGuard software. $349. ASD Software, Inc., 4650 Arrow Hwy., E-6, Montclair, CA 91763. 714-624-2594. (Apr '91) [MF#1548] MacSafe 84% MacSafe is a data-file-security program that lets you put multiple files into a "safe," where you can protect them further through two types of encryption (including DES) and a flexible and easy-to-use file manager. Allows for installation on hard-disk drive. Version 1.0 reviewed. Version 2.0 shipping. Requires Mac Plus or later. $189.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Ste. 210, Houston, TX 77056, 800-325-3587 or 713-522-5625. (Mar '87) [MF#1549]

NightWatch 84% NightWatch locks your hard-disk drive by using a floppy startup disk or key. Type in correct password, and access to the hard-disks is allowed. Version 1.02 reviewed. Version 1.03 shipping. Requires Mac Plus or later and a hard-disk drive. $159.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Ste. 210, Houston, TX 77056, 800-325-3587 or 713-522-5625. (Sept '88) [MF#1510]

FileGuard 70% FileGuard is an INIT that inspects open files for known viruses. Rival checks files constantly, but displays are hardly noticeable. Also scans disks and does some file repairs. Experienced users can easily add protection against viruses by calling the Symantec AntiVirus Newswire. The INIT portion, SAM, can track and intercept as many as 14 categories of new events, from relatively innocuous operations (such as copying applications to disk) to potentially insidious code changes in files. Includes Virus Clinic, an application for batch-encrypting older files that may be infected. Easy to use and easily modifiable for special needs. New feature allows networked users to access single virus-detection file on central server. Version 3.0 reviewed. Requires Mac Plus or later and System 6.03 or later. $99. Symantec Corporation, 1777 Cooper Ave., Cupertino, CA 95014. 800-441-7243 or 408-253-9600. (Aug '91) * 39 Eddy [MF#1552]

SecureInit 84% SecureInit locks files and folders, makes the System Folder invisible, erases files not on its user-specified approved list, locks disks against use after replacing specified files with clean copies after use, and password-protects everything. Also purges files as a disk fills up, but this is too dangerous to use in many cases. Particularly good at resisting efforts to bypass it. Version 2.5 shipping. Requires Mac Plus or later. $99. SecureInit Software, Inc., 1032 Irving St., Ste. 513, San Francisco, CA 94122. 415-347-1590. (Aug '90) [MF#1553]

ultraSecure 84% ultraSecure offers a powerful, hierarchical data-protection system. Implementation is structured rigidly and allows only to their own files and to those belonging to anyone below them in the hierarchy. Includes basic password-protection.
Virex is a virus preventer, detector, and eradicator that works against known viruses, Excellent scanning and installation process is simple enough for novices. The new Virex AppleShare Installer (available free to customers with it's license or ten-packs of Virex) is designed for use on an AppleShare file server. System-7-compatible, but features limited to Balloon Help. Version 3.2 reviewed. Requires Mac Plus or later and System 4.2 or later. $99.95. ten-user pack, $499.95. Micromedia Software Division, P.O. Box 3419, Santa Clara, CA 95052. 408-727-8227. (Aug '91) [MF#1555]  

LetterWorks  
LetterWorks is a book of 401 sample business letters. Letters come in text format on disk, so any word-processing program can open them. Version 1.0 reviewed. Requires Mac Plus or later; $79.95. Round Lake Publishing, Inc., 31 Bailey Ave., Ridgefield, CT 06877. 203-438-5255. (Mar '90) [MF#1565]  

MacWrite II  
MacWrite II offers useful word-processing features along with an excellent tracking changes and lock-function plus elegant multiple-column and mail-merge functions. Includes spelling checker. Supports footnote but no style sheets. With its optional hooks for PC and Mac file translators, MacWrite II is an excellent choice for mixed environments. Version 1.2 reviewed. Requires Mac Plus or later; hard-disk drive recommended. $129. Claris Corp., 2301 Patrick Henry Dr., Santa Clara, CA 95052. 408-727-8227. (June '92) ★ $85 ($Edy. [MF#1567]  

miniWriter  
miniWriter is a word-processing DA that has a slick feel and is easy to work with. Its interface is a finely tuned (early) quotes, a Find function, and the option to set the typeface and size for the whole document but not the text. The DA has a range of functions, including a spell checker, line breaks, and callout functions. miniWriter is a very attractive choice for text files. In addition, miniWriter is also a part of the Address Book Plus. It is also a part of the Address Book Plus. The software is available on a Mac disk, but it can also print on laser and inkjet printers. Version 1.6 reviewed. Version 1.73 shipping. Shareware, $12. Maitrema Design, P.O. Box 12085, Eugene, OR 97440. (Oct '90) [MF#1568]  

ilius  
This high-end word processor has an intuitive design and is easy to learn, but it has a range of menu options that will intimidate novice users. The DA has a range of functions, including a spell checker, line breaks, and callout functions. It is an attractive choice for text files. The software is available on a Mac disk, but it can also print on laser and inkjet printers. Version 1.6 reviewed. Version 1.73 shipping. Shareware, $12. Maitrema Design, P.O. Box 12085, Eugene, OR 97440. 503-342-2834. (Oct '90) [MF#1568]
Supports multiple columns, footnotes, and style sheets. Has glossary and spelling checker. Version 3.06 reviewed. Requires Mac Plus or later; hard disk drive recommended. Requires Microsoft Word, MacWrite II, or WriteNow. $49.95. MacWrite II, P.O. Box 300, 107 S. Cedros, Solana Beach, CA 92075, 800-922-2993 or 619-481-1477. (Jan '91) [MF#1569]

QUED/M tttt
QUED/M is an excellent DA text editor. Saves documents in a form readable by most computers and printed on popular printer or graph- ics or multiple fonts. Programming language allows database creation. Can build complex search patterns. Mac- ros feature lets it function as an appointment book or text database. Version 2.07 reviewed. Version 2.09 shipping. Requires Mac 5.0, or later; MacWrite II, MacWrite, or WriteNow, $95. A Lasting Impression, 3378 Thornberry Rd. Winchester, MA 01890, 617-721-2037. (Oct '89) [MF#1571]

Sonar Bookends tttt
Sonar Bookends is designed to create indexes for long documents. Has some interface flaws and lacks editing tools. Provides a variety of Boolean selection options for creating phrase lists. Doesn't require special indexing characters or text-marking procedures. A good choice if your word processor supports Boolean searching. Version 1.0 reviewed. $139.50. Vir- ginia Systems, Inc., 5509 W. Bay Area Dr., Houston, TX 77080. 416-515-1251 or 416-515-1250. (June '92) [MF#1574]

Vantage tttt
Vantage is a text-editing and the commercial version of the shareware that lets you combine text and graphics easily. Changes case; counts the number of lines, words, sentences, or parag- raphs; in a selection; and searches and replaces. Requires Mac Plus or later; and a hard disk drive. $149. DeltaPoint, Inc., 2 Harris Court, Ste. B-1, Monterey, CA 93940. 650-827-4534 or 408-648-4000. (June '92) [MF#1574]

WordPerfect ttttt
This fast word processor comes bundled with Grammatica (Mac) or Grammar Book III (MS DOS) and for Works available at the same price. Requires Mac Plus or later, Microsoft Word, MacWrite, or WriteNow, $95. A Lasting Impression, 3378 Thornberry Rd. Winchester, MA 01890, 617-721-2037. (Oct '89) [MF#1571]

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MINIFINDERS

gives a detailed report. Shows where text has been moved, deleted, or changed. Can also print document with revision bars to show editing. Sold as a companion to OmniPage, but OmniProof is really a separate program. Version 1.0 reviewed. Requires Mac Plus or later. $150. Caire Corp., 100 Cooper Ct., Los Gatos, CA 95030. 408-720-7725 or 408-395-7000. (Sept '90) [MF#1582]

Read-It O.C.R. Pro  

Read-It: O.C.R. Pro is an affordable, capable OCR package that won’t set any speed records. OmniFont capability recognizes most common typefaces and is available in Automatic mode. Recognizes multiple columns, italics, and some foreign characters but not underlined text. If your Mac is low on RAM, the program has a slower Transfer mode which may still provide adequate speed and still adapts well to most foreign-language fonts. Provides no visual feedback to inform users of recognition problems as OCR progresses. Supports Mac SE or later. Version 3.0 reviewed. Version 4.0 shipping. Requires Mac Plus or later with 4 MB of RAM, a hard-disk drive, and a flatbed scanner. $395. Old School Software Inc., 1325 Red Rd., Ste. A, South Miami, FL 33143. 305-822-0772 or 305-665-4665. (Mar '92) [MF#1586]

ReadRight for Macintosh  

ReadRight is an affordable, capable OCR package that won’t set any speed records. Provides accurate text recognition even of poor-quality material. Has some advanced features such as template support and page-decomposition tools. Provides a window to inform users of recognition problems. Doesn’t support hand-held scanners. Version 1.0 reviewed. Requires Mac SE or later with 5 MB of RAM, a hard-disk drive, and a flatbed scanner. $495. OCR Systems. 1800 Byberry Rd., Ste. 1405, Huntingdon Valley, PA 19006. 215-938-7460. (Mar '92) [MF#1587]

WordScan Plus  

WordScan Plus is a powerful OCR package that, despite its Windows heritage, adheres well to Macintosh standards. Easy to use but also very accurate and easily adapted to the input of output. Can handle scanned TIFF, EPS, or PICT files as well as image files received via fax. Handles high-resolution complex page formats well, and Preview mode lets you designate what to scan or ignore. Good automation features will endear this program to Macintosh word-processing bureaus. Allows deferred batch processing of multiple scanned images. Supports a variety of scanners and automatic document feeders. Version 2.0 reviewed. Requires 5 MB of RAM, System 6.05 or later, and a hard-disk drive. $895. Calera Recognition Systems, 475 Potrero Ave., Santa Clara, CA 94080. 408-544-7051 or 408-720-8300. (Feb '92) * 91 Eddy [MF#1588]

Word Processing/Spelling & Grammar Checkers

American Heritage Electronic Dictionary  

American Heritage Electronic Dictionary is a DA that accesses 116,000 entries from the standard office edition of Houghton Mifflin’s American Heritage Dictionary. Accurate and useful, but its clumsy interface doesn’t integrate well with other applications. Also includes the complete Roget’s II Elec­ tronic Dictionary as well as a thesaurus. Version 1.0 reviewed. Requires Mac Plus or later, System 6.0 or later, and a hard-disk drive. $89.50. WordStar International Inc., 201 Alameda del Prado, Novato, CA 94949. 800-523-3520 or 415-382-8000. (Aug '91) [MF#1589]

Correct Grammar  

Correct Grammar is an excellent Macintosh grammar checker with a high error-detection rate. This rule-based application handles a wide variety of interface. The interface is good, but some dialog-box type items are too small. Customization easy and necessary. Version 2.0 reviewed. Version 3.0 shipping. Requires Mac Plus or later. System 5.0 or later, and a hard-disk drive. $99. WordStar International Inc., 201 Alameda del Prado, Novato, CA 94949. 800-523-3520 or 415-382-8000. (Aug '91) [MF#1589]

Grammar Mac  

Grammar Mac offers good grammar-checking ability and an interface considerably better than previous versions. Customization of error-checking rules and interface is easy. Creates a copy of a document, with errors marked and diagnosed; the marked document is then corrected in a word-processing program before rechecking in Grammar Mac. Version 2.0 reviewed. Requires Mac Plus or later. $99. Reference Software International, 330 Townsend St., San Francisco, CA 94107. 800-922-9923 or 415-436-0222. (Sept '91) [MF#1591]

Inside Information  

Inside Information is a “hierarchical” dictionary, which provides large categories of words you can search through in almost the same way as you do a thesaurus. But it lets you explore subjects such as a library’s traditional card catalog does. It has three search views: outline (with expandable/collapsible headings); the tree view, and the more intuitive graphic view. A Reverse Dictionary feature lets you search for words according to your definition. This feature, like the overall utility, needs refinement and expansion. Version 1.0 reviewed. Requires Mac Plus or later. Two Tobyeh Village Office Park, Pittsford, NY 14534. 800-828-6293 or 716-248-9150. (Feb '91) [MF#1592]

LookUp  

LookUp is an interactive single-word spelling checker DA. Uses the 93,000-word Spellwell dictionary as well as several Macintosh dictionaries. Checks any word on the fly. Fast, Version 2.0 reviewed. Version 2.1 shipping. Requires Mac Plus or later. $39.95 direct. Working Software Inc., P.O. Box 1844, Santa Cruz, CA 95061. 408-423-5696. (Feb '90) [MF#1593]

Sensible Grammar  


Spelling Coach Professional  

Spelling Coach Professional 3.0 is a good, powerful spelling checker. New features include a much-improved control panel, clearer dialog boxes, greater flexibility in keyboard-command-equivalent assignments, and Deneb’s Big Thesaurus — the best available. Coach can check spelling in batches or interactively. Main drawback is that it takes time and effort to learn. Version 3.0 reviewed. Version 3.1 shipping. Requires Mac Plus or later with System 6.03 or later. $69.96. Microlytics Inc., Two Tobyeh Village Office Park, Pittsford, NY 14534. 800-828-6293 or 716-248-9150. (Feb '91) [MF#1595]

Spellswell  

Spellswell is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, and simple interface but weak guessing. Excellent performance. Version 2.0 reviewed. Requires Mac Plus or later. $39.95 direct. Working Software Inc., P.O. Box 1844, Santa Cruz, CA 95061. 408-423-5696. (Sept '88) * 86 Eddy [MF#1596]

Sensible Spell!  

Sensible Spell! is a single-word spelling package that’s easy to use. Version 2.0 reviewed. Requires Mac Plus or later. $39.95. Sensible Software Inc., 20200 E. Nine Mile Rd., Ste. 150, St. Clair Shores, MI 48080. 800-394-4660 or 313-774-7215. (Sept '91) [MF#1594]

WordFinder Plus  

WordFinder Plus is an electronic thesaurus that won’t replace your trusty Roget’s but is useful for checking synonyms on the fly. Version 2.0 reviewed. Requires Mac Plus or later with System 6.03 or later. $69.96. Microlytics Inc., Two Tobyeh Village Office Park, Pittsford, NY 14534. 800-828-6293 or 716-248-9150. (Feb '91) [MF#1595]

Word Foreign-Language Dictionaries

These electronic dictionaries are for use with Word: British (as opposed to U.S. English), French, Spanish, German, Italian, Swedish, and Dutch. Each dictionary acts as a supplement to the standard U.S. English dictionary, so you can use only one dictionary at a time. Without trying to include every word in each foreign language, these dictionaries can catch any misspelling, incorrect placement of titles, and even incorrect accent marks. Requires Microsoft Word 4.0, $75 each. Alki Software Corp., 219 First Ave. N., Ste. 410, Seattle, WA 98109. 206-286-2600. (Feb '91) [MF#1598]

WorksPlus Spell  

WorksPlus Spell is a speedy spellchecker and hyphenation checker for Microsoft Works. It includes a glossary for abbreviations and time/date/stamping. Limited use with Works. Version 2.0 reviewed. Requires Mac Plus or later. $39.95. Landen & Associates, 1000 Atlantic Ave., Alameda, CA 94501. 800-233-6851 or 510-769-7701. (Oct '87) * 87 Eddy [MF#1597]
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Autosynchronous Monitors

Can a sharp, bright, affordable monitor dethrone Apple's venerable 13-inch color champ? Fourteen challengers cross over from PC land.

BY WINN L. ROSCH

One size fits all. The phrase brings to mind discount clothing stores, where the term fit is used a bit loosely. Autosynchronous monitors — autosyncs, for short — have historically been the one-size-fits-all of personal-computer displays: affordable but of questionable quality. Although popular for IBM PCs and compatibles, they haven’t been capable of producing the high-quality images Mac users demand. Until now.

Autosyncs get their name from their ability to automatically adjust to a range of scan rates (or synchronizing rates), the number of times per second the screen is refreshed. An autosync can accept a variety of video signals from a variety of computers, including the Mac. By contrast, a fixed-frequency monitor operates at a single scan rate.

The monitor most familiar to users of color Macs is the fixed-frequency 13-inch AppleColor High-Resolution RGB Monitor, long the monitor of choice for those who want a sharp, bright, colorful display but who don’t require — or can’t afford — a larger, more expensive color monitor. The AppleColor has a well-deserved reputation for precise focus, excellent color uniformity, and freedom from the myriad tiny imperfections — or, in monitor jargon, nuisances — that can mar an otherwise high-quality display.
Autosynchronous Monitors

Although somewhat expensive, the AppleColor has had no serious competition for the title of best-buy basic business monitor; most Macintosh-monitor vendors have focused their efforts on larger monitors for graphics and DTP professionals. Some fixed-frequency competitors to the AppleColor do exist, but most small color monitors have been destined to be attached to PCs. Because of the video-signal anarchy in the PC world, most small color monitors are autosyncs (also known as multisync, because of their ability to handle multiple synchronizing rates). Because PC owners are currently demanding better and better displays, autosyncs are getting better and better; good enough to challenge — and even dethrone — the AppleColor.

To find out exactly how good the newest autosyns are, we enlisted the aid of ZD Labs, the new multimillion-dollar testing center created by Ziff-Davis Publishing, MacUser's parent company (see the "How We Tested" sidebar). We ran 14 color autosyncs through a more rigorous technical evaluation than we've ever used for testing fixed-frequency monitors (see "Big Screens for Small Macs: Mac LC and Ilsi Color Display Systems," February '92, page 156, and "The Perfect Image: True-Color Displays," May '91, Buyer's Guide page 4). After this objective testing was finished, we put each monitor in front of a panel of display experts, who subjectively judged the monitor's image and color quality.

Sometimes, our test equipment detected errors on a scale almost invisible to the human eye — even with the Taxan MultiVision 795's 40-percent misconvergence, for example, the red, green, and blue dots that make up the pixels on this monitor were still close enough for our jurors. At other times, however, the eyes of our expert jury found fault with an overall picture for which test equipment measured only negligible deviations from the norm. Generally, though, the eyes of our jury corroborated the objective findings of our test equipment. If anything, our human testers were more forgiving — and less wide-ranging in their opinions — than the cold, precise eye of the Microvision Superspot 100 System we used for our tests.

The Going Rates

Before we even began our testing, we discovered some important good news: Because autosync prices are

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When Does 15 = 14 = 13?

If all the autosynchronous monitors we looked at display the same number of pixels in about the same amount of screen real estate, why do some manufacturers call them 14-inch monitors and others call them 15-inch monitors? And why did we select the 13-inch AppleColor High-Resolution RGB Monitor as our reference standard — aside from the fact that it's by far the most popular Mac color monitor?

The answer is simple: All these monitors have a glass tube of about the same size inside their case, or bezel. The stated monitor size arises more from how manufacturers choose to describe and market their product than from how much glass is used. When we measure a screen, we do so diagonally, from one corner of the case to the opposite corner. Some manufacturers measure from the corners of the glass tube itself, which are not visible from the outside. If 2 inches of screen are hidden behind a plastic bezel or visible but not in use, what good are they to you?

At 640 x 480 pixels — the standard Mac video resolution — any extra inches mean little. However, autosyncs can accommodate multiple resolutions, many of which pack more pixels onto the screen. Most of the monitors we looked at can also display the popular 932-x-624-pixel resolution, and those 211,968 extra pixels will welcome the elbowroom.

— Elisa M. Welch
How It Works: Autosynchronous Monitors

Autosynchronous monitors are compatible with a wide range of computers — PCs as well as Macs. But that flexibility requires several controls for fine-tuning the display to a particular video signal and occasionally requires an adapter for connecting the monitor to the video output of your Mac. Here we illustrate the controls on the NEC MultiSync 4FG.

1. Input cable
2. Mac-to-VGA adapter
   Many of the autosynchronous monitors we tested have a VGA-style cable permanently attached to their back. Attachment to a Mac requires a Mac-to-VGA adapter, which maps the red, green, blue, and sync signals to the correct pins and emulates an AppleColor High-Resolution RGB Monitor.
3. Mode-status LED
   This LED lights when NEC’s AccuColor and pincushion controls are activated. The alternative functions of the control buttons are listed in the drop-down control-panel cover.
   NEC’s AccuColor system brings the red, green, and blue adjustments — which other manufacturers often hide inside a monitor’s case — outside for user adjustment. These controls let you set your display subjectively or objectively (with a TV analyzer such as the Minolta Color Analyzer CA-100 we used in our testing) to more closely match your viewing environment or your printer.
4. Memory-recall button
   Newer autosyncs feature digital controls that retain the size and position settings for each incoming frequency, for set-and-forget convenience. Once you’ve made size and position adjustments for your Mac and another platform (say, a PC), the monitor automatically senses the input frequency and switches to the last settings used with that type of signal. The memory-recall button recalls the memory settings entered at the factory.
5. Size controls
   Because autosyncs work with so many different video-signal standards, controls for matching the size of the displayed image to the video signal are a must. Up-front controls are the most convenient.
6. Position controls
   Position controls let you center the displayed image. If you plan to use your display with both a Mac and a PC, choose a model with controls up front or a model with digital memory controls.
7. Degauss button
   Should your monitor become magnetized by a nearby loudspeaker or telephone headset, it’s easiest to degauss (or de-magnetize) the display with a degaussing button. Displays that auto-degauss on power-up require you to turn the power off and on again to activate the circuitry.
8. Color switch
   This switch lets you select among the factory defaults (N) and two memory settings (1 and 2) for red, green, and blue levels, adjustable via NEC’s AccuColor system.
9. Sync switch
   Some display cards produce sync signals (the signals that control the timing synchronization between the video-signal source and the monitor) on a separate wire (separate sync). Others provide this signal on the green-signal wire (sync-on-green). An easy-to-reach switch makes switching among platforms simple.
Autosynchronous Monitors

driven by the number of color PCs (50,000,000+, more than ten times the number of color Macs), they are more in line with PC than with Mac prices: Autosyncs are usually inexpensive. For example, the least expensive autosync we tested, the Samtron SC428V, lists for $549. That's a little more than half the $999 list price of the AppleColor. Even the most expensive monitor we tested, the exceptionally bright $1,095 Taxan MultiVision 795, costs only 10 percent more than the AppleColor.

An extra 10 percent is still a good deal, given that an autosync isn't limited to use with a Mac. If you're buying a few dozen monitors for a business that has Macs as well as PCs, a high-quality autosync usable on both platforms is the perfect solution to inventory confusion.

An autosync operates within a range of video rates and not at all video rates, so it's critical to choose one that can handle the frequencies sent by the video board in your computer — be it a Mac or a PC. For example, the NEC MultiSync 4FG has a vertical-scan-rate range of 55 to 90 hertz (thousands of cycles per second) and a horizontal-scan-rate range of 27 to 57 kilohertz. The video signal put out from a Mac NuBus video card or from the built-in video in the IIci, IIlsi, LC, LC II, or any Quadra is 66.7 hertz vertically and 35 kilohertz horizontally — well within the MultiSync 4FG's range.

The vertical-scan rate, also known as the frame rate, tells you how often the entire screen is updated; the horizontal-scan rate tells you how quickly individual lines are painted on the screen. The standard Mac II-family

**Figure 1: Performance of Autosynchronous Monitors**

<table>
<thead>
<tr>
<th>Overall Performance</th>
<th>Subjective Image Quality</th>
<th>Subjective Color Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC MultiSync 4FG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sony CPD-1304</td>
<td></td>
<td></td>
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<tr>
<td>Fora Addonics</td>
<td></td>
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<tr>
<td>Mon-7C8A</td>
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<tr>
<td>Taxan MultiVision 795</td>
<td></td>
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<tr>
<td>Niseco Sangyo Hitachi</td>
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<tr>
<td>15 MVX</td>
<td></td>
<td></td>
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<tr>
<td>Darius TSM1431</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tektronics RE-1422</td>
<td></td>
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<tr>
<td>Sampo AlphaScan Plus KDM 1466A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meiko Innovision MX148</td>
<td></td>
<td></td>
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<tr>
<td>Mitsubishi Diamond Pro 14</td>
<td></td>
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<tr>
<td>Samtron SC428V</td>
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<td>Panasonic PanaSync C1395</td>
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<td>Amdek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AppleColor High-Resolution RGB Monitor</td>
<td></td>
<td></td>
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</tbody>
</table>

**Figure 1:** Our jury of experts analyzed image and color quality, and our lab technicians tested focus, color quality, and brightness. All results except those for maximum usable brightness show each monitor's performance relative to that of a 13-inch AppleColor High-Resolution RGB Monitor.

**Overall Performance:**
To rank the 14 autosyncs, we gave equal weight to subjective and objective scores. The NEC MultiSync 4FG came out on top, and the Sony CPD-1304 edged out our reference standard, the familiar AppleColor, in the race for second place.

**Subjective Image Quality:**
Our jury analyzed each screen for focus, geometry (how accurately the monitor displayed shapes), and lack of nuisances (such as jitter, swim, and drift). The results were normalized to those of an AppleColor, whose total score of 1.0 represents a score of .33 for each of the three image-quality tests. Except for the Princeton Ultra 1400, all the autosyncs looked pretty good, but none matched the Apple of our eye.

**Subjective Color Quality:**
Our jury scrutinized each monitor's representation of a color palette for accurate pastels and good saturation of primary colors. The bright Taxan MultiVision 795 edged out the Sony CPD-1304 and the NEC MultiSync 4FG; the Sampo AlphaScan Plus KDM 1466A's colors appeared washed out.
video signal is often called a 640 x 480 signal, because it displays a raster, or grid of pixels (dots), 640 pixels wide and 480 pixels high. The 640-x-480-pixel dimension, or resolution, is common among PCs as well. All the monitors we looked at can handle this Mac video rate, but if you want to use any of them with a PC, be sure to check the PC’s video requirements before you buy.

Table 1, which lists common PC video standards as well as their pixel dimensions and horizontal- and vertical-scan rates, can help. Table 2 has the minimum and maximum horizontal- and vertical-scan rates for every autosync monitor we tested.

### PCs Are Your Friends

Mac users have essentially considered autosynces irrelevant: All they needed was a monitor that scanned at the Mac’s rates, which Mac-dedicated monitors did handsomely. They didn’t need to bother about VGA, CGA, MCGA — the murky alphabet soups of PC video standards.

Autosync manufacturers focused on displays for PCs and ignored the machine that made graphics mandatory in modern business, the Mac. For example, until quite recently, it was rare for an autosync monitor to be shipped with a Mac cable and most autosync-monitor manufacturers didn’t even mention the Mac in their manuals.

But things are changing — rapidly. Microsoft Windows is raising the expectations for PC displays, and the multiplatform office is becoming more and more common. Although manufacturers are finally coming around, Mac support is hardly universal.

---

**Objective Image Quality:**

We used a Microvision Superspot 100 System to measure convergence, lack of pincushion distortion (how straight a line is on-screen), lack of nuisances, and MTF (modulation transfer function) sharpness. The results were normalized to those of an AppleColor, whose total score of 1.0 represents a score of .25 for each of the four image-quality tests. Only the Nissee Sangyo Hitachi 15 MVX and the NEC MultiSync 4FG outperformed the AppleColor.

**Objective Color Quality:**

We used a Minolta Color Analyzer CA-100 to measure three aspects of each monitor’s color quality: color range, color tracking (how consistently the red, green, and blue phosphors were illuminated at incremental brightness levels), and spatial uniformity (how consistent the monitor’s color and brightness remained over the entire screen). Again, the results were compared with those of an AppleColor, whose total score of 1.0 represents a score of .33 for each of the three color-quality tests. Only the Fora Addonics Mon-7C8A outdled the Apple.

**Maximum Usable Brightness:**

A bright screen such as the Texan MultiVision 795’s combats glare, is easy to read for long periods, and allows for high contrast. We measured the maximum brightness before the screen lost sharpness, using a Minolta Color Analyzer CA-100.
example, you must order a Mac cable as an option for the Mag Innovation MX14S, Mitsubishi Diamond Pro 14, Panasonic PanaSync C1395, Princeton Ultra 1400, and Sony CPD-1304. All the other autosyns we tested provide a Mac cable as standard or free on request. The Samtron SC428V was equipped with a connector that didn’t fit properly: We had to remove the adapter’s fat plastic shell to plug the adapter in to the back of a IIci, although it was fine on an LC or a IIsi.

This cable confusion illustrates a cardinal rule of buying peripherals: Always be sure to specify the appropriate cable, and ask whether it comes standard or as an option (and if so, what it costs). This rule also applies to power cables. The Reliys RE-1422 and Taxan MultiVision 795 come equipped with power cables designed to fit the AC connectors on the back of most Macs and PCs, but the power cables’ plugs don’t fit into a standard three-prong wall socket. To use either of these monitors with a Macintosh LC, which has no AC outlet for a monitor, you need a hard-to-find adapter. All the other monitors we tested use power cables with standard three-pronged plugs, and the Amdek AM/738+ also includes a European-style cable.

Once you have the right cables, setting up a Mac monitor should be a piece of cake, right? Not necessarily so with autosync monitors: Some have unfamiliar ports (for plugging in unfamiliar PC cables), and most include a variety of buttons and knobs with which Macintosh users may not be familiar. The controls may seem like a nuisance, but they’re really a boon: They allow you to adjust the position and color of the image on-screen when you move the monitor from one computer to another (see the “How It Works” sidebar.)

To their credit, the manuals for the Amdek AM/738+, Mitsubishi Diamond Pro 14, NEC MultiSync 4FG, Panasonic PanaSync C1395, and Princeton Ultra 1400 provide specific instructions for connecting the monitors to a Mac (the NEC manual even discusses the Mac LC). On the other hand, the Mag Innovation MX14S instructions note only that you need an adapter, the manual for the Nissei Sangyo Hitachi 15 MVX makes little mention of the Mac, and the documentation from all the other manufacturers ignores the Mac entirely.

Two Tube Types

Despite a proliferation of cabling schemes, control configurations, and video standards, just two types of CRTs (cathode-ray tubes, the guts of every display system) dominate the monitor marketplace. The older technology, shadow mask, is used in most of the monitors we tested. The newer one, Sony’s Trinitron technology, is found in the Fora Addonics Mon-7CSA, Mag Innovation MX14S, Sony CPD-1304, and Taxan MultiVision 795 as well as in our reference standard, the familiar AppleColor High-Resolution RGB Monitor.

Shadow-mask technology is steadily improving, outgrowing the reputation it once had for blotchy, imprecise displays. A shadow mask is a
thin metal plate riddled with holes that allows only the correct beam to strike a red, green, or blue phosphor. A shadow mask can heat up and expand at high brightness levels. This effect — called doming — can cause a beam to miss its intended target, resulting in a blurry image. To avoid this, the newest shadow masks — such as the one in the NEC MultiSync 4PG — are made from a material called Invar, which remains stable at high temperatures, allowing for higher brightness levels.

Although shadow-mask technology is improving, one drawback remains: A shadow-mask tube’s glass curves inward on all four sides, thus increasing the probability of reflected glare.

Trinitron technology offers excellent focus and a bright display. In a Trinitron CRT, the electron beams pass through an aperture grille of fine vertical wires (each with a thickness of about 195 microns, or millionths of a meter). This grille allows only the intended beam to strike either the red, green, or blue phosphor, creating the color you see on the screen.

Materials under greater tension are less susceptible to changes caused by heat, so the tightly stretched wires permit the monitor to operate at higher brightness levels. The Taxan MultiVision 795 — which uses a Trinitron tube — was easily the brightest monitor we tested.

To keep the aperture grille’s vertical wires from vibrating, a reinforcing wire is stretched horizontally across the grille, which produces a thin dark shadow across the lower portion of the screen — a faint but permanent line that some people find bothersome. Larger (16- and 19-inch) Trinitron tubes have two of these wires; the second one is stretched across the upper portion of the grille. The glass face of a Trinitron monitor curves in at the sides only and not at the top or bottom, thus reducing reflected glare.

Both technologies allow for powerful electron beams that can produce bright displays. The stronger the beam, the wider it gets, however, and the wider it gets, the poorer its focus becomes. Apple chose to limit the brightness of its AppleColor monitor — it was the second-dimmest in our tests (see Figure 1) — to keep the beams narrow and the image sharp. Although the AppleColor produces an exceptionally sharp image, we prefer monitors that let you adjust the brightness and judge for yourself at what point you want to make the trade-off between brightness and focus.

**Seeing Is Believing**

Brightness is important if you and your Macintosh reside in a sunlit office, but if you work mostly with text,
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The Outbound family of Notebook computers are up to 50% faster than PowerBooks, 7% lighter, provide 17% more screen area and are a true notebook size at 8 1/2" x 11". Their unique modular design lets you "mix and match" the CPU, hard drive, and memory you want, before and after you buy. You get the performance you need at the start, then upgrade simply and easily by installing low-cost modules.

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- CPUs from 20 to 33 MHz
- RAM from 2 to 14 MB

Notebooks use genuine Apple ROM and System Software and are equipped with all of the ports you’d expect in a Mac®.

The specs speak for themselves:

<table>
<thead>
<tr>
<th>MODEL</th>
<th>OUTBOUND NOTEBOOK 2000</th>
<th>APPLE POWERBOOK 100</th>
<th>OUTBOUND NOTEBOOK 2030</th>
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<td>$2999</td>
<td>$2999</td>
<td>$3299</td>
</tr>
</tbody>
</table>

Notebook prices based on retail sales. PowerBook prices reflect published Apple retail pricing. Technical specifications and prices subject to change without notice.

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The Macintosh ROM is pre-installed with memory conscious System 6.0.7, but Outbounds are fully compatible with System 7 and thousands of Macintosh applications. All models include an internal SuperDrive™ equivalent floppy disk drive for working with high and low density Mac and MS-DOS diskettes.
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Autosynchronous Monitors

Figure 3: Color Tracking

Good

Bad

Figure 3: The consequences of poor color tracking are readily visible. The Fora Addonics Mon-VCGA (left) scored high marks in our color-tracking test, whereas the Princeton Ultra 1400 suffered from weak illumination of its red and blue phosphors, resulting in a green-tinted screen image.

Color Tracking

For a monitor to function properly, each of the beams should strike exactly the same physical area, even though the individual beams hit separate phosphors. When a beam misses — or fails to converge with — the other beams, a rainbow outline, or halo, appears. This misalignment is measured as a percentage of pixel size. In our tests, most of the monitors kept convergence errors to an acceptable level, below about 30 percent of the pixel size. Only the Amdek AM/738+ had noticeably poor convergence.

Color My World

Sharpness, although important, is only one aspect of monitor performance. The ability of a display to accurately present the colors you expect is critical for graphic artists; DTP professionals; and other users working with continuous-tone images, photo retouching, and video. You can’t make adjustments if you can’t see what you’re doing.

The color capabilities of monitors differ in several ways. Some display a numbers, or wire-frame drawings, you may be happy to trade brightness for sharpness — how well you can see each detail in the on-screen image. When an image appears fuzzy, your eye constantly tries to focus on it better. This repetitive muscular adjustment can lead to eyestrain.

A monitor appears sharp when you can distinguish fine lines on the screen. The darker the line and the lighter the background, the better. Historically, PC users — especially pre-Windows command-prompt types — were accustomed to viewing displays that had bright characters on dark backgrounds. In order to blend the individually lighted pixels into smooth, solid characters, monitor designers emphasized brightness over sharpness. Mac users and now Windows folks as well spend more time viewing dark lines on light backgrounds. This has brought about a trend toward sharper definition rather than brightness.

The measurement of a monitor’s sharpness is called its MTF, or modulation transfer function. Essentially, a monitor’s MTF is the ratio between the darkness of a line and the brightness of its background, expressed as a percentage. We found that the NEC MultiSync-4FG had an excellent MTF, 74 percent; the rest ranged from 47.5 (the Relisys RE-1422) to 63 percent (the Mag Innovation MX145).

Another factor that influences sharpness is convergence — how close a monitor’s three electron beams stay to each other. In a color monitor, each of the beams should strike exactly the same physical area, even though the individual beams hit separate phosphors. When a beam misses — or fails to converge with — the other beams, a rainbow outline, or halo, appears. This misalignment is measured as a percentage of pixel size. In our tests, most of the monitors kept convergence errors to an acceptable level, below about 30 percent of the pixel size. Only the Amdek AM/738+ had noticeably poor convergence.

Table 1: Video Standards

<table>
<thead>
<tr>
<th>PC video standard</th>
<th>Pixel dimensions</th>
<th>Horizontal-scan rate</th>
<th>Vertical-scan rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDA</td>
<td>720 x 350</td>
<td>18.3 kHz</td>
<td>50 Hz</td>
</tr>
<tr>
<td>CGA</td>
<td>640 x 200</td>
<td>15.75 kHz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>EGA</td>
<td>640 x 350</td>
<td>21.5 kHz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>VGA</td>
<td>640 x 480</td>
<td>31.5 kHz</td>
<td>60 or 70 Hz</td>
</tr>
<tr>
<td>MCGA</td>
<td>640 x 480</td>
<td>31.5 kHz</td>
<td>60 or 70 Hz</td>
</tr>
<tr>
<td>VESA</td>
<td>800 x 600</td>
<td>48 kHz</td>
<td>72 Hz</td>
</tr>
</tbody>
</table>

Table 1: PC video standards can be intimidating until you understand what all the letters mean. Generally, they refer to the type of video board in the computer. The board sends the video signal to the monitor. We’ve listed the standards in the order in which they were introduced.

MDA (Monochrome Display Adapter): used with single-color (think green) displays.
CGA (Color Graphics Adapter): the first IBM board to work with color monitors, offering 16 colors (including black, dark gray, light gray, and white).
EGA (Enhanced Graphics Adapter): offers several improvements over CGA, including increased on-screen resolution and 64 colors (still including black, two grays, and white).
VGA (Video Graphics Adapter): built into IBM’s PS/2 computers, offering still better resolution and 256 colors on-screen simultaneously.
MCGA (Memory Controller Gate Array; also Multi-Color Graphics Array): a degraded form of VGA used with IBM’s lesser PS/2 models.
VESA (Video Electronics Standards Association): an emerging cross-platform video standard.
wider color gamut, or range of colors, than others can. Others are more accurate in maintaining their color balance through a wide range of brightness levels.

We determined the range of primary colors each monitor could display and compared the results with the CIE chromaticity chart. (CIE stands for Commission Internationale d’Eclairage, which, in 1931, created a now widely accepted method for describing colors.) The Trinitron-based monitors — the Fora Addonics Mon-7C8A, Mag Innovation MX14S, Sony CPD-1304, and Taxan MultiVision 795 — had the widest color repertoire, taking all four top positions. But the difference between the best Trinitron and the best shadow-mask tube amounted to only about 5 percent — not a noticeable difference to any but the most discriminating viewer.

In order to represent colors accurately, the three video amplifiers (one for each primary color) in each monitor must match one another. If one amplifier is stronger than another, one color will overpower the others and tinge the whole image. This consistency among amplifiers is termed color tracking. A perfect monitor would exhibit 100-percent correctness, but most people do not detect defects down to about 90 percent. Only the Princeton Ultra 1400 scored well below this level. The problem was obvious on its screen, whose overall greenish tint could be reduced but not eliminated by adjustment of the control settings.

You're in Control

The consistently high image and color quality of these autosyns makes choosing among them tough. In fact, the biggest differences are in features rather than in performance. Autosyns require ready access to their controls: Plug the monitor in to a different computer, and you may have to adjust the image size and position to get the best display. You want these controls up front or on the side of the monitor — not at the back, where you need long arms, a mirror, and quite a bit of luck in order to set them properly.

Besides the expected brightness and contrast controls, you want at least four others — horizontal position (occasionally termed phase), vertical position, horizontal size (width), and vertical size (sometimes called height). All but two of the autosyns we tested had all these basic controls; neither the Amdek AM/738+ nor the Relisys RE-1422 offered a vertical-position control. The controls should provide enough range to make the image fill the screen and to center the image properly. When we connected each of the 14 autosyns to a Mac Ile, each exhibited sufficient control range and was able to generate an image measuring at least 13 inches diagonally.

Unless you work in a fairly dark environment, you should investigate a monitor with some kind of antiglare treatment. Although they produce a slight reduction in sharpness, antiglare treatments cut down the reflections that can make an on-screen image difficult to see. Several glare-reducing treatments are popular, and each has its advocates. Among the autosyns we tested, only the Mag Innovation MX14S and the NEC MultiSync 4FG had no antiglare treatment — but neither does the popular AppleColor. NEC does offer an optional ($79) Monitor Lens; it provides OCLI glare protection, which MacUser judges to be the best. There are also numerous low-cost third-party glare solutions offered by companies such as Kensington (San Mateo, California) and image-enhancement filters such as PC Soft Lens, made by Ergotech (Corona, California).

Autosyns are versatile, but to gain that versatility, you must step outside the familiar plug-and-play world of the Mac and be prepared to wrestle with unfamiliar cables and controls. An autosync monitor is like an off-the-rack suit — you need to make a few adjustments here and there to get the best fit, but the end result can be completely serviceable, even stylish, at a price that makes up for the loss of designer mystique.

Winn L. Bosch offers even more computer views in The Winn Bosch Hardware Bible.
Autosynchronous monitors — autosyncs, for short — are not the poor relations of the Macintosh-display family anymore. Versatile and affordable, they have good to excellent quality and can work not only with your Macintosh but also with practically any IBM PC or compatible available.

You’ll have a hard time making a bad choice among the autosyncs we tested. The differences are subtle, and choosing is mostly a matter of picking the subtlety that’s most important to you.

If you’re looking for the sharpest display, the NEC MultiSync 4FG ($949 list, $800 street) should be your top choice. Its relatively low color temperature produces whites that appear whiter to most users, and its powerful and versatile controls make switching from a Mac to a PC a snap as well as allowing for easy color adjustments.

If you want a wide range of bright colors, investigate the entire group of Trinitron-based monitors — they have a 10-percent-larger range of hues than any of the shadow-mask monitors do, and they delivered more-consistent screen illumination, scoring highest in our uniformity tests. Our overall color-quality favorites are the Fora Addonics Mon-7C8A ($694 list, $575 street) and the Sony CPD-1304 ($1,000 list, $445 street).

For brightly lit office environments, the Taxan MultiVision 795 ($1,095 list, $600 street) is your best choice, delivering the most brilliant image of all (54.8 footlamberts) with little loss in apparent image quality.

For critical comparisons of scanned images, the near-perfect gray linearity of the Nissei Sangyo Hitachi 15 MVX ($795 list, $625 street) enables you to see all the subtle variations in grays and colors. This autosynchronous monitor also has the least pincushion distortion, which means that straight lines remain straight.

**Table 2 Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
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</thead>
<tbody>
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<td>The monitor’s retail price.</td>
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<td>Street price</td>
<td>The monitor’s average price through dealers surveyed across the U.S. in April 1992 or through mail order.</td>
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<td>Tube type</td>
<td>Whether the tube uses a shadow mask or a Sony Trinitron aperture grille.</td>
</tr>
<tr>
<td>Screen size (diagonal)</td>
<td>The distance from one corner to the opposite corner of the exposed glass face of the monitor, in inches.</td>
</tr>
<tr>
<td>Active screen size (diagonal)</td>
<td>The length, diagonally, of the portion of the screen that lights up, in inches.</td>
</tr>
<tr>
<td>Max. pixel dimensions (W x H)</td>
<td>The maximum number of dots (pixels) that can be displayed on the screen, counting horizontally (width) and vertically (height).</td>
</tr>
<tr>
<td>Horizontal-scan rate (min., max.)</td>
<td>The minimum and maximum number of lines of pixels per second that can be written on the screen, in kilohertz.</td>
</tr>
<tr>
<td>Vertical-scan rate (min., max.)</td>
<td>The minimum and maximum rate at which the screen can be redrawn from top to bottom, in cycles per second (hertz).</td>
</tr>
<tr>
<td>Power consumption</td>
<td>The maximum electrical-power requirements of the monitor, in watts.</td>
</tr>
<tr>
<td>Swivel stand attached</td>
<td>Does the monitor ship with a swivel stand attached?</td>
</tr>
<tr>
<td>Antiglare treatment</td>
<td>The type of coating or transparent panel on the monitor’s screen, designed to eliminate or diffuse reflected light.</td>
</tr>
<tr>
<td>Controls</td>
<td>Does the monitor have controls for brightness, contrast, the position and the size of the image, pincushioning, degaussing, and voltage? If yes, the type (analog or digital) and the location of the control.</td>
</tr>
<tr>
<td>Signal compatibility</td>
<td>The video standards each monitor can handle.</td>
</tr>
<tr>
<td>Case dimensions (L x W x H)</td>
<td>The outside length, width, and height of the monitor’s plastic shell, in inches.</td>
</tr>
<tr>
<td>Footprint (L x W)</td>
<td>The area the monitor stand occupies on top of your desk, in inches.</td>
</tr>
</tbody>
</table>
When a bug showed up in a new program, the first to know was a guy in Montana. And everyone on CompuServe.

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### Table 2: Features of Autosynchronous Monitors

<table>
<thead>
<tr>
<th>Feature</th>
<th>Amdek AM736+</th>
<th>Darius TSM1431</th>
<th>Fora Addonics Mon-768A</th>
<th>Mag Innovation MX14S</th>
<th>Mitsubishi Diamond Pro 14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$599</td>
<td>$599</td>
<td>$694</td>
<td>$799</td>
<td>$839</td>
</tr>
<tr>
<td><strong>Street price</strong></td>
<td>$460</td>
<td>$340</td>
<td>$575</td>
<td>$739</td>
<td>$675</td>
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<tr>
<td><strong>Pros</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube type</td>
<td>shadow mask</td>
<td>shadow mask</td>
<td>Trinitron</td>
<td>Trinitron</td>
<td>shadow mask</td>
</tr>
<tr>
<td>Screen size (diagonal)</td>
<td>13 in. (14 in. claimed)</td>
<td>13.25 in.</td>
<td>13.25 in.</td>
<td>13.07 in.</td>
<td>13.25 in.</td>
</tr>
<tr>
<td>Active screen size (diagonal)</td>
<td>11.5 in.</td>
<td>11.5 in.</td>
<td>11.75 in.</td>
<td>12 in.</td>
<td>12.75 in.</td>
</tr>
<tr>
<td>Max. pixel dimensions (W x H)</td>
<td>1,024 x 768 pixels</td>
<td>800 x 600 pixels</td>
<td>1,024 x 768 pixels</td>
<td>1,280 x 1,024 pixels</td>
<td>1,024 x 768 pixels</td>
</tr>
<tr>
<td>Horizontal-scan rate (min., max.)</td>
<td>31.5, 38 kHz</td>
<td>15.75, 39 kHz</td>
<td>30, 57 kHz</td>
<td>30, 64 kHz</td>
<td>30, 58 kHz</td>
</tr>
<tr>
<td>Vertical-scan rate (min., max.)</td>
<td>50, 90 Hz</td>
<td>50, 90 Hz</td>
<td>45, 90 Hz</td>
<td>50, 120 Hz</td>
<td>50, 90 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>86 watts</td>
<td>80 watts</td>
<td>90 watts</td>
<td>110 watts</td>
<td>100 watts</td>
</tr>
<tr>
<td>Swivel stand attached</td>
<td>yes</td>
<td>no</td>
<td>no*</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Antiglare treatment</td>
<td>silica, tinted glass</td>
<td>etched</td>
<td>tinted glass</td>
<td>none</td>
<td>etched, tinted glass</td>
</tr>
<tr>
<td>Brightness/contrast</td>
<td>analog, right</td>
<td>analog, left</td>
<td>analog, front</td>
<td>analog, front</td>
<td>analog, front</td>
</tr>
<tr>
<td>Horizontal position</td>
<td>analog, back</td>
<td>analog, back</td>
<td>analog, front</td>
<td>digital, front</td>
<td>digital, left</td>
</tr>
<tr>
<td>Vertical position</td>
<td>no</td>
<td>analog, back</td>
<td>analog, front</td>
<td>digital, front</td>
<td>digital, left</td>
</tr>
<tr>
<td>Horizontal size</td>
<td>analog, back</td>
<td>analog, back</td>
<td>analog, front</td>
<td>digital, front</td>
<td>digital, left</td>
</tr>
<tr>
<td>Vertical size</td>
<td>analog, back</td>
<td>analog, back</td>
<td>analog, front</td>
<td>digital, front</td>
<td>digital, left</td>
</tr>
<tr>
<td>Pincushioning</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>digital, front</td>
</tr>
<tr>
<td>Degaussing</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>auto</td>
<td>auto</td>
</tr>
<tr>
<td>Input select</td>
<td>no</td>
<td>analog, back</td>
<td>no</td>
<td>auto</td>
<td>no</td>
</tr>
<tr>
<td>120/240-volt switch</td>
<td>auto</td>
<td>no</td>
<td>yes*</td>
<td>auto</td>
<td>no</td>
</tr>
<tr>
<td>Signal compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.024 x 768 noninterlaced (75 Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.024 x 768 noninterlaced (60 Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.024 x 768 interlaced (60 Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STD 1280 x 1024</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCGA, VGA (all), and SuperVGA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mac II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mac LC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mac II cable</td>
<td>included</td>
<td>free on request</td>
<td>included, with adapter</td>
<td>$25 option</td>
<td>$35 option</td>
</tr>
<tr>
<td>Input connectors</td>
<td>15-pin mini</td>
<td>9-pin mini, Digital/TTL</td>
<td>15-pin mini</td>
<td>15-pin mini</td>
<td>15-pin mini</td>
</tr>
<tr>
<td>Case dimensions (L x W x H)</td>
<td>14.5 x 14.1 x 13.3 in.</td>
<td>15.5 x 13.75 x 14 in.</td>
<td>16.1 x 14.2 x 13.5 in.</td>
<td>16.29 x 14 x 14 in.</td>
<td>15.5 x 13.75 x 13.75 in.</td>
</tr>
<tr>
<td>Footprint (L x W)</td>
<td>9.5 x 9.5 in.</td>
<td>11 x 9.25 in.</td>
<td>6.75 x 8.75 in.</td>
<td>9 x 9 in.</td>
<td>9 x 9 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>30 lb</td>
<td>32.6 lb</td>
<td>28.9 lb</td>
<td>35.2 lb</td>
<td>26.5 lb</td>
</tr>
<tr>
<td>Company</td>
<td>Amdek</td>
<td>Darius Technology, Inc.</td>
<td>Fora, Inc.</td>
<td>Mag Innovation</td>
<td>Mitsubishi</td>
</tr>
<tr>
<td>San Jose, CA 95134</td>
<td>3471 N. First St.</td>
<td>22028 26th Ave. S.E.</td>
<td>Bothell, WA 98021</td>
<td>4392 Corporate</td>
<td>5655 Plaza Dr.</td>
</tr>
<tr>
<td>800-722-6335</td>
<td>30 W. Montague Exp'y</td>
<td>206-483-8889</td>
<td>San Jose, CA 95134</td>
<td>Center Dr.</td>
<td>Cypress, CA 90630</td>
</tr>
<tr>
<td>408-473-2013</td>
<td></td>
<td></td>
<td></td>
<td>800-843-2515</td>
<td></td>
</tr>
</tbody>
</table>

*The manufacturer claims that the swivel stand is attached, but this wasn’t the case with our test monitor.

†The manual doesn’t explain how this switch works; it’s not intuitive.
**BEST CARDS FOR THE APPLE 16-INCH DISPLAY!**

<table>
<thead>
<tr>
<th>16-Inch Display Interface Cards</th>
<th>E-Machines</th>
<th>Radius</th>
<th>RasterOps</th>
<th>SuperMax</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-bit color</td>
<td>DoubleColor SX</td>
<td>$449</td>
<td>Precision 8X</td>
<td>Spectrum B $999</td>
</tr>
<tr>
<td>24-bit color</td>
<td>Future SX</td>
<td>$599</td>
<td>Precision 24xp</td>
<td>Pointboard Li $999</td>
</tr>
<tr>
<td>8-bit color with Ethernet</td>
<td>ColorLink DC/T</td>
<td>$639</td>
<td>None</td>
<td>SuperMac B-24 PDQ $999</td>
</tr>
<tr>
<td>networking built-in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-bit color with Ethernet</td>
<td>ColorLink SX/T</td>
<td>$789</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>networking built-in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only E-Machines, the 16-inch company, brings you a complete family of color cards for the Apple 16-inch. And the only cards with Ethernet networking built-in. All feature acceleration, video-out, pan and zoom, multiple display support, and of course, the best prices in the industry! Call now for the dealer nearest you.

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Fax: 503-641-0946

1-800-344-7274

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Prices reflect manufacturers suggested retail price at the time of printing and are subject to change.

**Circle 151 on reader service card.**
### Table 2: Features of Autosynchronous Monitors, continued

<table>
<thead>
<tr>
<th>Specification</th>
<th>NEC MultiSync 4FG</th>
<th>Nissei Sangyo Hitachi 15 MVX</th>
<th>Panasonic PanaSync C1395</th>
<th>Princeton Ultra 1400</th>
<th>Relisys RE-1422</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price</td>
<td>$949</td>
<td>$795</td>
<td>$899</td>
<td>$899</td>
<td>$745</td>
</tr>
<tr>
<td>Street price</td>
<td>$600</td>
<td>$525</td>
<td>$445</td>
<td>$479</td>
<td>$389</td>
</tr>
<tr>
<td>Cons</td>
<td>Expensive</td>
<td>Little mention of Mac</td>
<td>Expensive</td>
<td>Expensive</td>
<td>Documentation doesn't mention Mac.</td>
</tr>
</tbody>
</table>

#### Specifications

<table>
<thead>
<tr>
<th>Tube type</th>
<th>Shadow mask</th>
<th>Shadow mask</th>
<th>Shadow mask</th>
<th>Shadow mask</th>
<th>Shadow mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen size (diagonal)</td>
<td>13.75 in. (15 in. claimed)</td>
<td>13.75 in. (15 in. claimed)</td>
<td>13.5 in.</td>
<td>13.25 in.</td>
<td>13.25 in.</td>
</tr>
<tr>
<td>Active screen size (diagonal)</td>
<td>12.75 in.</td>
<td>12.5 in. (15 in. claimed)</td>
<td>12.5 in.</td>
<td>12.5 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Max. pixel dimensions (W x H)</td>
<td>1,024 x 768</td>
<td>1,024 x 768</td>
<td>1,024 x 768</td>
<td>1,024 x 768</td>
<td>1,024 x 768</td>
</tr>
<tr>
<td>Horizontal-scan rate (min., max.)</td>
<td>27, 57 kHz</td>
<td>30, 58 kHz</td>
<td>30, 57 kHz</td>
<td>15, 36.5 kHz</td>
<td>28, 50 kHz</td>
</tr>
<tr>
<td>Vertical-scan rate (min., max.)</td>
<td>56, 90 Hz</td>
<td>50, 106 Hz</td>
<td>50, 90 Hz</td>
<td>45, 120 Hz</td>
<td>47, 89 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>105 watts</td>
<td>106 watts</td>
<td>110 watts</td>
<td>65 watts</td>
<td>90 watts</td>
</tr>
<tr>
<td>Swivel stand attached</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Antiglare treatment</td>
<td>Linn Li option, $79</td>
<td>antistroc, rila</td>
<td>etched, tinted glass</td>
<td>etched</td>
<td>tinted glass</td>
</tr>
</tbody>
</table>

#### Controls

<table>
<thead>
<tr>
<th>Brightness/contrast</th>
<th>analog, front</th>
<th>analog, front</th>
<th>analog, front</th>
<th>analog, front</th>
<th>analog, front</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal position</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
</tr>
<tr>
<td>Vertical position</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
</tr>
<tr>
<td>Horizontal size</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
</tr>
<tr>
<td>Vertical size</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
<td>digital, front</td>
</tr>
<tr>
<td>Pincushioning</td>
<td>digital, front</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Degaussing</td>
<td>yes, front</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Input select</td>
<td>analog, front</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

#### Signal compatibility

- 1.024 x 768 noninterlaced (75 Hz)
- 1.024 x 768 noninterlaced (60 Hz)
- 1.024 x 768 interlaced (60 Hz)
- STD 1.280 x 1.024
- MCGA, VGA (all), and SuperVGA
- Mac II
- Mac LC

#### Other

- Mac II cable: free on request, included, $40 option, $13 option, free on request
- Input connectors: physically attached, 15-pin mini, physically attached, 15-pin mini, 15-pin mini
- Case dimensions (L x W x H): 16.29 x 14.64 x 15.59 in., 16.5 x 14 x 14.75 in., 14.8 x 14 x 14.5 in., 15.25 x 14 x 14.75 in., 15 x 14.25 x 14.5 in.
- Footprint (L x W): 10.25 in. diameter, 10 x 10.75 in., 9.2 x 6.5 in., 9.75 x 10.5 in., 9.75 x 10.25 in.
- Weight: 39.2 lb, 36.7 lb, 27.5 lb, 35 lb, 25 lb

#### Company

- NEC: 1255 Michael Dr., Wood Dale, IL 60191, 708-860-9500
- Nissei Sangyo America: 800 South St., Waltham, MA 02154, 617-893-5700
- Panasonic: 2 Panasonic Way, Secaucus, NJ 07094, 732-742-8086, 212-887-8659
- Princeton Graphics: 1125 N. Meadow Pk., #406, Roswell, GA 30076, 404-644-1010
- Relisys: 320 S. Milpitas Blvd., Milpitas, CA 95035, 408-945-9000

1 The factory setting is 12.75 inches, and it can be adjusted to 13.75 inches; the manufacturer claims 14 inches.
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We have display products for every Mac.

With over 50 products, Lapis extends the display compatibility of all Macintosh computers. In addition to Lapis’ own line of low-cost, high-quality monitors, Lapis boards let you use your Macintosh with displays from virtually all manufacturers including Apple, E-Machines, Ikegami, NEC, Radius, RasterOps, Sampo, Samsung, Seiko, Sony, and SuperMac.

<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Color</th>
<th>Gray Scale</th>
<th>Monochrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh Computer type</td>
<td>19'-21'</td>
<td>15'-17'</td>
<td>Apple 13'</td>
</tr>
<tr>
<td>Classic &amp; Plus (in black &amp; white)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE (in black &amp; white)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC &amp; LCII</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE/30 &amp; IIs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quadras and II-family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PowerBooks &amp; Classic II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Supported by Lapis board  ■ Supported by Lapis PowerBase (external adapter)*
## Table 2: Features of Autosynchronous Monitors, continued

<table>
<thead>
<tr>
<th>Company</th>
<th>Sampo America</th>
<th>Samtron</th>
<th>Sony</th>
<th>Taxan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5550 Peachtree</td>
<td>SC428V</td>
<td>CPD-1364</td>
<td>MultiVision 795</td>
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<tr>
<td></td>
<td>Industrial Blvd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Norcross, GA 30071</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>404-448-0220</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List price</td>
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<td>$549</td>
<td>$1,000</td>
<td>$1,095</td>
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<tr>
<td>Street price</td>
<td>$590</td>
<td>$450</td>
<td>$445</td>
<td>$600</td>
</tr>
<tr>
<td>Pros</td>
<td>Good subjective geometry.</td>
<td>Lowest list price.</td>
<td>Greatest color range.</td>
<td>Brightest monitor.</td>
</tr>
<tr>
<td>Cons</td>
<td>Poor subjective color range. Documentation doesn’t mention Mac.</td>
<td>Documentation doesn’t mention Mac.</td>
<td>Documentation doesn’t mention Mac.</td>
<td>Highest list price.</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube type</td>
<td>shadow mask</td>
<td>shadow mask</td>
<td>Trinitron</td>
<td>Trinitron</td>
</tr>
<tr>
<td>Screen size (diagonal)</td>
<td>13 in.</td>
<td>13 in. (14 in. claimed)</td>
<td>13 in. (14 in. claimed)</td>
<td>13.5 in.</td>
</tr>
<tr>
<td>Active screen size (diagonal)</td>
<td>12.25 in.</td>
<td>12 in. (13 in. claimed)</td>
<td>13 in.</td>
<td>12 in.</td>
</tr>
<tr>
<td>Max. pixel dimensions (W x H)</td>
<td>1,024 x 768 pixels</td>
<td>1,024 x 768 pixels</td>
<td>1,024 x 768 pixels</td>
<td>1,024 x 768 pixels</td>
</tr>
<tr>
<td>Horizontal-scan rate (min., max.)</td>
<td>30.60 kHz</td>
<td>31.5, 35.5 kHz</td>
<td>28, 50 kHz</td>
<td>30, 57 kHz</td>
</tr>
<tr>
<td>Vertical-scan rate (min., max.)</td>
<td>50, 90 Hz</td>
<td>50, 90 Hz</td>
<td>50, 87 Hz</td>
<td>50, 100 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>110 watts</td>
<td>70 watts</td>
<td>100 watts</td>
<td>100 watts</td>
</tr>
<tr>
<td>Swivel stand attached</td>
<td>yes (detachable)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Antiglare treatment</td>
<td>silica etched, tinted glass</td>
<td>silica</td>
<td>silica</td>
<td>silica</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brightness/contrast</td>
<td>analog, front</td>
<td>analog, front</td>
<td>analog, front</td>
<td>analog, front</td>
</tr>
<tr>
<td>Horizontal position</td>
<td>analog, front</td>
<td>analog, back</td>
<td>analog, left</td>
<td>analog, front</td>
</tr>
<tr>
<td>Vertical position</td>
<td>analog, front</td>
<td>analog, back</td>
<td>analog, left</td>
<td>analog, front</td>
</tr>
<tr>
<td>Horizontal size</td>
<td>analog, front</td>
<td>analog, back</td>
<td>analog, left</td>
<td>analog, front</td>
</tr>
<tr>
<td>Vertical size</td>
<td>analog, front</td>
<td>analog, back</td>
<td>analog, left</td>
<td>analog, front</td>
</tr>
<tr>
<td>Pincushioning</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Degaussing</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Input select</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>120/240-volt switch</td>
<td>no</td>
<td>auto</td>
<td>no</td>
<td>auto</td>
</tr>
<tr>
<td>Signal compatibility</td>
<td>1,024 x 768 noninterlaced (75 Hz)</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mac II cable</td>
<td>included</td>
<td>included</td>
<td>$20 option</td>
<td>included</td>
</tr>
<tr>
<td>Input connectors</td>
<td>physically attached</td>
<td>physically attached</td>
<td>9-pin, RGB D-sub</td>
<td>15-pin mini</td>
</tr>
<tr>
<td>Case dimensions (L x W x H)</td>
<td>14.75 x 14 x 15 in.</td>
<td>14.5 x 14 x 14.5 in.</td>
<td>16.2 x 13.7 x 13.9 in.</td>
<td>16 x 13.75 x 13.75 in.</td>
</tr>
<tr>
<td>Footprint (L x W)</td>
<td>9 x 9 in.</td>
<td>10 x 10 in.</td>
<td>9.25 x 9.25 in.</td>
<td>9.34 x 9.25 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>27.6 lb</td>
<td>26.7 lb</td>
<td>28.6 lb</td>
<td>28.6 lb</td>
</tr>
</tbody>
</table>

MacUser August 1992
Most business and government professionals view and analyze data with spreadsheets, databases and occasionally in business graphics packages. While these types of software work well when displaying statistical data, they are blind to important geographical information - such as market potential by sales territory, distribution coverage by product, or customer locations by ZIP code or street address.

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**CIRCLE 187 ON READER SERVICE CARD.**
Now you can get out of trouble before you get into it.
Owning most utility software packages is like belonging to the Auto Club.
If your system crashes, or if you have an accident with your data, they can come to your rescue.

It doesn't take an MIS type to appreciate what Public Utilities can mean in higher productivity and lower support costs. But if you are an MIS type, you'll be delighted to know that, in addition to protecting your people from disaster, Public Utilities reminds them to do prudent things like perform regular backups, update their passwords and optimize their hard disks.

But before you get back up and running, you have to spend a lot of time waiting by the side of the road.
Which is why Public Utilities, the ingenious new package from the creators of Suitcase, is the utility every Macintosh has been waiting for.
Instead of getting you back up and running, Public Utilities concentrates on keeping you up and running.
How?
By automatically finding and fixing potential disk and data corruption problems before they leave you stranded.
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It even launches the requisite software for them, at a stroke.
(If the requisite software doesn’t happen to be a Fifth Generation product, Public Utilities will launch it anyway.)
Of course, even Public Utilities can’t prevent people from deleting their files or reformatting their hard disks.
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AgfaType™ CD-ROM 3.1—$99
Includes 20 Free Headline Typefaces
"AgfaType is the best of the new breed of unlockable font CD-ROMs."

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By Aileen Abernathy

**Designer pages:** Atex believes that the major competition for its new page-design program, Renaissance, is Illustrator and FreeHand, not QuarkXPress and PageMaker. Renaissance ($895) offers a novel combination of page-layout and drawing tools along with a point-and-click interface that minimizes trips to the menus. It supports multiple page sizes in a single document, and you can visually resize display text and rule widths simply by dragging their handles. (Why can’t the DTP gorillas do this stuff?) An eyedropper tool lets you fill display type with graphics or create custom color palettes. Other cool features: customizable dummy text, automatic drop caps, text on a curve, two-color blends, masking of graphics, stand-alone libraries, and robust output capabilities. Alas, the initial release of Renaissance has a few glaring weaknesses. Text can be imported only in ASCII format, for example. Still, many designers may find it just the ticket for brochures, display ads, and magazine covers. 508-670-3430.

**One good kern deserves another:** Agfa has broadened its suite of end-user type products with three utilities raided from Canadian companies. KernEdit, considered by many to be the best kerning editor, and KernData were plucked from Pairs Software. KernEdit 2.0 ($149) lets you alter the kerning data for PostScript and TrueType fonts, and it sports a preview window. KernData supplies predefined kerned pairs for more than 400 Adobe fonts, in 25 packages ($95 each). TypeChart ($99), acquired from Octavo Productions, creates handsome type-specimen sheets for your fonts. 508-658-5600. EDCO Services has released LetrTuck Professional, a $499 package that combines a kerning editor with 200 kerning sets for the most-popular PostScript fonts. Extra packages of 200 kerning sets are $400 each. 813-962-7800.

**Art on call:** One World Interactives is readying The Virtual Portfolio, a CD-ROM showcase of the graphics and animation work of 250 Mac artists such as Kathy Kifer (below). The 400-megabyte disc will be sent free to 10,000 prospective buyers. 503-683-4020. Mirror Technologies and 3M are preparing CD Stock, a stock-photo research tool. This release presents the libraries of four major stock-photo agencies (5,000 images each). The agencies retain all copyrights, and you pay a royalty for image use, which also nets you a high-quality transparency. CD Stock costs $995 bundled with a Mirror CD-ROM drive or $650 for the discs alone. 612-633-4450.
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CIRCLE 190 ON READER SERVICE CARD.
All the Right Angles

High-quality color separations are now possible from the desktop, thanks to new technologies that minimize moiré problems.

By Bruce Fraser

If you do color separations from the desktop, chances are you've seen printed images that appear to be covered with lace doilies. These distracting interference patterns, called moiré, are caused by the superimposition of the four halftone screens — cyan, magenta, yellow, and black — used to reproduce full-color images. Some moiré is inevitable in four-color printing: the goal is to render it imperceptible.

In traditional color separations, the four halftones are created photographically with filters and mesh screens. This technique produces halftones at precise rotation angles, resulting in the minimum possible moiré. These angles — cyan at 15 degrees, magenta at 75 degrees, yellow at 90 degrees, and black at 45 degrees — are called the traditional angle set.

The advent of digital prepress presented a new problem. Conventional halftones are composed of variably sized, regularly spaced dots, but digital devices such as PostScript image-setters have a fixed grid of same-sized dots, like holes in a pegboard. To simulate halftones, an imagesetter must group its laser spots into larger units called cells. Each cell corresponds to a single conventional halftone dot. By varying the number of laser spots that are printed within a cell, the imagesetter simulates the varying dot sizes of halftones. (For a complete explanation of traditional versus digital halftones, screen angles, the four-color process, and the causes of moiré, see "That's a Moiré," July '92, page 173.)

But the most serious limitation of digital devices appears when you rotate a digital halftone. Imagesetters can print a given laser spot or leave it blank, but they can't print a portion of a laser spot or a spot that doesn't fall on the grid. When you rotate a halftone cell, its corners must intersect the grid at the "corners" of spots. If the corners line up, then all the spots within the cell will also fall on the grid.

This constraint drastically reduces the number of rotation angles. The actual angles available depend on the screen frequency (number of cells per inch) and the imagesetter's resolution. Imagesetters can easily obtain the 45-degree and 90-degree angles used for the black and yellow screens, because the underlying grid is square, but they can't readily achieve the 15-degree and 75-degree rotation angles normally used for the cyan and magenta screens. Imagesetters must therefore alter these angles to get printable ones. Even a slight angle shift can cause moiré, however, and this is the major reason that desktop color separations have suffered from moiré problems.

**Digital Dilemma**

Prepress vendors have devoted substantial amounts of time and money to improving the quality of digital halftones. One solution to the moiré problem is a technology called Flamenco, marketed by The Color Group, of Richmond, California. Flamenco does away with rotated screens entirely. Instead, all four colors are printed at the same 45-degree angle,
with each screen offset slightly from the others so that the dots don’t print on top of one another. (If the dots are directly superimposed, the result is mud.)

The Flamenco technology was enthusiastically received by early adopters, but it proved extremely vulnerable to misregistration on printing presses, resulting in dramatic color shifts. Such coaligned screens are currently out of favor in the imagesetter arena, although they are commonplace on thermal-wax and inkjet printers, which have more precise registration and lower resolutions.

Today’s imagesetter vendors use two fundamentally different approaches to solving the screen-angle problem: rational-tangent screening and irrational-tangent screening.

The terms rational and irrational are derived from the mathematics used in the algorithms. With an angle such as 45 or 90 degrees, the tangent of the angle between the halftone cell and the underlying imagesetter grid is rational. It can be expressed as a ratio of two whole numbers — that is, as the ratio between the number of spots horizontally and the number vertically. The cells fall exactly on the grid, are identically shaped, and have the

Table 1: Halftone Angles and Frequencies

<table>
<thead>
<tr>
<th></th>
<th>Traditional Screens</th>
<th>RT Screening</th>
<th>HQS Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle (degrees)</td>
<td>Frequency (lpi)</td>
<td>Angle (degrees)</td>
<td>Frequency (lpi)</td>
</tr>
<tr>
<td>Cyan</td>
<td>15</td>
<td>133</td>
<td>18.435</td>
</tr>
<tr>
<td>Magenta</td>
<td>75</td>
<td>133</td>
<td>71.565</td>
</tr>
<tr>
<td>Yellow</td>
<td>90</td>
<td>133</td>
<td>90</td>
</tr>
<tr>
<td>Black</td>
<td>45</td>
<td>133</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 1: If you output color separations with 133-lpi screens at 2,540 dpi on an imagesetter, you’ll find that the imagesetter can’t match the values of traditional halftone screens. Rational-Tangent Screening produces screen angles and frequencies that are significantly different from the norm, which can cause moiré and color shifts. The new supercell algorithms, such as Linotype-Hell’s HOS Screening, offer a closer approximation to the traditional angles for cyan and magenta, and the screen frequency is nearly identical for all four colors.

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same number of spots (see Figure 1). With an angle such as 15 or 75 degrees, the angle of the halftone cell doesn't intersect the imagesetter grid in a repeatable way, so the tangent is irrational — that is, it can't be calculated exactly and halftone cells vary in shape and number of spots. Digital devices that use irrational screening calculate the requested angles Figure 1: With rational screening, the corners of each halftone cell lie exactly on the underlying imagesetter grid and each halftone cell is identical, but the angles may vary significantly from the desired values. Irrational screening provides a closer approximation of the traditional angles; in this computation-intensive approach, the corners of the halftone cells don't lie on the grid and each cell is slightly different. Supercells are a compromise technology that combines the speed of rational screening with the accuracy of irrational screening. The corners of the supercell fall exactly on the imagesetter grid; the corners of its component cells don't.

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CIRCLE 173 ON READER SERVICE CARD.
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<table>
<thead>
<tr>
<th>CPU</th>
<th>Video</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac II, IIx, IIXx</td>
<td>8-bit system</td>
<td>$2195</td>
</tr>
<tr>
<td>LC, Quadra 700 &amp; Quadra 900</td>
<td></td>
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</tr>
<tr>
<td>Mac II, IIx, IIXx</td>
<td>24-bit system (accelerated)</td>
<td>$2749</td>
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<tr>
<td>IIXx, Quadra 700 &amp; Quadra 900</td>
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<td></td>
</tr>
<tr>
<td>Quadra 700 &amp; Quadra 900</td>
<td>On-board video</td>
<td>$1895</td>
</tr>
</tbody>
</table>

*8-bit solution retains PDS slot for the RealTech cache card.

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ColorBoard 24XLI
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ColorBoard 264SE/30
ColorBoard 8LC
ColorBoard 8XL
PaintBoard 24
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and frequencies as closely as possible, but they can't match them exactly and the discrepancy produces stray laser spots that have to be distributed among the halftone cells. Thus, the appearance of each halftone cell must be calculated individually, a computation-intensive task. Until recently, only high-end proprietary systems had enough computing power to handle irrational screening.

PostScript imagesetters don't have the horsepower to handle irrational screening, so they use rational screening. In this approach, the irrational angles are rounded up or down to the nearest rational angle. This technique produces halftone cells that are identical, allowing faster processing, but it alters the screen frequency and can introduce moiré problems.

Rational Screening

Since the early days of digital color separations, one company, Hell (now part of Linotype-Hell), has held key patents on both rational and irrational approaches to screening. Rational Tangent (RT) Screening is the subject of one such patent, and until recently it was the only screening technology available in PostScript imagesetters. When it encounters irrational angles, RT Screening substitutes an angle and frequency combination that produces halftone cells whose corners do lie on the imagesetter grid. The resulting cells are identical, and only one threshold matrix must be calculated for the entire halftone screen. The threshold matrix is a mathematical function — basically a precalculated lookup table — that dictates the order in which laser spots should be turned on in a cell to simulate a given gray level. In rational screening, the same table can be reused for each halftone cell, providing a very fast and compact way of growing the halftone dots.

The problem with RT Screening is that the adjusted angles and frequencies depart significantly from the traditional angle set (see Table 1). Note that not only are the angles for cyan and magenta different from the traditional values, but the screen frequencies also vary among the four colors. The adjustments in screen frequency are required to maintain color balance and image detail.

RT Screening has proved workable for digital color separations, but it's vulnerable to moiré in colors such as browns and purples that contain significant percentages of three or four process colors.

The Irrational Approach

High-end digital color vendors such as Scitex, Hell, and Crosfield (now part of Du Pont) use irrational screening, which traditionally has provided output quality superior to that produced by the rational-screening methods of PostScript.

Traditional halftone

Scitex irrational screening

RT Screening

Optronics IntelliDot-II
imagesetters. Irrational screening used to be available only on proprietary film-recorder systems, which cost upwards of $300,000. (A film recorder is basically a high-end imagesetter, with very high resolution and a very accurate film-transport mechanism.) Now, though, high-end vendors are providing irrational screening on midrange PostScript output devices.

One indication that irrational screening is a tough nut to crack is that these companies have all relied on the same irrational-screening algorithm, licensed from the original developer — again, Hell. This algorithm reproduces the traditional angles very closely by dint of extensive calculation. It doesn't place the corners of the square halftone cells on the imagesetter grid; instead, it makes minute alterations to the shape of each halftone cell (see Figure 1) so that, on average, the desired screen frequency and angle are obtained. In addition, irrational screening can't use a single threshold matrix to calculate the halftoning sequence, because each cell may be a slightly different shape and may contain a different number of laser spots. Instead, each cell must be calculated individually, which takes formidable memory and computing power.

Because of the overhead required to calculate the size, shape, and threshold matrix of each individual cell, vendors run the screening algorithm in specialized hardware, which takes the interpreted PostScript code produced by the RIP (raster-image processor) and substitutes its own screening functions for the standard PostScript screening routines. In some approaches, the interpreted PostScript is converted to a proprietary format before the algorithm is applied. (The RIP is the part of an imagesetter that interprets PostScript code and rasterizes it as a high-resolution bit map. It passes this bit map to the imagesetter engine, which does the actual marking of the film or paper.)

Take, for example, Scitex's Dolev PS imagesetter, a midrange machine that uses a software PostScript interpreter that runs on several platforms, including the Mac and high-powered PCs. After interpreting the PostScript code, the Dolev's interpreter converts it into the proprietary Scitex CT (continuous-tone) and LW (linework) formats. These formats are sent to the rasterizer in the Dolev, which calculates the irrational screens in hardware. The algorithm is licensed from Hell, but the hardware is Scitex's design. By converting the data from PostScript to Scitex format, the Dolev gives PostScript users access to the high-quality irrational screening used in Scitex press systems.

Linotype-Hell likewise now offers irrational screening from PostScript input in its new RIP 60, which contains its own I.S. Technology, another irrational-screening algorithm.

Figure 2: Have advances in digital-screening technologies eliminated the moiré doilies? Judge for yourself. The traditional halftone (far left, top) is the ideal against which to judge the five electronic images. RT Screening, the oldest, least accurate technology, should fare poorly against both irrational screening (Scitex, Optronics) and the new supercell approach (Agfa, Linotype-Hell). We deliberately created a moiré-prone image to test the screening techniques. The potential for moiré is greatest in the neutral water area; also examine the continuity of the vertical line in the mirror. Finally, look for subtle color shifts, caused by variations in screen frequency.

Figure 1: Having advances in digital-screening technologies eliminated the moiré doilies? Judge for yourself. The traditional halftone (far left, top) is the ideal against which to judge the five electronic images. RT Screening, the oldest, least accurate technology, should fare poorly against both irrational screening (Scitex, Optronics) and the new supercell approach (Agfa, Linotype-Hell). We deliberately created a moiré-prone image to test the screening techniques. The potential for moiré is greatest in the neutral water area; also examine the continuity of the vertical line in the mirror. Finally, look for subtle color shifts, caused by variations in screen frequency.
screening technology based on the Hell patent. Linotype-Hell claims that I.S. Technology is equivalent to the irrational screening used in its high-end film recorders. The RIP 60 drives the Linotronic 630 imagesetter and the much more costly R 3020 PS and R 3030 PS film recorders, which are PostScript-compatible versions of the Hell ChromaGraph film recorders (around $250,000 without the RIP).

Unlike previous Linotype-Hell R1Ps, which were based on Adobe PostScript interpreters, the RIP 60 uses a PostScript-clone interpreter from Hyphen (a British clone maker), running in Hell's hardware. This combination boosts the resolution of the output devices to 10,000 dpi in one direction. In contrast, Adobe-licensed PostScript interpreters can't handle resolutions that differ in the vertical and horizontal directions.

Thus far, Optronics' IntelliDot-II, which is available on Optronics' ColorSetter 4000 imagesetter, is the only irrational-screening algorithm that is not licensed from the Hell patent. An interesting note: The IntelliDot algorithm was developed by Dr. Winrich Gall, who wrote the key Hell patents much earlier in his career. Like the other vendors that offer irrational screening, Optronics addresses the performance penalty by running the screening algorithm in hardware.

The Supercell Compromise

Between rational and irrational screening is a third approach, represented by Adobe's Accurate Screens, Linotype-Hell's HQS Screening, Hyphen's SpectraCell Two, and Agfa's BST (Balanced Screening Technology). These are all rational-screening algorithms, but they offer a much closer approximation to traditional angles than do previous techniques, while keeping the screen frequency the same for all four colors (see Table 1).

These new algorithms achieve greater angular accuracy by grouping halftone cells into supercells. For example, a 3 x 3 supercell contains 9 halftone cells (see Figure 1). The corners of the supercell fall exactly on the imagesetter grid, although the corners of its component cells may not. Each supercell is thus identically shaped and has the same number of laser spots. The supercell is much larger than a halftone cell, so there are more places where its corners can intersect the underlying grid. Thus, a supercell can approximate the traditional angles and frequencies with much greater precision.

At a given imagesetter resolution, the halftone cell for a traditional screen-frequency-and-angle combination might be 15.2 laser spots on a side. The algorithm would produce a supercell containing the smallest whole number of laser spots into which the halftone cell could be divided and would distribute the spot error within the supercell. In this example, the supercell would consist of 76 laser spots (15.2 x 5), or 5 halftone cells on a side. Most of the component halftone cells would be
of irrational screening, it's now available for PostScript output. For most desktop color work, which uses relatively small images at low-to-medium screen frequencies, the supercell-based technologies should prove a viable alternative. Neither approach will solve all your color-separation problems, but either should help keep the moiré blues away.

Contributing editor Bruce Fraser likes to consider all the angles before forming an opinion.

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Apple's still being coy about its pen-based PDA (personal digital assistant), due early next year, but both Microsoft's Windows for Pens (an extension of Windows 3.1) and GO Corp.'s PenPoint operating system shipped in April. I guess now we'll find out whether there's a market there or not. Don't get too excited yet, though. It's still next to impossible to find hardware that can run either of these new systems.

By Henry Bortman

**Serial thrillers:** It's convenient to have two serial ports on the Mac. You connect to a LocalTalk network via the printer port and to a modem via the modem port, and you're set. But what if you need to use your label printer or that new graphics tablet? AXiON (408-522-1900) has a solution: the AXiON Switch ($159), an electronic serial switch that plugs in to your Mac and provides ports for as many as three serial devices. To select a port, just click on its icon on the AXiON control panel.

On the other hand, **if you want to share** with other Mac users on a network what's connected to one of your serial ports, try ShadowLAN ($149), a control panel from Applied Engineering (214-241-0055). Both Macs — the one making a serial device available for sharing and the one accessing the shared device — must have ShadowLAN installed.

**Cupertino does OSI:** OSI (Open Systems Interconnect) is a set of international-standard protocols for networked computers. Once hailed as a panacea for connecting dissimilar computers on dissimilar networks and very popular in Europe, OSI has been slow to catch on in the U.S. — as has X.400, the E-mail standard for OSI networks. Apple recently announced two new products that will help Macs become good OSI citizens: MacX.400 and MacOSI Transport. MacX.400 ($5,000, available at the end of 1992) turns a Mac into an X.400 mail server that can exchange mail with other X.400 servers. The catch: Users can’t “do mail” with an X.400 mail server without either X.400 client software on their Macs or an X.400 gateway on their Mac mail server. That’s where Worldtalk (408-399-4000) comes in. It markets Worldtalk 400 Gateways for both CE Software’s QuickMail and Microsoft Mail for AppleTalk Networks. The gateways sell for $1,500 each.

**The other shoe:** You want to know about the other new Apple product too? MacOSI Transport protocols let Macs and other computers exchange data directly over OSI networks, much as MacTCP enables Macs to talk to other computers on TCP/IP-based networks. The MacOSI Transport kit and a developer’s kit (the API) are available from APDA (800-282-2732 or 408-562-3910) for $200 each. Speaking of TCP/IP, Apple will now ship MacTCP Token Ring Extension software as part of the MacTCP package it licenses to developers for inclusion with TCP/IP products. Previously, MacTCP worked only with LocalTalk and Ethernet networks.

MacUser August 1992 199
Now There Is A Way To Detect A Network Problem While It's Still Just A Funny Noise In The Engine.

If you're running an AppleTalk network, you know how life feels in the fast lane. As technology grows more complex, networks start having problems. Routers and file servers go down. Printers stop printing. Network modems hang up. Traffic levels surge out of control and everybody and everything grinds to a halt.

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INTEGRATION

VITAL Points the Way

Apple’s new VITAL strategy points corporate customers down the road to multiplatform distributed computing.

By John Rizzo

Cracking the corporate market, as Apple has discovered, takes more than just giving individual computer users the power to be their best. Users also need a way to be their best within a corporate-wide IS (information systems) structure that includes networks of DOS machines, workstations, minicomputers, and mainframes as well as Macs — a type of structure that IS departments are still trying to figure out how to build and operate smoothly. To help these struggling IS departments (and its own efforts to become an “enterprise computing” company), Apple has come up with VITAL, a blueprint for creating IS data-sharing applications on multiplatform networks.

Developed out of Apple’s efforts to meet its own internal IS needs as well as the needs of its large customers, VITAL is a tortuously constructed acronym (Virtually Integrated Technical Architecture Lifecycle) for an ambitious effort. A key word is Virtually; in the VITAL model, shared data appears to users to be from a single source, even though it may actually be scattered across a network on incompatible computers and applications. The word Lifecycle indicates that the VITAL system is a modular one, meant to be continually evolving, unlike the static mainframe-centered systems it is intended to replace. And VITAL is Integrated because it doesn’t dictate which computers, networks, or standards you use; it’s compatible with other IS design frameworks, such as IBM’s SAA (Systems Application Architecture) and Digital’s NAS (Network Application Support). VITAL’s goal is to supply a consistent interface to users and a consistent API (application-program interface) to in-house developers while giving IS managers the ability to select any platforms they want for their enterprise-computing efforts.

VITAL and Enterprise Computing

Three words can describe enterprise computing: database, database, and database. Information is acquired, processed, and retrieved for tasks such as customer-call tracking, employee directories, and manufacturing and sales inventories. In big companies, there are even databases that keep track of the databases.

IS groups have traditionally handled all this information by writing custom mainframe applications. Although mainframes have the horsepower to tackle tough problems, programming them is difficult and expensive. Mainframe-centered information systems are also rigid, because making changes to software is a major effort. And because mainframe-centered systems are based on the host/terminal model, in which the mainframes do all the processing, they don’t take advantage of the processing power in the desktop computers that have replaced dumb terminals on many users’ desks.

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The VITAL Structure

In addition to describing a multiplatform, multinetwork, client/server model of IS computing, VITAL specifies how information-system applications should be designed to fit into this model. VITAL divides the traditional IS tasks into four types of application areas called repository, data capture, data access, and desktop integration (see Figure 1). This separation of tasks is a key feature of VITAL. It lets IS managers eliminate bottlenecks by dedicating machines to specific tasks. It also lets in-house programmers develop modular software along function lines, so it's easier to add different computers or change software features in one area without affecting the others — and because a user's desktop is just another module, that module can provide the user with a consistent interface.

Here are some highlights of the four VITAL application areas:

Repository. Although it contains data, the repository is separate from the individual databases that store such data as customers' names and product information. The data it contains is metadata, or data about data. Metadata includes information such as catalogs of the databases in the enterprise system. It also includes data dictionaries, which define...
The separation of IS tasks into four application areas is a key feature of the VITAL model. With data capture and data access as separate functions, users can write and read data more efficiently. The repository provides a way to keep track of what's located where on the network, and desktop integration lets users interact with different types of data in different locations through a consistent interface.

the terms used in different databases and recognize that, for instance, a field called CUST_NO in an ORACLE database on a VAX is the same as Customer Number in a 4th Dimension database on a Mac. With the VITAL model, users don't have to learn the mainframe terminology, because the software can consult the repository for these data definitions.

Metadata can also include authorization data — who has access to what and for how long — and “extract specs,” which tell an application how often to automatically access data from a database. Financial data may need to be accessed every 15 minutes, whereas customers' payment records may need to be accessed only once a month.

The repository also maintains a directory of directories to help users find information on the network. Directories can include information on services and data on different servers, network configurations, and hardware and software configurations.

The repository itself has a flexible network configuration. It can reside on multiple machines, on warehouse and local servers, and even on Macs.

Data Capture. The data-capture part of a VITAL system is used only to create, update, or delete information in databases, not to access it — in other words, to write data, not to read it. By separating the data-capture and data-access functions, VITAL improves performance in data-capture operations. With the old method of having data-access and data-capture functions in one application, users accessing data often tie up machines that others need for data entry.

Apple intends to supply an API to enable the Mac to act as a front end for any commercial transaction-request system, such as Digital's DECip Desktop for ACMS, as well as for systems that users write in-house.

Data Access. Data access in VITAL is based on a network of shared databases that reside on the warehouse and local servers and communicate with each other. As a common language, Apple suggests you use SQL (Structured Query Language). Apple also suggests using its own client-to-host query language, DAL (Data Access Language), to enable your
Figure 2: VITAL is basically a model and a set of design templates to help you build a system that fits the model. To help you determine which design templates you need for each application area, Apple provides decision matrices, which are similar to lookup tables. You find the row on the table that best prioritizes the characteristics of your system and look up which templates you should use.

client applications to access host SQL databases.

DAL-compatible Mac applications such as ACIUS’ 4th Dimension, Brio’s Data Prism, Lotus 1-2-3 for Macintosh, and GeoQuery’s GeoQuery can access SQL databases on minicomputers and mainframes without users knowing anything about the host computer. As for non-Mac clients, Blyth has products that add DAL support to Microsoft Windows and OS/2, and there are DAL products for UNIX clients as well. On the server side, DAL-compatible products include Pacer’s DAL Server for UNIX, Novell’s NetWare SQL, Tandem’s Data Access Language Server, Data General’s DAL for MV, and ORACLE. In the future, Apple will also develop a suite of database Apple events so that applications can get data from servers automatically.

Keep in mind that VITAL offers SQL and DAL as options but doesn’t require you to use them. Rather than DAL, you can use another available client-to-host query tool for SQL databases (Fairfield Software’s Clear Access, for example), or you can write your own completely different language. VITAL specifies only that you use shared databases that can talk to each other and suggests SQL because it’s the industry standard.

Desktop Integration. The desktop-integration part of VITAL defines how users interact with a system. VITAL calls for a consistent user interface for all types of information, regardless of the source. To achieve this goal, VITAL proposes the use of integration services, which can reside on each personal computer or on a workgroup server. Integration services are software modules that can deal with different networks and mainframes and with multiple user IDs for different servers, networks, and applications. Instead of each application dealing with these entities individually, the applications access the services, which take care of the dirty work. For example, an application might access services to transfer files or to submit transactions to a database. Another service, called data synchronization, synchronizes copies of local databases on individual computers with the official copy on the server.

VITAL defines several dozen services; the more you implement when building your system, the easier it is for users. How you implement them is up to you. If you like, you can implement services supplied by Apple as part of the OCE (Open Collaboration Environment), which will be available as an extension to System 7 either later this year or early next year (see “On Beyond E-Mail,” March ’92, page 191). OCE will supply directory services, which enable users to easily locate other users by way of a
directory icon on the desktop. Other OCE services include encryption, authentication, and mail and messaging. All the OCE services will be available to any application through a single standard API. Because OCE will come as an easy-to-implement System 7 feature, most developers of off-the-shelf Mac software will probably implement it to keep their competitive edge.

Because a lot of these desktop-integration services exist for the Mac or are being added, Apple thinks it has the most to offer in this area. Still, Apple is committed to making VITAL cross-platform. For instance, it has stated that OCE will be ported to other environments, with Microsoft Windows as its first likely target. But the success of desktop integration in VITAL doesn’t rest on OCE. Instead of OCE, you could use Banyan’s StreetTalk directory system, which is available now, or a combination of systems — or even write your own.

VITAL Support

Apple is providing VITAL’s technical specifications to its corporate customers. These specifications include a series of booklets and detailed design guidelines. For each of the areas defined by VITAL, Apple has a decision matrix to help you choose from many design templates (see Figure 2). You can use the decision matrix to check off your system’s important characteristics and their priorities. For instance, a data-capture matrix asks you to characterize your system’s data volatility, security risk, and posting urgency. With each characteristic prioritized, the matrix points you to one or more design templates.

Each template includes high-level flowcharts that provide processing techniques for designing a specific part of the VITAL model. The templates show the interaction between desktop and mainframe systems but are not specific to any hardware or software products. Templates help an IS group keep consistency among applications. The design templates and the decision matrices have documentation that describes details of the design and gives technical hints.

Apple will also support VITAL with enterprise-computing conferences and a VITAL industry-advisory board, which currently includes Liberty Mutual, Florida Power & Light, and Stanford University. System integrators such as KPMG Peat Marwick are being trained to provide VITAL consulting services. Apple also provides a toll-free number for customers interested in obtaining information about VITAL: 800-635-9550, extension 502.

Will all this distributed-computing support legitimize Apple in the IS world? That’s the VITAL question.


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WristSaver/ WristSaver MousePad

- The WristSaver cradles your wrist with a contoured neoprene rubber pad and a nylon covering. It's ergonomically designed to support your wrist at the proper angle to help avoid the pain associated with Carpal Tunnel Syndrome. The WristSaver MousePad provides a comfortable rest for your wrist plus a conventional mouse pad. Samples finger movements replace sliding the entire arm or hand. Manufacturer: LB Innovators WristSaverMousePad ACC0655 $15 WristSaver ACC0660 $15 Bundle INND0035 (Available in Gray, Black, Red or Navy)

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TrueLaser printer or ScanMaker 6002S*

- The TrueLaser is Microsoft's answer to fast and versatile laser printing. It offers 300 dpi resolution, comes with 35 built-in TrueType fonts and PostScript and HP-GL compatible. It's autowidering capability allows it to change automatically between AppleTalk, Centronics and RS-232C interfaces. The TrueLaser is also one of the fastest printers in its class. INPD060 $1399. ScanMaker 6002S has unbeatable features at an unbeatable price. Captures 24-bit color, 8-bit gray and black and white images at resolutions up to 1200 dpi. It's perfect for all the work from compso to final proofs projects. Included with the scanner is the full version of Adobe's Photoshop, the ScanMaker plug-in and Sane's Scanmatch color calibration software. Manufacturer: Microtek INPD0180

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- Track the hours you spend on a project with WindosWatch. It's a must for professionals who bill their services by the hour (or minute). WindosWatch operates in the background, automatically generating a timesheet as you work. Use WindosWatch to collect and merge timesheets from team members over the network or export timesheet information to a spreadsheet. Don't miss any opportunity to accurately bill your clients. After all, time is money. Publisher: ASD Software UT0026

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Single User A00135 $139

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<td>DiskTop</td>
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White Knight V.11

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Easy Alarms 2.0

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3. File Sharing
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Alliance Peripheral Systems, 2900 S. 291 Hwy., Independence, MO 64057
Parents: Better buy that bigger hard drive. Broderbund is bringing out Kid Pix Companion, a $39.95 extension to the prepubescent's painting program Kid Pix.

Among other things, Companion lets kids create (and save) QuickTime movies and slide presentations. Just what we needed: multimegabyte Kid Pix files . . . . Then again, slide-presentation software with an interface designed for children might make sense for some adults. 415-382-4400.

By James Bradbury

**Accessorizing:** The latest PowerBook configurations (bigger hard drives, more memory) make it increasingly practical to leave that desktop Mac on the store shelf. If you opt for a PowerBook-only setup, though, it doesn’t mean that you have to forget the **pleasure of a color monitor.** Computer Care’s new BookView Imperial video adapter ($1,399 for the 140 and 170; $1,169 for the 100) can support monitors as large as 19 inches in 8-bit color — without any external boxes. A $395 BookView model that duplicates the PowerBook’s internal display on an external monochrome monitor is also available. 612-371-0061. Even if your PowerBook is doing double duty as a desktop machine, you’ll still want to **hit Route 66** every now and then. To make sure you don’t run out of gas, take along a $79.95 NOTEpower DC-to-AC inverter so you can recharge your batteries (or run your PowerBook) from your car’s cigarette lighter. 604-420-1585.

**Space cases:** Both outer and inner space are well represented on some recent CD-ROMs. Anatomy has come a long way since those plastic overlays in the encyclopedia. Folkstone Designs offers The Anatomist, a 13-megabyte HyperCard stack of human anatomy based on The Anatomy Coloring Book. 604-886-4502. $295. Even more ambitious is A.D.A.M. Software’s A.D.A.M., which combines QuickTime movies of surgical procedures with medical illustrations. 404-980-0888. Five modules, $1,250 each (volume discounts available). For outer-space buffs, it’s The View from Earth, a $79.98 CD-ROM documentary on the July 11, 1991, solar eclipse, from Warner New Media. Besides the expected color slide show of the big event itself, you get an eclipse tracker that shows **past and future solar eclipses** between 1940 and 2040. 818-955-6499.

**Sultans that swat:** Just when you thought it was safe to go back into the palace . . . . Brøderbund’s Prince of Persia is an addictive action game that combines state-of-the-art animation and some simple puzzle solving with suitably gory graphics and sound effects. Your would-be prince has one hour to reach a princess trapped in a tower, with plenty of scimitar-swinging thugs and fiendish booby traps to dodge. Although the game is great in color, it’s also perfectly playable (maybe even better) on a PowerBook. So perhaps not all those PowerBooks on airplane flights are actually crunching numbers. 415-382-4400. $49.95. 
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Unhappy Returns

When a good program goes bad, make sure you don’t get burned — especially when it comes to preparing your taxes. Plus: how to find free megabytes on your PowerBook’s hard drive.

By Steven Bobker

We all have to deal with taxes. For years, many of us have used a program called MacInTax to make that unpleasant chore easier. MacInTax has always been a superb — even brilliant — program. Its combination of an intuitive interface, great calculating power, and superior printing capability made it a Mac paradigm in the true sense of that sadly overused word.

Last year MacInTax’s original publisher, SoftView, had competition from ChipSoft, whose TurboTax was particularly well-suited for tax calculation. MacInTax excelled at printing, however. The perfect solution in 1991 was to use TurboTax to do the preliminary work and then transfer the data to MacInTax for printing. It looked like 1992 was going to be nirvana for the legions who use these programs.

Then ChipSoft bought SoftView. This year there was only ChipSoft’s MacInTax, an amalgam of MacInTax and TurboTax. Because of the time it takes to get articles prepared and printed, monthly magazines base their reviews on the earliest versions of each year’s tax-preparation programs so that readers can get this information early enough to make intelligent buying decisions. Those versions, which are usually good but rarely perfect, are what the reviews must judge. Minor imperfections often tend to get glossed over, because it’s reasonable to expect that they will be fixed before the final version.

This year saw the usual laudatory reviews for the first versions, and several publications went out of their way to praise MacInTax. I got a copy of the program early, read the reviews, did a bit of preliminary work on my taxes, and waited for the final release. My mistake.

The reviewers and I should have hammered harder on the program back in January. There were flaws and problems, and although many of them were fixed, some were not. The final release was slow to arrive, and the state versions came even later. What’s more, the final version was unpredictably buggy, which isn’t reassuring in a program that calculates your taxes and might be the only thing standing between you and the IRS.

The final version ChipSoft shipped had the base number 9.01, onto which an a, b, or c was appended. Users who received one of these versions had to report specific problems in order to receive another version with a different suffix. It wasn’t clear what problems the different versions fixed, why different versions were available simultaneously, or why different users got a particular version. All the versions had problems. For example, version 9.01c fixed some details but broke the Interview feature for many users.

My own experience with MacInTax wasn’t pleasant. The first steps went well and I seemed on that road to tax nirvana, but then the crashes started. Sometimes I’d fill in a line and save it successfully and sometimes not. By actual count, I crashed more than 100
times. ChipSoft suggested that I increase MacInTax’s memory allocation. I gave MacInTax 3 megabytes of RAM on my 10-megabyte LC, which should have been enough to get rid of my problems. No way. In fact, the memory allocation seemed to have no effect whatsoever.

The company’s next suggestion was to turn off all my extensions. I turned them off; it wasn’t simple, though, because all of my fonts are loaded with MasterJuggler. In my case, no extensions means no fonts and screens that are very hard to read. I took the relevant fonts from their suitcase and installed them directly into the System file.

This suggestion didn’t help. In fact, it made things worse, so I put all my extensions back. Next I got rid of the Index and Prefs files MacInTax creates. That helped, but finally, hours after I should have been finished, I was ready to print. I have a RealTech Laser (a wonderful printer) and had no problems printing my forms out cleanly. Almost. For some reason, all the forms were able to print in a batch except Schedule B, which had to be printed in a separate pass.

With the job essentially done, I got a bit curious, so I tried a few experiments. I could print Schedule B by itself but not in combination with another form, schedule, itemization, or worksheet. This remained true even after I’d trashed the Index and Prefs files for what seemed to be the 20th time.

I started investigating ChipSoft’s tech-support areas on CompuServe (Section 8 of the Mac B Vendor Forum and section 17 of the Mac A Vendor Forum) and found quite a few similar tales of woe. Making direct and bulletin-board contact with ChipSoft at the height of the tax season was difficult, and only lucky users succeeded. The company’s on-line support was at best cryptic and often bordered on rude. On-line support should have been the saving grace. It wasn’t, nor was it ever quick. But it was on-line where I learned about the existence of the different-final versions, with never a clue to their differences.

Some users experienced few or no problems, but they were in the minority. Many simply could not print to HP DeskWriters or got unacceptably ugly results. Others, in contrast, could print easily to DeskWriters. ChipSoft’s solution was to tell users who were having problems to get a new driver from HP (a slow process that would have forced them to file for an-extension), but it never told them that the driver was immediately available in HP’s CompuServe forum.

Because I was puzzled by how such a good program could have gone so bad in such a short time, I asked ZiffNet/Mac users to recount their experiences. An overwhelming number had problems at least as serious as mine. Many had to file for an extension; several found more errors and decided (wisely) to check all calculations manually.

ChipSoft has shown only slight interest in these shortcomings. It has collected reports of problems into a so-called enhancement database, which the company will use to determine areas that need fixing before next year’s edition. Meanwhile, ChipSoft either failed to buy SoftView’s old versions of MacInTax or chose to no longer make them finalizable. Several users have requested old versions of forms so they can make necessary corrections, and they were willing to pay for them. Although SoftView always made such items available, ChipSoft simply said no.

What’s the moral here? Actually, there are several. Don’t accept reviews as the final authority. Test your new software promptly to be sure it does what you want it to. And be especially careful with your tax software.

**Persistence Pays**

In my roundup of Mac books last month, I failed to find a really good System 7-only text, because I just didn’t look hard enough. There is one: It’s called *Guide to System 7* (1-55623-743-6; $9.95), by Michael Frase, and it’s part of Macintosh Rapid Reference series, from Business One Irwin.

This small book (only 102 pages, and pretty small pages at that) is packed with power instructions that show readers how to really use the new features of System 7. The book is definitely not a basic Mac text. Its target readers range from knowledgeable users to network administrators in medium- and large-sized companies. The network tips alone are worth the price of the book.

The author is well known for being opinionated and he sometimes says things I don’t quite agree with, but he’s never wrong. There are many ways to reach the same end, and he tends to tell you how he would get there. He pulls no punches, and you will find bug reports and workarounds throughout the book.

Even if you think you know System 7, *Guide to System 7* would be a worthwhile addition to your reference library.

**Pick of the Month**

Getting started in communications is never easy. You need both a modem and communications software. Many modems come bundled with commercial software such as QuickLink II or an old version of MicroPhone, and sometimes a modem is bundled with freeware such as FreeTerm 3.0. None of that software is suitable for long-term use, because it will bring you more frustration than results, assuming that it works in your environment in the first place.

Fortunately there’s a solution to these problems. Use the bundled software to download ZTerm, available on bulletin-board systems or from on-line services. This shareware package ($30, registration only; $40, with disk) from Dave Alverson (5635 Cross Creek Court, Mason, OH 45040) has enough features and power to satisfy all users. For file transfers, it offers Xmodem, Ymodem, and the powerful Zmodem. CompuServe and ZiffNet/Mac users can also use B Plus, the most efficient file-transfer protocol for those services. ZTerm has a scroll-back buffer whose size is limited only by available memory. Dialing setups and macros can automate logging on and connecting to other modems. It runs on Macs with at least 512K of RAM.

ZTerm’s menu structure is inspired and easy to master. There’s even an intelligent Append command on the File menu. In fact, the whole program is easy to use, thanks to its excellent 40-page manual, which comes as a disk file.

The really important performance questions are: Can it make and hold connections under less than perfect conditions, and is it very efficient at transferring files? The answer is that there is no better program for connecting and transferring data. ZTerm is available on Ziff­Net/Mac (filename ZTERM.CPT), and you’ll find it in Library 1 of the Download & Support Forum.

**Road Tips**

Apple sometimes lives in the past. The long-discontinued Apple Tape Drive 40 robs 1.6 megabytes from the hard drive of every PowerBook that Apple has ever shipped. The reason is simple. The tape drive couldn’t handle more than 40,000K per tape. Because Apple’s default disk-
Prices for a fully-configured PostScript-language printer start here.

Compatible with PCs and Macs simultaneously, the NEC Silentwriter Model 95 sets itself to the active interface ports and appropriate language—Adobe PostScript Level 2 or HP’s PCL5—and prints sharp-edged images using microscopic toner at six pages per minute.

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drive partitions still make provision for the Apple Tape Drive’s limited capacity, a 40-megabyte PowerBook disk drive is formatted for only 40,000K. (Although 40,000K might sound like 40 megabytes, it isn’t. A megabyte is 1,024K, which means that 40 megabytes is 40,960K.) Look at the amount of space on your PowerBook 140 or 170’s 40-megabyte hard drive. It should show a total space of 38.3 megabytes, but it can hold nearly 40 megabytes — 39.9 to be exact. Here’s how to get the extra 1.6 megabytes.

First, back up the hard drive, because you’re about to erase everything stored there and you’ll need a good backup. I know most of you back up regularly (right??), so all you’ll have to do is update your current backup. Even you hard cases who have never totaled a drive and never backed up will have to do so in order to get this 1.6 megabytes.

Restart your PowerBook, using the Disk Tools disk that’s included in your set of system disks. Run the Apple HD SC Setup application, and select Partition and then Custom. Remove the existing partition. (The grey space you see in the diagram is the space you’re going to recover.) Now create a new Maximum Macintosh partition. It will consume all the space in the graphic and will show that it occupies 39.9 megabytes. Save everything, reinstall the system, and restore your files. Enjoy the extra space.

This trick works for PowerBooks with 20-megabyte hard drives as well. A PowerBook 100 or a 140 with a 20-megabyte hard drive should have 18.3 megabytes of available space. You can extend that amount to 19.9 megabytes by using this procedure.

A Real Easter Egg

This month’s Easter egg is as authentic as you can get. You’ll find it buried deep within Now Software’s spiffy Now Up-to-Date calendaring program. You might have noticed a clue to this egg in the program’s Sample Calendar, which shows the phases of the moon, indicated neatly and iconically. At first it looked as if someone had obtained all that data and entered it in, but some experimentation on my part showed that the data was being generated by the program itself. The question: How to get to it?

The answer is simple if not too straightforward. Open any Up-to-Date calendar in either a single-day or multiday view (the weekly and monthly views don’t work). Hold down the Command and Option keys while double-clicking on an existing event or when you’re creating a new event. In the Event Info window, select the Repeat pop-up menu. Note the interesting new entries at the bottom.

Now you know when Easter is in 1993 (April 11) and in 1999 (April 4). Steven Bobker keeps busy acting as sysop for MacLife’s on-line service, ZiffNet/Mac, where he can be reached at 72511,45.
One of the critics, Macworld, recently said, "As a group, the RasterOps boards made the best video captures—with truer colors, better resolution, and fewer artifacts than all of the other boards."

MacWeek honored our 24STV video adapter with its Target Award. And Presentation Products handed us its Readers Choice Award. We could go on, but you get the point: RasterOps makes the most highly acclaimed multimedia/video products you can buy.

It's no wonder. Apple® developed QuickTime with RasterOps products. And today, the RasterOps QuickTime Presentation Theater is the only complete multimedia family available.

In its price range, it's the only one offering video output to an NTSC source or a video recorder. The only one with a full screen video window that can display and capture at 30 frames per second. And the only one that includes CD quality sound and video digitizing on one board. All these functions are enhanced by each product's easy interactivity.

We've prepared a video about the RasterOps QuickTime Presentation Theater. To order your $500 video, find out about our special VideoSpigot Trade-In Program, or get more information, please call us at 1-800-SAY COLOR.

And let RasterOps take you to the movies.
Okay, so you think you've got all the storage space you need... Think again. Tomorrow, you'll need more! Applications and files keep getting bigger. You need color. You want all the desktop space you can get—without taking up more of the top of your desk, and what about sound or QuickTime?

It used to be that the largest drive you could fit in a Ci was about 500MB, but not anymore! Today, the number is 830 MB.

APS offers the Toshiba 830 for $1749—the 3.5-inch storage solution for multi-user systems, workstations, file servers, oh...and the individual Macintosh user who just can't get enough storage.

**Toshiba—Storage for Tomorrow**

- Toshiba's 830 not only provides you with over 800 MBs of storage, but it fits internally in the Mac SE, SE/30, Cx, Ci and the Quadra 700.
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- Transfer rates as high as 1.2 MB/sec. you can use the data you've found—right now.

**Tomorrow Is Today**

**Toshiba 830 in APS Zero-footprint case**

- Okay, so you need the space, like the price and don't mind an additional peripheral on or around your desk. Get the 830 in an APS zero-footprint case for just $1849. You can still fit it under your classic Mac or place it conveniently under one of your other APS peripherals. Are you prepared for tomorrow? Call APS Technologies today.

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**1-800-235-2750**
If, like most other Mac users, you spend a lot of time entering data into your Mac, you probably wish for things that can make the whole process a little easier and a lot more comfortable. Such as a trackball that fits your hand, a keyboard that doesn’t hog most of your desk, or a mouse you can use when giving presentations. Luckily, there are plenty of good, reasonably priced third-party input devices around that let you work more comfortably and more productively. To find out more about specific products, see the March ’92 issue of MacUser, page 48, for a review of four alternatives to Apple’s mouse and the May ’92 issue, page 48, for a review of six trackballs. See also “Graphics Tablets: Drawing the Line,” April ’92, page 98.

By Victoria von Biel

SHOPPING LIST

How to Buy

Input Devices

Of course you’d never forget to do this, but it does happen: If you’re buying off the shelf, make sure the device you get works with the Mac. Some manufacturers produce Mac and PC versions of the same device that are packaged similarly.

If you’re left-handed, make sure you try the mouse or trackball first. Some models work just as easily with either hand, others you may have to rotate to use comfortably, and some are designed exclusively for the right hand.

Before you buy, find out what the return policy is. It can take several days to get accustomed to a new keyboard, mouse, or trackball. If after that time you still aren’t comfortable using it, you should be able to return it.

Don’t be too swayed by the argument that one device is more ergonomically correct than another. This buzzword is applied to most devices these days and has become virtually meaningless. How you work often influences your comfort and health more than what products you use.

For maximum comfort, look for devices that keep your hand and wrist on a relatively even level. Avoid products that make you flex your wrist too much.

Beware of all-in-one keyboards that combine trackballs and keyboards that can be removed or rearranged. They’re good for southpaws — you can put the numeric keypad or trackball in a more convenient position — but check out the price: That sort of combination package can cost more than if you bought the individual parts separately.

The higher a mouse’s or trackball’s resolution, the more responsive it is. The software that comes with your mouse or trackball is an added value — it can boost productivity by letting you control speed or assign certain actions (such as cutting and pasting) to certain clicks — but most users never make the most of it. Find out what the software can do before you buy the device, and once you own it, take advantage of the software’s features.

If desk space is an issue, trade in your mouse for a trackball, but first find out the trackball’s dimensions — some are surprisingly large.

Hate the PowerBook’s trackball? Small mice and trackballs (Appoint’s Thumbelina and MacMicrospeed’s MicroTRAC, for example) plug in to the PowerBook’s ADB port and are tiny enough to be tucked into the carrying case when you’re on the go.

For presentations, look for cordless mice and miniature trackballs you can hold in your hand.

A digitizing tablet that uses a pen or stylus for entering data gives you extreme control over input, but unless you spend a lot of time using painting or photo-editing applications, you probably don’t need one.

What’s the input device of the future? Voice-recognition products that let you just tell your Mac what to do. These devices are available, but they’re hard to learn and use. A much more convenient version of Articulate Systems’ Voice Navigator is in the works (“Speak Up: Your Mac Is All Ears,” July ’92, page 46), and Apple is developing its own voice-recognition technology.
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Want to add tear-off menus to System 7? Select a network printer without going to the Chooser? Add Finder comments that don’t disappear when you rebuild the desktop? The five control panels and two extensions included in Super 7 Utilities, from Atticus Software, let you tinker with System 7 to your heart’s content. Some are more useful than others (do we really need a commercial version of the Help Balloon utility Helium?), but power users are bound to find something they’ve been longing for. 203-324-1142. $99.97.

By Victoria von Biel

**Help yourself:** The ideal disk-repair utility would fix problems before they happened, right? That’s almost what Public Utilities from Fifth Generation Systems does. Described as “preventive maintenance” for your Mac, Public Utilities regularly monitors disks for potential trouble and then either automatically fixes what’s wrong or notifies you and offers a solution. The utility has some safe-computing features too: Processes that can irreparably damage data if used incorrectly (using a sector editor, for example) are not accessible — a nice feature if you’re loading this on a bunch of Macs in your office. 504-291-7221. $149.

**Everybody needs somebody:** Sometimes a disk-repair program can’t make things right, and frankly, you don’t know what’s wrong with your Mac. To the rescue come two telephone support services that promise no waiting and answers to all your questions, regardless of problem or program. The catch? You’ve got to pay: TeleGuru (800-374-4878 or 703-442-4540) charges $2.75 a minute (less for some corporate accounts); if you want the charges to appear on your phone bill, you can call 900-622-4878, which costs $2.95 a minute. Vmacs charges $3.50 for the first minute and $2.50 for each additional minute when you call 900-680-8622 (call 800-858-8622 or 219-663-2611 to set up corporate rates). Another idea: Mail-order company Bottom Line Distribution (900-420-3636) will answer any questions, whether you’ve bought products from them or not. Bottom Line charges $2 for each minute. You can save money by defining your problem before calling: TeleGuru offers a terrific DA that not only displays your Mac’s configuration but also includes an electronic notepad where you can jot down specific symptoms. Alternatively, you can download the free utility MacEnvy (which does the same thing) from an on-line service near you. Find it in MacUser’s ZiffNet/Mac in the Download & Support Forum; the filename is MACENV.SIT.

**Safety net:** Not many gurus — tele- or otherwise — can help if your floppy disk dies before you’ve had a chance to back it up. When you use Polaroid’s DataRescue diskettes, however, you get access to a free data-recovery service that promises to restore your data within 48 hours, sending back two restored disks and a couple of empty ones (for backup, maybe?). DataRescue diskettes are available from computer stores and dealers for about $22 for a box of 10. 800-443-5873 or 707-576-8210.
Surviving SCSI

SCSI — the hellish standard for connecting peripheral devices to the Mac — has earned its ugly acronym. Here's how to cope.

By Christopher Breen

If you're thinking of expanding into the exotic world of external hard drives, scanners, and CD-ROMs, prepare to cozy up to the SCSI standard, the sometimes quirky and often confusing method used to connect peripheral devices to the Mac.

SCSI (pronounced "scuzzy") stands for Small Computer Systems Interface. Technically, SCSI is a bus, or a collection of wires that conduct information from one location to another. SCSI devices are plugged in to the SCSI port on the back of your Mac, and you can chain as many as seven devices, including the Mac's internal drive.

SCSI's bad reputation is the result of several things, most notably cable incompatibilities and the fact that electric signals degrade as they travel along the bus. Here's how to keep things relatively trouble-free.

Christopher Breen is a writer, musician, and MIDI consultant who lives in the San Francisco Bay Area.

SCSI Termination

A SCSI terminator is a device that prevents the signal sent through the SCSI cable from ricocheting to its point of origin and raising serious hell with your computer system. Terminators come in three flavors: external plug-in terminators; internal resistor packs, which — if they're from an enlightened manufacturer — are easy to remove or switch off, and motherboard terminators. Motherboard terminators are connected to the SCSI jack inside your Mac and can be used only when no internal hard drive is present and your SCSI cable is longer than 18 inches. Check the manual to see what termination a device uses.

SCSI devices should theoretically be terminated at each end of the SCSI chain and nowhere between. Internal drives are always terminated, so users with such drives need worry only that the last device in the physical SCSI chain is terminated. Sadly, this setup doesn't always work. Possible exceptions include situations in which your SCSI bus is shorter than 18 inches (terminate only the last device) or when the cable between two devices is longer than 10 feet (add termination at the 10-foot mark and at the end).

Recently introduced active terminators (as opposed to passive terminators, found on SCSI devices until now) sport voltage regulators that result in a cleaner SCSI signal with less cross talk and may help when your cable length exceeds 12 feet.

Cables

SCSI cables come in varieties equaled only in the world of breakfast cereals.

• Your first cable is likely to be a SCSI system cable (a), which runs from the back of your Mac (25-pin male) to your first SCSI device (50-pin male).

• The PowerBooks use a special 30-pin connector (b).

• To connect one standard SCSI device to another, use a SCSI peripheral cable, which has a 50-pin male connector on each end (c).

• Nonstandard SCSI cables include the 25-pin-male-to-25-pin-male system cable (Macintosh to nonstandard SCSI device), the 25-pin-male-to-25-pin-male peripheral

SCSI IDs

Each device in your SCSI chain needs a unique SCSI-device-ID number. Setting ID numbers usually involves adjusting a knob, button, or wheel on the outside of the peripheral's cabinet. Some ID numbers are set internally with DIP switches.

• Apple has assigned SCSI-ID 0 to all of its internal hard drives, so if you have an internal hard drive, make sure no external device is set to ID 0.

• The Macintosh CPU is set to ID 7. Do not set a SCSI-ID number to a value greater than 6.

• If you have no internal hard drive and more than one external drive, the device with the highest ID number will become the startup device unless you designate a different drive in the Startup Disk control panel. Mac Plus users can't use this control panel and must configure their startup disks by ID number.

A New SCSI?

In 1991, ANSI (the American National Standards Institute) approved the new SCSI-2 standard. Highlights include greater compatibility among peripherals manufactured by different vendors; fast SCSI, a scheme that increases the SCSI data-transfer rate to 10 megabytes per second; and wide SCSI, an option that allows for a data path enlarged from 8 bits to 16 or 32 bits.

With new standards come new complications: Wide SCSI will require an additional cable containing 24 extra data lines. And to take advantage of SCSI-2's increased speed, you need a SCSI-accelerator card and a drive sprightly enough to keep up with these fast data-transfer rates.

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cable (nonstandard to nonstandard peripheral), and the 25-pin-male-to-50-pin-male peripheral cable (nonstandard to standard peripheral). Also available are 50-pin-female-to-50-pin-male extender cables.

- According to the SCSI specification, the total length of your SCSI cables must not exceed 6 meters (19.6 feet). Remember to factor the length of the internal-cable wiring of your peripherals (about 1 foot) into your calculations.
- Use high-quality double-shielded SCSI cables containing wires arranged in twisted pairs.

### Troubleshooting

Never make or break SCSI connections with the power turned on. Your SCSI cable carries approximately 5 volts, which, if shot down the wrong line while you're attempting to make a cable swap, might fry your Mac or peripheral.

Here's a simple checklist for when things go wrong:

- **Check all SCSI connectors.** Are they firmly seated, screwed down, and clipped on?
- **Check ID numbers** for possible conflicts.
- **Turn on your peripheral devices first.** Some older drives take a while to crank up to speed, and if you boot the Mac too quickly, they won't appear on your desktop.
- **If you're using System 7**, be careful to install compatible versions of any software that might affect your SCSI device or system. Running an accelerator with a System 6 driver under System 7 is probably not a recipe for success.

If you're still having trouble, try the following:

- **Test each peripheral** individually to ensure that it works. Make sure all your devices are turned on.
- **Juggle things around:** Change the device IDs, place peripherals in a different position in the SCSI chain, swap cables, move the terminator one device up the line, or remove the termination altogether.
- **Check placement.** Some peripherals demand to be placed in a specific location on the SCSI chain (at the end, for example). Read the manual, and put this finicky machine in its proper place. Other devices, most notably backup peripherals such as tape and removable-cartridge drives, don't work at all if they're connected to the same chain. Only one backup device can be on a chain.
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Sound Bytes

Sure your Mac can beep — it can even quote Arnold Schwarzenegger. But chances are you’re not making the most of its incredible sound capabilities. Here’s what you have to do.

By Bob LeVitus

You probably know that your Mac has a built-in speaker (how do you think it makes those beep sounds?). But did you know that your Mac, unlike PCs and clones, is capable of playing high-quality sounds with no additional hardware? And that many Macs — the Classic, LC, IIsi, PowerBooks, and Quadras — include a microphone so you can record sounds? Not only that, but for Macs that don’t have a microphone, there are several inexpensive hardware devices you can easily plug in to your system.

But is having sound on your Mac worth a darn? I think so — at least if you have disk space, RAM, and network bandwidth to spare. If so, you can add voice notes to documents (assuming you have an application that supports voice annotation), send voice mail across your network, or add narration to training stacks and QuickTime movies. You can even use sound to make your Finder more fun.

Note: I assume you’re using System 7. If you’re still using System 6, you can do most of the things described below, but you’re on your own as to exactly how to do them.

Sound In

The first thing you need to know is how to get sound into your Mac. If you have one of the Macs that includes a microphone, adding sound is a piece of cake. For instance, here’s all you have to do to create your own System beep:

1. Open the Sound control panel, and click on the Add button.
2. Click on the Record button, say “beep” into the microphone, and then click on the Stop button.
3. Save the beep, give it a name, and click on OK.
4. To hear your beep, either click on its name in the Sound control panel or double-click on its icon in the Finder.

The beep you’ve just created is now a standard Mac document stored inside the System file. After you’ve created a sound, you can move it, copy it, or drag it into the Trash, just as you would any other file. You can even use the standard Copy and Paste commands to add sounds to the Scrapbook (to hear a sound, just click on the Play Sound button, on the Scrapbook page). If you don’t want to store all your sounds in the System file, you can use Suitcase II, from Fifth Generation Systems, or MasterJuggler, from ALSoft, to manage sounds stored elsewhere on your hard disk.

And what if your Mac doesn’t have a built-in microphone? Don’t worry — several good recording devices are available. I use the MacRecorder Sound System Pro, from Macromedia (formerly MacroMind•Paracomp; 600 Townsend Street, San Francisco, CA 94103; 415-442-0200; $349, including the excellent SoundEdit Pro software). Articulate Systems (6000 Cummings Park, Suite 4500, Woburn, MA 01801; 617-935-5656) also makes recording devices. Choose from the no-frills

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An added benefit is that these devices all include audio input (also known as line-in) jacks that make it easy to record sounds from a cassette, CD, or videotape. Although you may be able to plug a cassette, CD, or video player into the microphone jack on a Classic, LC, or PowerBook (proceed cautiously, however; you could damage your Mac), getting quality sound recordings that way is more difficult than using software that comes with third-party devices.

Sound Out
Once you've got a microphone attached to your Mac, what the heck are you going to do with the sounds you record? Well, in addition to creating beep sounds (OK, maybe that's not the most productive thing you can do with your Mac), there are already several programs — Word 5.0 (Microsoft), Acta 7 (Symmetry), and KidPix (Broderbund), to name a few — that let you attach sounds to documents. If you use electronic mail such as Microsoft Mail or CE Software's QuickMail, you can send voice mail as easily as you send text.

I use Word 5.0's Voice Annotation command all the time to create voice notes for my editors and myself. If you have Word 5.0, check it out. Choose Voice Annotation from the Insert menu, and record a voice note, using whichever type of microphone you have connected to your Mac. Voice annotations are represented in your document by a little speaker icon; to hear the annotation, double-click on its icon.

Other applications, such as Director, from Macromedia, and Premiere, from Adobe, let you use sound almost as easily as Word does. Although you can't actually record sounds, you can easily import them for use in presentations.

If you're a HyperCard user, you can use ResCopy or ResEdit to import sounds. After you've imported a sound, you can play it by typing \texttt{Play "sound name"} in the message window or in any script.

Soon you'll be speaking or typing based on which communicates your point the best.

Another place where you're going to hear more and more sounds is in QuickTime movies. It's simple to add sound in QuickTime, and a little sound can add a lot of impact.

Perils and Pitfalls
The biggest problem with sound on the Mac is that it eats up disk space and can require a lot of RAM to record. Adding a mere \texttt{two-word} voice annotation to a 2,000-word Word 5.0 document causes the file size to balloon from 15K to 200K. This can be a problem if you have limited disk space or limited RAM or plan to send such a file across a network.

You can reduce a sound's RAM and disk-space requirements by recording it at the lowest quality level your program allows. Most programs offer a choice of recording qualities, such as good, better, or best. The better the recording quality, the more disk space the sound consumes and the more RAM it takes to record it. A sound recorded at the best setting is bigger and requires more RAM to record but sounds great; sounds recorded at the good or better setting use less disk space and need less RAM to record but don't sound as good. Play around with these quality settings. For most voice recording, the lowest quality is good enough to help you make your point.

In other words, use sound sparingly, at least for now. In the future, working with sound will become more viable. As hard-drive and RAM prices continue to drop and networks get faster, the penalties for using sound — in terms of disk space, RAM, and network speed — will diminish. It won't be long before you'll choose between speaking and typing based on which method will communicate your point more effectively rather than which will use more disk space or RAM or take longer to send across your network.

Mastering Sounds
Now let's have some fun. Bruce Tomlin's SoundMaster, a popular shareware control panel, lets you add sound to most Mac actions. Install it, and you'll be able to specify a sound that will play
when you start up; restart; shut down; insert a disk; eject a disk; press the Tab, Shift, Return, or Delete key; and more.

Yes, SoundMaster is silly, but it sure makes using a Mac a lot more fun. If you want to use it with System 7, however, make sure you get version 1.7.3, now widely available from on-line services and user groups. I've also included SoundMaster in my book Stupid Mac Tricks, although the version in the book is not System 7-compatible.

There are thousands of cool sounds around — you can download SoundMaster sounds from most on-line services and bulletin boards, and many user groups offer huge collections of sounds as well. For those who'd like to try SoundMaster, plus some cool sounds and other sound-manipulating software, we've put together a package of goodies on MacUser's on-line service, ZiffNet/Mac. You'll find it in the Download & Support Forum (filename BTSSNS.CPT).

A recent trend is for professionally recorded sounds to be sold as commercial software. SoundSource is the pioneer in this field; so far it sells two collections of sounds, sound effects, dialogue, and music from the original "Star Trek" television series (2985 E. Hillcrest Drive, Suite A, Westlake Village, CA 91360; 805-494-9996; $49.95 each). The recording quality is extremely good, and both of the collections include the latest version of SoundMaster. SoundSource says it'll have collections from other TV shows and movies available soon and hints that it may soon release similar collections of QuickTime movies.

You can also make your own sounds to use with SoundMaster. For example, I recently connected my Laserdisc player to my MacRecorder and digitized Arnold Schwarzenegger's voice from the Terminator movies. When I restart, Arnold says, "I'll be back." When I shut down, he says, "Hasta la vista, baby."

By the way, MasterJuggler includes a feature called HotSounds that is similar to SoundMaster.

**Sound-File Formats**

System 7 brought with it a new sound-file format known, cleverly enough, as System 7 Sound. (Older file formats included SoundEdit, snd, and sound resource.) You can easily tell the difference — System 7 sounds are the only ones that make noise when you double-click on their icons in the Finder. Unfortunately, most of the sounds available, including the ones in the SoundSource's Star Trek collections and most of the stuff on bulletin boards and on-line services, are in one of the older file formats and must be converted to the new format before you can use them with System 7. This shouldn't be much of a problem: Most programs — MasterJuggler, Suitcase, SoundEdit Pro, and SoundMaster, for example — don't discriminate among sound file formats.
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POWER TOOLS

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types; they let you work with old or new sound formats with equal ease.

If you do want to convert old-format sounds to the System 7 Sound format, you'll need either SoundExtractor, a shareware program by Alberto Ricci (available from ZiffNet/Mac and other fine on-line services), or SoundEdit Pro, from Macromedia.

SoundExtractor converts most old sounds to the System 7 Sound format easily and automatically. SoundEdit Pro is almost as easy to use — you just open the sound file in SoundEdit Pro, and then use the Save As command to save it in System 7 Sound format.

By the way, you can make any System 7 sound your Mac's startup sound, even if you don't have SoundMastor or Master-Juggler. All you have to do is put the sound (or an alias of it) into your Startup Items folder.

Better-Sounding Sounds

If you're using a lot of sounds with your Macintosh, you might want to consider buying an external speaker or a pair of them. Almost any speaker will do, but you'll get the best results from a speaker with built-in amplification: if your speaker doesn't have a built-in amp, it won't be very loud.

I have a set of MacSpeakers, which are designed specifically for use with a Mac (Persona Technologies Division of Monster Cable, 274 Wattis Way, South San Francisco, CA 94080; 415-871-6000; $229). They sound great, they look great, and they're packed with features: 10 watts per channel, external controls for bass and volume, simulated stereo, and sturdy shielded cases.

I find external speakers particularly useful when I do product demonstrations or presentations. Recently I've started bringing my MacSpeakers along to bookstore demos for my book Stupid Mac Tricks. They make a big difference — they're a vast improvement over the built-in Macintosh speaker when you're playing to a crowd.

For less expensive speakers, check your local Radio Shack store. Radio Shack carries several inexpensive speakers with built-in amplification. They won't sound as good as the MacSpeakers, but they are a lot less expensive.

Bob LeVitus is the author of Dr. Macintosh, Second Edition, and has hundreds of Macintosh sounds on his hard disk.
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You can also contribute tips electronically via ZiffNet/Mac, the on-line service for MacUser. Send them 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

Claris Resolve

There is no apparent way to select the default font (or size, style, and so on) for new spreadsheets that open in Claris Resolve. Here's a solution:

Create a new script, and type in the font and size of your choice, using the appropriate scripting commands. For example, Text Font "Times", Text Size "14".

The secret to having this become the default script is to save it with the name startup in the Resolve Scripts folder, which resides with the Resolve application. Any characteristics saved in this script will take effect when you open a new spreadsheet.

Ira Lansing
San Rafael, CA

Aliases (System 7)

Are you tired of constantly deleting or changing the alias suffix System 7 adds to the end of each alias name? Here’s how to use ResEdit to change the suffix to anything you want.

First make a duplicate of the Finder to work on, and open it with ResEdit. Then open the STR# resource, and double-click on ID 20500 (see Figure 1). The first STR# is the alias suffix. You can change the suffix to anything you like, as long as the new suffix is at least one character long — otherwise the Finder appends a number to the name of the alias.

Ira Lansing
San Rafael, CA

Tip of the Month

Nisus 3.06

In this age of multifarious word processors, many propriety formats have sprung up, and quite frankly, it’s a pain to switch from one format to another. So if you use Nisus 3.06, from Paragon Concepts, you’ll be pleased to hear that Paragon has added a feature that eases working with foreign file formats. The only problem is, this feature isn’t mentioned in the Nisus manual, so it’s not likely that you know about it.

Nisus already includes internal translators for Microsoft Word and MacWrite, but that does little good if you want to open a Microsoft Word document saved with the Fast Save option or a document from MacWrite II, WriteNow, or DGS WordPerfect 4.2. Claris makes an XTND package, that is a collection of translators that lets you read files created in different formats. If you have this XTND package installed in your System Folder and you hold down the Option key while selecting either Open or Save As, Nisus 3.06 will use the XTND translators (see Figure A). Not all XTND translators have export capabilities, however, so the list of file formats available with the Save As command may not be as extensive as the list of file formats available with the Open command.

Various programs contain the Claris XTND package, but MacWrite II has the best selection of translators. If as is likely — you don’t own both MacWrite II and Nisus 3.06 will use the XTND translators (see Figure A). Not all XTND translators have export capabilities, however, so the list of file formats available with the Save As command may not be as extensive as the list of file formats available with the Open command.

Ira Lansing
San Rafael, CA

MacroMaker

If you’ve switched from System 6 to System 7 but still want to use Apple’s MacroMaker utility that used to be included with

Figure 1: Using ResEdit, it’s easy to change the alias suffix to any other suffix you like.

Figure A: If you have Claris’ XTND translators installed in your System Folder, it’s possible to dramatically increase the Open and Save file formats available in Nisus 3.06.
system software, here’s how to do it. First, open the System Folder and drag in the contents of the MacroMaker folder (not the folder itself). Then select Restart from the Special menu. Once your computer has rebooted, the familiar tape-player icon should be back on the menu bar and MacroMaker will be fully functional as long as you do not place it in a folder inside the System Folder.

Michael Caldwell
Maiden, NC

**PageMaker 4.2**

With PageMaker 4.2, you can use the Shift-Function keys to access styles on the style sheet, which is a great feature. Even if you’re not using the function keys, assign numbers to your styles to bring those frequently used styles that are on the bottom of the list up to the top.

Kevin Cooper
Van Nuys, CA

**Word Processing**

From time to time, I need to copy and paste columnar data from various applications into Microsoft Word, but when I do this with certain applications — Maple or MiniTab, for example — the data no longer lines up nicely in columns. I solved this problem when I realized that some text-based editors format their columns by using a monospaced font such as Courier and make the columns line up by inserting the correct number of spaces. If the default font in your word-processing program is a proportional font (such as Times or Helvetica), the columns won’t line up when you paste in the data (see Figure 2). You can correct this by simply selecting the data you’ve pasted in and changing the font back to Courier or to another monospaced

---

**Figure 2:** Use a monospaced word-processing font to retain the columnar format in data received from on-line services.

---

By Drawing A Line Between These Powerful Icons, You Automatically Program Thousand
font. The same trick works with columnar data received from on-line services.

Albert Coons
San Antonio, TX

Word 4.0 and 5.0
Here’s a quick way to call up stylesheets: Select Commands from the Edit menu (Word 4.0) or Tools menu (Word 5.0), and select the Apply Style Name command. Select the stylesheet name from the list that appears on the pull-down menu, and use the documented procedure for assigning keyboard commands and saving the Word Settings file.

Now whenever you want to apply a particular style to a paragraph, you need only type your keyboard command.

Jan Stratad
Los Angeles, CA

WordPerfect 2.1
Thanks to the introduction of publish-and-subscribe, it’s now possible to generate tables in WordPerfect. It’s not exactly quick and easy, but it is possible.

Just create a publisher from within a spreadsheet program that has publish-and-subscribe capabilities (such as Lotus 1-2-3). Open a WordPerfect document, and subscribe to the edition as either Text or Text with Attributes. What you get is a block of text with the columns of the spreadsheet separated by tabs.

You can’t edit this text from WordPerfect, but you can alter its attributes, including typeface, font size, and tab stops. Change the font size so that the text fits on your page and move the tab stops until the text lines up the way you want it to, and you’ve got a table. You can even give it a border.

Byron C. Mayes
Bear, DE

Floppy Disks
Every once in a while, you encounter a floppy disk that just can’t be read from or written to any more. Before you slam that plastic demon into the trash, crack it open (if you haven’t already done so from frustration). Inside the diskette on both sides of the shell are thin clothlike pads that protect the disk medium from rubbing against the shell. If you remove these pads from the shell, you’ll get two really good screen cleaners—these pads will lift dust right off your screen.

Chris J. Catalana
Farmingville, NY

Finder (System 7)
Under System 7, if you want to clean up just one or two icons in a window rather than all the icons, you have to hold down the Shift key while selecting Clean Up from the Special menu. This is an annoying procedure if you’re accustomed to System 6, which let you just select an icon and choose Clean Up.

Here’s a way you can avoid having to hold down the Shift key. Just drag the icons you want to clean up to the scroll bar or the title bar of the current window, and they’ll automatically be repositioned on the grid. Be careful, however, that you don’t drag the icons out of the window, because you’ll remove them from the folder.

Morris Ng
Saratoga, CA

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<td>Motorola 25 MHz processor</td>
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Questions, anyone? Here's where to get answers from the experts. Bob LeVitus is the author of the best-selling Dr. Macintosh, 2nd edition. Andy Ihnatko is a longtime activist with the BCS•Mac user group. Together, they're ready to answer questions about everything Macintosh.

Don't want to wait for an answer? Post your question on ZiffNet/Mac, MacUser's on-line service, and get a reply from Bob (76004.2076), Andy (72511.204), or one of the other MacUser experts. See the masthead in this issue for instructions on how to sign up.

By Bob LeVitus and Andy Ihnatko

Crash of the Titans

Q. I recently bought a Classic II with 4 megabytes of RAM and a 40-megabyte internal hard drive as a replacement to my aging but faithful SE. It doesn't make sense to me that the Classic II can't operate under any version earlier than System 7.0.1. I'm also running into problems with bombing, screen freezes, the occasional disappearance of folders and files, the appearance of more than one System Folder, and unexpected appearances of a Trash folder.

What's going on here? Is my Classic II defective?

John Dabbas
San Diego, CA

Andy: Apple's set a grim precedent for the way new Macs deal with system software. Until fairly recently, a new Macintosh usually came with the newest version of system software, but Apple only recommended that you use it. So if you wanted to use a IIci with System 4.2, for example, you could. You'd wind up with so many system crashes that the FAA would come to your house searching for flight recorders, but, hey, that was your business. Then Apple started hard-coding barriers into ROM: if you weren't using at least a specific version of system software, your Mac couldn't boot. I know of no way to get such a Mac to use an older version of the system. (And don't try editing the vers resource of the system to fake your Classic II into thinking 6.08 is actually 7.0.1: the consequences are fairly ghastly, as I can attest.)

Bombing and screen freezes are semi-normal. A sad fact of Mac life is that when you're the first user on your block to buy Apple's latest Mac, you're going to suffer the slings, arrows, and system crashes of older software that innocently does something your new Mac doesn't like. Sit tight; write a bunch of letters to the publishers of whatever software's crashing; and rest assured that new, compatible versions will be released real soon now. If it's the Finder that's crashing and you've already removed all non-Apple system extensions, then have a little chat with your dealer and get yourself a Mac that doesn't have these problems.

Your Finder wackiness is because System 7 wreaks havoc with the data structures the Finder uses to keep track of files. Apple has

...But We're Afraid to Ask

Simplicity is the watchword of this section. This is where we pay homage to the sort of unaffected, basic questions that don't get asked too often these days, because of recent changes in the federal tax code. So if an agreeably simple, unslicable question pops into your head, by all means send it in. To prevent the IRS from assessing a fundamentally tariff on your next file, write a bunch of letters to the publishers of the FAA would come to your house searching for flight recorders, but, hey, that was your business. Then Apple started hard-coding barriers into ROM: if you weren't using at least a specific version of system software, your Mac couldn't boot. I know of no way to get such a Mac to use an older version of the system. (And don't try editing the vers resource of the system to fake your Classic II into thinking 6.08 is actually 7.0.1: the consequences are fairly ghastly, as I can attest.)

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Your Finder wackiness is because System 7 wreaks havoc with the data structures the Finder uses to keep track of files. Apple has formats as well as avoid having to pay licensing fees to Adobe. That was the idea, anyway. Unfortunately, lots of ugly lawsuits erupted, and worse yet, Microsoft made it clear that it'd do whatever it took to make Windows the standard for graphical computing, even if that involved buying surplus tactical missiles from the now-defunct Soviet Union.

Plus, TrueType wasn't really catching on — Type 1 is the definitive font standard. Versions of ATM are available for nearly every major platform, and there isn't a single DTP service bureau in this quadrant of deep space that doesn't expect the documents you submit to use PostScript fonts.

Now for some of the practical hands-on advice that has become the hallmark of this column ever since my editor called and yelled at me last month. There's no longer any really compelling reason to continue buying TrueType fonts. Sure, having outlines and bit-maps in one file is keen and some folks swear to Tarim that TT quality is superior to that of PS at sizes smaller than 6 points or so, but these are hardly compelling reasons to abandon a wildly popular industry standard. Plus, there are half a dozen programs available that can convert one format to the other (FontMonger, from Ares. and Fontographer, from Altsys, to name two). You shouldn't go to the trouble and expense of buying new PostScript fonts to replace your TrueTypes, but buying solely PostScript fonts from now on would probably be wise.
fixed the problem with version 1.1.1 of its System 7 Tune-Up extension — a later version might be available when you read this. This free system patch (available from user groups/ZiffNet/Mac, and other on-line sources) prevents additional files from disappearing but doesn’t re-store files that have already been sucked into the Bermuda Triangle.

There are three methods for retrieving those lost files. First, try locating them by name with the Finder’s Find command, and then copy them onto another disk. If that fails, rebuild the Desktop file on the afflicted hard drive and see if the Hoffa-esque files reappear (to rebuild the desktop, hold down the Command and Option keys as you restart). If even that offers you no succor, open the volume with CE Software’s DiskTop or another file-diddling utility, delete all the invisible Desktop files you find in it (see Figure 1), and restart. Robert Gibson’s reCoverUp, a shareware utility available from ZiffNet/Mac and user groups, can do this last job for you if you’re a little squeamish about deleting files.

Each of these methods has about as much chance of recovering your data as Spike Lee has of winning the Best Director award at next year’s Academy Awards; it’s possible, but don’t put money on it. Unfortunately, the only 100-percent sure way to keep additional files from disappearing is to reinitialize the afflicted drive (the appropriate software should have come with the drive) and start with a clean slate.

**Bob:** You should install Tune-Up 1.1.1 (or later) regardless of whether you’ve lost files, but be sure to follow the installation instructions, particularly if you’ve experienced that nasty disappearing-folder bug.

**A Skinnier System**

**Q.** What counts as system software when you look at About This Macintosh on the Apple menu? I have 4 megabytes of RAM on my LC, but the system software is creeping up over the 2-megabyte mark. Apple says you can run System 7 with 2 megabytes of RAM, so apparently the basic System 7 software is substantially less than that. I’m guessing that when you add fonts, DAs, extensions, and so on, some of these things are counted as system software. Is there any way I can find out what’s fattening up my system software?

**Phillip Mayer**
Oak Brook, IL

**Bob:** The number you see when you choose About This Macintosh represents the amount of RAM your system software is using. Among the things that can make it use more RAM are extensions, control panels, file sharing, and the disk cache. I use about 30 extensions and control panels, keep file sharing turned on, and set the disk cache to 512K, which causes my system software to use more than 5,000K of RAM.

Here’s how you can evaluate what is actually using all that RAM on your Mac:

1. Boot your Mac while holding down the Shift key. Under System 7, this disables all your extensions and control panels and sets the disk cache to 16K. Keep holding the key down until you see the Extensions Off message on the Welcome to Macintosh startup screen. System software RAM usage should drop to less than 1,200K when you do this.

2. Choose About This Macintosh from the Apple menu, and write down the figure displayed for your system software.

3. Create a folder anywhere on your hard disk, and name it Disabled Stuff.

4. Move the contents of your Extensions and Control Panels folders to the Disabled Stuff folder. The Extensions and Control Panels folders inside your System Folder should now be empty.

5. Drag one item (for example, the AfterDark control panel) from the Disabled Stuff folder into your System Folder. You’ll see a dialog box that says, “Control panels need to be stored in the Control Panels folder or they may not work properly. Put AfterDark into the Control Panels folder?” Click on OK. (Note: If the item you dragged into the System Folder was an extension instead of a control panel, expect to see slightly different wording in the dialog box. Click on OK in either case.)

6. Reboot your machine. Choose About This Macintosh, and write down the figure displayed for your system software. To determine the amount of RAM used by After Dark, subtract the number you wrote down in step 2 from this number.

7. Repeat this process with each item in the Disabled Stuff folder.

Here are the numbers I got for some common extensions and control panels (these figures are approximate; your mileage may vary): Adobe Type Manager uses 200K; After Dark, 100K; QuickKeys, 250K; and Easy Access, 15K. Among the other control panels that consume RAM only when they’re turned on are File Sharing (250K) and Virtual Memory (350K).

Printer drivers, fonts, sounds, and DAs don’t use RAM if they’re in your System Folder, Apple Menu Items folder, or Extensions folder at startup, although sounds and DAs consume RAM when you use them.

**Andy:** Gezz, Bob. you have more RAM allocated for your system software than I have in my Mac! If any of you Texas readers notice your lights dimming for no apparent reason, it’s just Bob starting up his Mac.

**P.S.** Many extensions (such as ATM) have their own RAM caches. Folks who want to trim down their system RAM consumption should check all their control panels.

**What the Heck Is PRAM?**

**Q.** I recently replaced my Mac Plus’ battery, but after only a few months, I began seeing aged-battery signs again (the speaker volume changed, clock and calendar settings were off, mouse tracking was reset to the slowest..."
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Figure 2: You can zap the PRAM on a Mac Plus by removing the battery for 10 to 15 minutes.

The battery supposedly checked out fine on a meter at my local Apple dealer, who said that, barring an incorrect battery installation, my Mac might have a PRAM problem.

Just what is PRAM? And, if that is my Mac’s problem, does it really involve such drastic surgery as completely replacing the motherboard (as the dealer told me)?

Steve Jones
Knoxville, TN

Bob: PRAM is an acronym for parameter random-access memory, a small piece of memory that stores system-software settings even when your Mac is turned off. The first thing you should try is to clear out the PRAM by zapping it. To do this, open the battery compartment on the back of your Plus and remove the battery for 10 to 15 minutes (see Figure 2). Don’t do this if you have a Mac that’s still under warranty, because you’ll void the warranty. This process resets all system-software settings to their defaults. Now reinser the battery, boot up, and reset all your system-related parameters — mostly control panels such as General, Startup Device, Mouse, Keyboard, and so on. If this doesn’t fix things, chances are that something more serious is wrong with your Mac.

Andy: When all your control-panel settings start to go wonky, you’ve got PRAM trouble. Either the PRAM on your motherboard is bad, or no power is getting there. You’ve already ruled out a dead battery, so unless you see dirty contacts in the battery holder or a loose wire, it’s probably something on the motherboard. All your Mac’s components are hard-soldered in, so the only official fix is a motherboard swap.

Backup to the Future

Q. Would you recommend backing up an internal hard drive onto an external hard drive? I have a 170-megabyte internal hard drive, and it’s ridiculous to try to back up with floppies. SyQuest and Ricoh drives are too expensive to use just for backing up (I can get a decent external drive less expensively). Why should I want to invest in one of those when the new 128-megabyte optical discs are cheaper and more reliable and optical drives are beginning to approach the price of Ricoh and SyQuest drives?

Paul B. Macchia
Washington, DC

Andy: First, to swipe a line from the hit flick Wayne’s World, backing up to floppies is punishment for shoplifting in some countries. I won’t insult your intelligence by suggesting that it’s nonheinous by any definition of the term. OK, sure, backing up to an...
external hard drive can be a nifty idea. Advantages: It's the fastest backup device available (no removable-cartridge drive is nearly as fast as a standard hard drive); a quality 120-megabyte external drive is about half the price of an 80-megabyte removable-cartridge system; and because all external drives mount as regular volumes with no extensions or incantations, they can be used as part of your regular system if you ever need on-line storage.

Now the hammer comes down. By using a hard drive, you're missing out on a lot of the flexibility a removable-cartridge system provides. Because the medium is not screwed or soldered in and can be replaced, tape drives and removable-cartridge systems have a big advantage over other types of drives. First and foremost, a hard drive allows you to make only one backup. Why would you want more than one backup? Well, you could have one for the office and another for your safe-deposit box. Better yet, you could keep each of the last four weeks' backups on different cartridges and back up every week onto the least recent backup cartridge. This gives you snapshots of your system as it existed during the past month. If you discovered a virus infecting your data, you could go back through your cartridges week by week until you found an untainted version.

Also, cartridge-backup systems let more than one person make backups. If you have a tape drive, for example, all the people in the office can have their own $15 DAT cassette and the drive can be moved around when backups and restores are needed. Finally, a cartridge drive can be used for infinite storage — buy a dozen cartridges and use four of 'em for backup and the rest for regular data. You can use one cartridge for UNIX, one for fonts, another for shareware programs, and on and on. When 120 megabytes of optical storage can cost about $60, you may never trash another file again!

As to the superiority of 3.5-inch optical systems, well, Paul, given your hometown, I'm tempted to make a crude joke regarding the thought processes folks in the Beltway put into monetary decision making. But the last time I did that, a government employee sent me a nasty letter on official letterhead, saying that no government employee ever wastes time or resources. So I won't.

The thing is, you're right on practically all counts; optical is the Wave of the Future. But there are still reasons for buying SyQuest and Bernoulli drives. They're about $600 less expensive than optical systems, and a 3.5-inch optical cartridge is practically useless if your office and your local service bureau use the older-style magnetic cartridges. But hey, those are just today's problems; all the highly paid pundits agree that optical drives will sell for less than $1,000 within a year, and because they use an interplatform industry standard (ha ha), they are destined to litter the nation at any moment now.

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This Month on ZiffNet/Mac

ZMAC UTILITY

This month’s utility is not so much a system enhancement as it is an enhancement to the buying process. The MacUser MiniFinders stack puts all the product information covered in this issue — and more — just a mouse click away.

As popular as the MiniFinders are in print, it’s sometimes a challenge to find a particular product when you’re looking through the magazine. That’s why MacUser also publishes a HyperCard version of its popular product database.

Unlike the paper version, the stack comes with a powerful search engine, written by HyperCard-scripting expert David Drucker. The Find command lets you search for any product according to its name, manufacturer or publisher, mouse rating, category, or any word that occurs in the description. For instance, you can search for all the database-management products with a rating greater than four mice. The stack also has an Import command for adding new MiniFinders as they are released and a Help card that explains navigation.

The MiniFinders stack is available exclusively on ZiffNet/Mac. Download the file MUMINI.SEA from Library 3 (Utilities) of the MacUser Forum (GO ZMC:MACUSER).

More for Your Money

A new monthly $2.50 ZiffNet/Mac membership fee gives users unlimited access to several popular services. Users can now access the following areas without incurring CompuServe’s usual $12.50 hourly rate for 2,400-bps access:

- MacUser Power Tools (GO ZMC:POWERTOOLS).
- MacUser/MacWEEK Index (GO ZMC:INDEX).
- Ziff Support Forum (GO ZMC:SUPPORT).
- ZiffNet/Mac Tech Support Database (GO ZMC:TIPS).

Mewhinney Finders

The man behind MacUser’s MiniFinders, associate editor Bruce Mewhinney, will be on-line July 13 to 17 to answer everyone’s questions about MacUser’s compendium of product information. If you have a question, opinion, or addition to the ever-evolving MiniFinders database, you can contact Bruce Mewhinney in the MacUser Forum (GO ZMC:MACUSER).

Hot New Files

Here’s a sampling of the best new uploads in ZiffNet/Mac’s Download & Support Forum (GO ZMC:DOWNETECH).

- **Alias Director** (ADIREC.CPT) has features such as drag and drop and the ability to remove aliases for deleted files, making it easy to create, delete, and manage System 7 aliases.
- **MICN** (MICN.CPT) is a clever system extension that displays the names of menus such as File, Edit, Font, Help, and Window as icons rather than names, which conserves menu-bar space.
- **OpenFolder 7** (OPENF0.CPT) displays a standard open-file dialog box you can use to navigate within any mounted volume and open any folder. If you dislike clicking through a hierarchy of folders and waiting for them to open, you’ll find OpenFolder 7 useful.
- **Super Ruler** (SRULER.CPT) is a DA that displays a resizable horizontal or vertical ruler in any application. This older program works fine under System 7. Shareware, $10.
- **TOMINIT II** (TMINIT.CPT) allows menus (including hierarchical menus) to be torn off in any application. Shareware, $20.
- **TTConverter** (TTCNV.CPT) is a Mac utility that converts Windows 3.1 TrueType fonts into the Mac TrueType format or vice versa. Shareware, $10.

Zmac Tip of the Month: Navigator

People who use Navigator to connect with ZiffNet/Mac have one of the best CompuServe interfaces, because it saves money. Navigator is an off-line interface that lets you set some options before going on-line. After you’re connected to Zmac, Navigator collects messages, sends replies, and downloads files. You review messages off-line to avoid expensive connect-time charges. Navigator’s greatest strength is also its greatest weakness, however. By automating all tasks, Navigator prevents you from easily using many of the interactive databases that comprise some of the free services on ZiffNet/Mac. Navigator does let users add manual tiles and create scripts for some of the databases. For a list of these scripts, download the file NAVZIF.TXT from Library 7 (Reference) of the Download & Support Forum (GO ZMC:DOWNETECH).
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Please answer questions below:

1. How many micro computers do you buy products?
   (check one) [ ] 0-4  [ ] 5-9  [ ] 10-19  [ ] 20-49  [ ] 50-99  [ ] 100 or more
2. Your primary job function is (check one) [ ] 11  [ ] 12  [ ] 13  [ ] 14  [ ] 15  [ ] 16  [ ] 17  [ ] 18  [ ] 19  [ ] 20  [ ] 21  [ ] 22  [ ] 23  [ ] 24  [ ] 25  [ ] 26  [ ] 27  [ ] 28  [ ] 29  [ ] 30  [ ] 31  [ ] 32  [ ] 33  [ ] 34  [ ] 35  [ ] 36  [ ] 37  [ ] 38  [ ] 39  [ ] 40  [ ] 41  [ ] 42  [ ] 43  [ ] 44  [ ] 45  [ ] 46  [ ] 47  [ ] 48  [ ] 49  [ ] 50  [ ] 51  [ ] 52  [ ] 53  [ ] 54  [ ] 55  [ ] 56  [ ] 57  [ ] 58  [ ] 59  [ ] 60  [ ] 61  [ ] 62  [ ] 63  [ ] 64  [ ] 65  [ ] 66  [ ] 67  [ ] 68  [ ] 69  [ ] 70  [ ] 71  [ ] 72  [ ] 73  [ ] 74  [ ] 75  [ ] 76  [ ] 77  [ ] 78  [ ] 79  [ ] 80  [ ] 81  [ ] 82  [ ] 83  [ ] 84  [ ] 85  [ ] 86  [ ] 87  [ ] 88  [ ] 89  [ ] 90  [ ] 91  [ ] 92  [ ] 93  [ ] 94  [ ] 95  [ ] 96  [ ] 97  [ ] 98  [ ] 99  [ ] 00
3. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (check all that apply)
4. Which of the following products have you bought in the last 6 months? (check all that apply)
5. If so, what function do you serve in the buying process?
   (check all that apply)
   [ ] 01  [ ] 02  [ ] 03  [ ] 04  [ ] 05  [ ] 06  [ ] 07  [ ] 08  [ ] 09  [ ] 10  [ ] 11  [ ] 12  [ ] 13  [ ] 14  [ ] 15  [ ] 16  [ ] 17  [ ] 18  [ ] 19  [ ] 20  [ ] 21  [ ] 22  [ ] 23  [ ] 24  [ ] 25  [ ] 26  [ ] 27  [ ] 28  [ ] 29  [ ] 30  [ ] 31  [ ] 32  [ ] 33  [ ] 34  [ ] 35  [ ] 36  [ ] 37  [ ] 38  [ ] 39  [ ] 40  [ ] 41  [ ] 42  [ ] 43  [ ] 44  [ ] 45  [ ] 46  [ ] 47  [ ] 48  [ ] 49  [ ] 50  [ ] 51  [ ] 52  [ ] 53  [ ] 54  [ ] 55  [ ] 56  [ ] 57  [ ] 58  [ ] 59  [ ] 60  [ ] 61  [ ] 62  [ ] 63  [ ] 64  [ ] 65  [ ] 66  [ ] 67  [ ] 68  [ ] 69  [ ] 70  [ ] 71  [ ] 72  [ ] 73  [ ] 74  [ ] 75  [ ] 76  [ ] 77  [ ] 78  [ ] 79  [ ] 80  [ ] 81  [ ] 82  [ ] 83  [ ] 84  [ ] 85  [ ] 86  [ ] 87  [ ] 88  [ ] 89  [ ] 90  [ ] 91  [ ] 92  [ ] 93  [ ] 94  [ ] 95  [ ] 96  [ ] 97  [ ] 98  [ ] 99  [ ] 00

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<td>$10,001-$14,000</td>
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<tr>
<td>128 mb</td>
<td>Panasonic</td>
<td>$529</td>
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<td>240mb Quantum 10ms 2 yr</td>
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<thead>
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<th>Part Number</th>
<th>Capacity</th>
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- **Optical Access Intl.** The fastest CD-ROM drive available with a 310 ms access time. Includes SuperCache software for lightning speed access to large amounts of information. Features headphone jack, stereo RCA type audio connectors, and deluxe desk accessory. Includes cable, sample CD, and one caddy.

**Access RD/Aria™**
- **Optical Access Intl.** 128 megabytes in your shirt pocket. This 3.5" optical drive is the cutting edge of technology, enhances with SuperCache software for lightning fast operation. The ultimate data security and affordability. Includes: cable, and removable 3.5" media cartridge (ANSI compatible).

**PROclaim!**
- **Compact Designs** QuickTime CD-ROM. Most complete source of quality multimedia images. Over 600-MB of images includes 250 video clips saved as 24-bit QuickTime movies. Subjects include: Business, Technology, Cities, People, Environment, Military, Space, and much more. Includes features such as presentation animations and video animated phrases, as well as a user-friendly HyperCard visual directory.

**QuickTime Starter Kit**
- **Apple Computer** Contains all the tools to help you get started with the innovative QuickTime software. With QuickTime installed on your Mac, you can work with dynamic information such as video and sound, as easily as you work with text and graphics.

**Universal PowerCache Card**
- **DayStar Digital** When you feel the need for speed, the award-winning PowerCache gives you the best combination of blazing-fast speeds (up to three times) and cost-effective prices. More important, it's guaranteed 100% compatible with all your software and hardware, while running at full speed.

**SIMMs/Mac Memory Book**
- **Mac's Place** Expand the memory of your Mac! One Meg SIMM, 80 nanoseconds, only $35! Four Meg SIMM only $128! Also included, Connectix Macintosh Memory Guide, the complete guide for RAM configuration, expansion, tricks and traps. Call for PowerBook RAM prices.

**Bernoulli Transportable 90-MB PRO**
- **IOMEGA** The best removable solution for your state-of-the-art needs! System 7 and QuickTime require even greater storage demands, but now you simply insert another affordable 90-MB disk—180 with included compression, and you'll never fall short of disk space again.

**Cinematon**
- **Vividus** Easily create interactive presentations with professional-quality animation, sound, and QuickTime video. Also animates PowerPoint and Persuasion presentations. Includes painting tools, the CinePlayer, a HC-XCMD to control movies, and 12-MB of animation, templates, and sound.

---

See listings under Hardware

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090

* System 7 Compatible  * System 7 Savvy  * 30-Day Money Back Guarantee
"We know about QuickTime. Call us!" —Mac

**PROmotion**

*Motion Works*  
Easily create full color animations with multiple audio tracks, even if you can’t draw. Interface follows traditional animation techniques such as cel based actors, onion skinning and path based motion. Other features include cel tweening and Print to Video. Export your animations to QuickTime® or Berkeley Systems After Dark.

**DP + Hard Drives**

*DataPlace*  
Available only at Mac's Place! These quality Quantum hard drives and Syquest Removable Cartridge drives come with Alysas Software's More Disk Space, Central Points MacTools Deluxe and Nova's Kaboom! Special Edition. Each drive features a selectable SCSI ID switch, two 50 pin SCSI connectors, an external fuse and two AC Plug-ins.

**DiVA VideoShop**

*DiVA VideoShop* is a fun, easy and powerful application for creating and editing QuickTime movies. Used with any QuickTime digitizing board, DiVA VideoShop's recording module lets you record video and audio clips directly onto your hard disk. For ease of editing, DiVA VideoShop uses micons (moving icons) to represent each clip. You can incorporate clip media from the Image Bank CD Collection of 300 movies, 70 music scores, and a sound effects library, all included in the box. Special Bundles: VideoShop and RasterOps 24STV.....$1172, VideoShop and SuperMac Video Spigot NuBus.....$798.

**Interactive Training - MacroMind Director**

*Media In Motion*  
The comprehensive computer-based interactive course designed to help individuals learn MacroMind Director in just one session! Complete instruction on Director 3.0 and 3.1 including all key components, cast creation, scripting QuickTime™ and more. Save time and guarantee your proficiency in using Director.

**Director 3.1**

*Macromedia*  
New Version! The professionals choice for multimedia production is now the ultimate QuickTime authoring tool. Author, edit, playback and export interactive QuickTime movies with no additional hardware. Other features include expanded help, added functionality in the Score, a $195 Accelerator, and license free distribution of your multimedia productions.

**CameraMan**

*Vision Software*  
New! Make a full-color movie of whatever's happening on your Mac screen with CameraMan! Records all screen activity in real-time to a QuickTime™ or PICS movie. Use your screen movies in multimedia, presentation, and QuickTime™ packages. Free movie player included!

**Opcode Systems**  
Records and edits Macintosh audio and offers control of CD-ROM's. Fun to use and easy to understand, since the interface resembles a home CD player. Includes powerful editing features and even adds special effects like echo. Supports all popular Mac sound formats for easy integration with other programs.

$248

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090

**Mac's Place**

Call 1-800-367-4222 or Fax your P.O. 1-206-881-3090

* System 7 Compatible  
* System 7 Savvy  
* 30-Day Money Back Guarantee
Your order will ship to you overnight for just $3.
### Quantum Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Product Description</th>
<th>Actual MAC Capacity</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>52mb</td>
<td>LP565*</td>
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<td>9ms</td>
<td>49mb</td>
<td>$215</td>
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<tr>
<td>80mb</td>
<td></td>
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<td></td>
<td></td>
<td>$275</td>
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<tr>
<td>105mb</td>
<td>LP5105*</td>
<td>3.5&quot; Low Profile</td>
<td>9ms</td>
<td>100mb</td>
<td>$335</td>
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<tr>
<td>120mb</td>
<td>LP5120</td>
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<td>10ms</td>
<td>116mb</td>
<td>$409</td>
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<tr>
<td>210mb</td>
<td>PRO210</td>
<td>3.5&quot; Half Height</td>
<td>10ms</td>
<td>199mb</td>
<td>$599</td>
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<td>240mb</td>
<td>LP5240</td>
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<td>10ms</td>
<td>234mb</td>
<td>$639</td>
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<td>425mb</td>
<td>LP5420</td>
<td>3.5&quot; Half Height</td>
<td>8ms</td>
<td>406mb</td>
<td>$1059</td>
</tr>
</tbody>
</table>

**Quantum Drives features:**
- Avg. seek times of 25ms or less
- MTBF of 100,000 - 250,000 hrs
- TWO Year Warranty

**NOTES:**
- 3.5" Low Profile, Low Power (25ms) for MacClassic, LC & lisa.
- Internal Drives: 80mb 2.5" Low Profile 17ms 80mb $289 $349
- 207mb LXT-213 3.5" Half Height 15ms 202mb $595 $655
- 300mb LXT-340 3.5" Half Height 15ms 324mb $969 $1029
- 535mb LXT-585 3.5" Half Height 12ms 510mb $1249 $1309
- 645mb XT-8765N 5.25" Full Height 6.82ms 639mb $1389* $1489
- 1.2GIG PO-12S 5.25" Full Height 13ms 997mb $1849* $1949
- 2.0GIG PI-175 5.25" Full Height 13ms 1433mb $2449* $2549

### Fujitsu Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Product Description</th>
<th>Actual MAC Capacity</th>
<th>Internal</th>
<th>External</th>
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<tbody>
<tr>
<td>330mb</td>
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<td>3.5&quot; Half Height</td>
<td>9ms</td>
<td>314mb</td>
<td>$1079</td>
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<tr>
<td>425mb</td>
<td>M2625SA</td>
<td>3.5&quot; Half Height</td>
<td>9ms</td>
<td>402mb</td>
<td>$1049</td>
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<tr>
<td>520mb</td>
<td>M2632SA</td>
<td>3.5&quot; Half Height</td>
<td>9ms</td>
<td>496mb</td>
<td>$1199</td>
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<tr>
<td>645mb</td>
<td>M2663</td>
<td>5.25&quot; Full Height</td>
<td>16ms</td>
<td>640mb</td>
<td>$1259</td>
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<tr>
<td>1.2GIG</td>
<td>M2666</td>
<td>5.25&quot; Full Height</td>
<td>14.5ms</td>
<td>1028mb</td>
<td>$1899</td>
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<tr>
<td>2.0GIG</td>
<td>M2665SA</td>
<td>5.25&quot; Full Height</td>
<td>11ms</td>
<td>1665mb</td>
<td>$3195</td>
</tr>
</tbody>
</table>

**Fujitsu 3.5" high performance SCSI disk drives features:**
- 10MB/s data transfer rate
- 6.82 ms average latency
- 240 KB read-ahead cache buffer
- Embedded SCSI interface
- Upto 4.8 MB/sec SCSI data transfer rate

### Seagate Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Product Description</th>
<th>Actual MAC Capacity</th>
<th>Internal</th>
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<tr>
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<td>320mb</td>
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<td>W-Run</td>
<td>315mb</td>
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<tr>
<td>645mb</td>
<td>ST4766N</td>
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<td>W-Run II 634mb</td>
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<tr>
<td>1.0GIG</td>
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<td>W-Run VI 632mb</td>
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<tr>
<td>1.4GIG</td>
<td>ST4160N</td>
<td>5.25&quot; Full Height</td>
<td>W-Run VII 646mb</td>
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<tr>
<td>1.4GIG</td>
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<td>W-Run VIII 630mb</td>
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<td>1.4GIG</td>
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<td>5.25&quot; Full Height</td>
<td>W-Run IX 1350mb</td>
<td>$2849</td>
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</table>

**Seagate Drives include a ONE YEAR Warranty and the ClubMac Package.**

### Maxtor Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Product Description</th>
<th>Actual MAC Capacity</th>
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<tr>
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<td>7120</td>
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<td>15ms</td>
<td>121mb</td>
<td>$319</td>
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<tr>
<td>207mb</td>
<td>LXT-213</td>
<td>3.5&quot; Half Height</td>
<td>15ms</td>
<td>202mb</td>
<td>$595</td>
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<tr>
<td>300mb</td>
<td>LXT-340</td>
<td>3.5&quot; Half Height</td>
<td>15ms</td>
<td>324mb</td>
<td>$969</td>
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<td>535mb</td>
<td>LXT-585</td>
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<td>12ms</td>
<td>510mb</td>
<td>$1249</td>
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<tr>
<td>645mb</td>
<td>XT-8765N</td>
<td>5.25&quot; Full Height</td>
<td>6.82ms</td>
<td>639mb</td>
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<td>1.2GIG</td>
<td>PO-12S</td>
<td>5.25&quot; Full Height</td>
<td>13ms</td>
<td>997mb</td>
<td>$1849*</td>
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<tr>
<td>1.7GIG</td>
<td>PI-175</td>
<td>5.25&quot; Full Height</td>
<td>13ms</td>
<td>1433mb</td>
<td>$2449*</td>
</tr>
</tbody>
</table>

**Maxtor 3.5" Drives include a ONE YEAR Warranty and 5.25" Drives include a TWO YEAR Warranty**

### Seagate Drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Model</th>
<th>Product Description</th>
<th>Actual MAC Capacity</th>
<th>Internal</th>
<th>External</th>
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</thead>
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<tr>
<td>234mb</td>
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<td>12.6ms</td>
<td>223mb</td>
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<tr>
<td>328mb</td>
<td>C2234</td>
<td>3.5&quot; Half Height</td>
<td>12.6ms</td>
<td>313mb</td>
<td>$1089</td>
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<tr>
<td>422mb</td>
<td>C2235</td>
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<td>402mb</td>
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<tr>
<td>663mb</td>
<td>8758T/P</td>
<td>5.25&quot; Full Height</td>
<td>16.5ms</td>
<td>833mb</td>
<td>$1409</td>
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<tr>
<td>1.0GIG</td>
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<td>5.25&quot; Full Height</td>
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<td>$1989</td>
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<tr>
<td>1.6GIG</td>
<td>8758T/P</td>
<td>5.25&quot; Full Height</td>
<td>13.5ms</td>
<td>1292mb</td>
<td>$2439</td>
</tr>
</tbody>
</table>

**HP 2.0GIG DAT Drive (35470A)**

**HP Compression DAT Drive (35480A)**

**Tape Backup Systems**

### ClubMac Tape Backup Systems

**Bundle with RETROSPECT (v.1.3c)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>Teac MT-2ST/N</td>
<td>155mb</td>
<td>$549</td>
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<tr>
<td>WangDAT 1300XL</td>
<td>2.0GIG</td>
<td>$1329</td>
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<td>WangDAT 3200 DDS-DC</td>
<td>3-5GIG</td>
<td>$1549</td>
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<tr>
<td>Exabyte 8200</td>
<td>2.2GIG</td>
<td>$2049</td>
</tr>
<tr>
<td>Exabyte 8500</td>
<td>5.0GIG</td>
<td>$3329</td>
</tr>
</tbody>
</table>

All ClubMac tape backup systems include a ONE YEAR Warranty, one cassette, RETROSPECT (v.1.3c) backup software, HP's own Data compression chip set adds increased capacity and improved compatibility with DDS standards.

### Fujitsu Drives

**Capacity Model Product Description Actual MAC Capacity Internal External**

**Quantum Drives features:**
- Avg. seek times of 25ms or less
- MTBF of 100,000 - 250,000 hrs
- TWO Year Warranty

**NOTES:**
- 3.5" Low Profile, Low Power (25ms) for MacClassic, LC & lisa.
- Internal Drives: 80mb 2.5" Low Profile 17ms 80mb $289 $349
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- 1.2GIG PO-12S 5.25" Full Height 13ms 997mb $1849* $1949
- 1.7GIG PI-175 5.25" Full Height 13ms 1433mb $2449* $2549

**Maxtor 3.5" Drives include a ONE YEAR Warranty and 5.25" Drives include a TWO YEAR Warranty**

**Maxtor Drives include the ClubMac Package.**

**Fujitsu drives include a 6 YEAR WARRANTY with the ClubMac Package.**
### PRINTERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>NEC Silentwriter Model 95</td>
<td>$1398</td>
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<tr>
<td>NEC Silentwriter Model 990</td>
<td>$2449</td>
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<tr>
<td>Epson EPSL-7500 Laser Printer</td>
<td>$1995</td>
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<tr>
<td>QMS-PS 410 Laser Printer</td>
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### ACCELERATION

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<td>PowerCache</td>
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<td>3D PowerCache</td>
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<td>40 MHz PowerCache</td>
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<td>50 MHz PowerCache</td>
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<tr>
<td>60 MHz PowerCache</td>
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### SCANNERS

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<td>MICROTEK 600ZS Color Scanner</td>
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<tr>
<td>Epson ES-300C Color Scanner</td>
<td>$1249</td>
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<tr>
<td>Sharp JX-320 Color Scanner</td>
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### MEMORY

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<th>Model</th>
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<td>PowerBook 100</td>
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<td>2MB Memory Module</td>
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<td>4MB Memory Module</td>
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### MISCELLANEOUS

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<td>$189</td>
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<tr>
<td>3C 2400 Baud Modem (includes software &amp; cable)</td>
<td>$97</td>
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<td>Deneo Fax Desktop 2406S Fax Modem</td>
<td>$299</td>
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<tr>
<td>Deneo Fax Plus with Voice Mail</td>
<td>$325</td>
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<tr>
<td>Deneo Fax Plus Int, NuBus with Voice Mail</td>
<td>$269</td>
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<tr>
<td>EMAC 2400 Modem with MNP 5</td>
<td>$145</td>
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<td>PSI PowerBook Int. Fax Modem 24/48/965</td>
<td>$205</td>
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<tr>
<td>Applied Engineering</td>
<td>$215</td>
</tr>
<tr>
<td>Keytronic Mac Pro Keyboard</td>
<td>$125</td>
</tr>
</tbody>
</table>
Monitors to

NEW COLOR TRINITRON

RasterOps 20" Sony Trinitron Color Display
Dual Scan • 1152 x 870 • 81 dpi • 1024 x 768 • 72 dpi
No card needed with Quadra on-board video

$2,395

Quadra-Ready 20"

NEW 16" COLOR

with purchase of MX card

RasterOps Sweet 16

16" Color display • 824 x 632 • 72 dpi

$995

Introducing New PaintBoard Li

only $849

Accelerated 24-bit Color for 19" Displays
On-board QuickDraw acceleration • Hardware pan and zoom allows for instant 2, 4 or 8x magnification and panning • Supports 13", 16" & 19/20" displays

NEW 16" Color System

16"

Accelerated 24-bit Color System
RasterOps 16" display with accelerated 24-bit card

$1,995

19"

Accelerated 8-bit Color System
RasterOps 19" display with accelerated 8-bit card

$2,095

19"

Accelerated 24-bit Color System
RasterOps 19" display with accelerated 24-bit card

$2,495

20"

Accelerated 24-bit Color Trinitron System
RasterOps 20" Trinitron with accelerated 24-bit card

$3,245

COLOR BOARDS

Call

NEW PaintBoard 24

24-bit board • QuickDraw acceleration • Supports 13" to 21" monitors

Call

8XL 8-bit color

$455

8XLi Accelerated 8-bit color

Call

New ProColor 32

Call

Accelerated 32-bit color board • CYMK to RGB conversion • RISC interface

24STV

$795

24-bit live video for 13" monitors

24XLTIV

$2,695

24-bit live video for large screens

24XLI SPECIAL

24-bit board • QuickDraw acceleration • GWorld Ram expandable • Supports 13" to 21" monitors • Quantities are limited

$1,845
the Macs!

LOW-COST DISPLAY SYSTEMS

14" TRINITRON

$379

17" COLOR

$895

With Accelerated 24-bit Color Card $1,095

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NEW Mac LC II, 4/40 Call
Mac IIsi, 3/40 $1,945
Mac Iici, 5/0 Call
Mac Quadra 700 40 $3,895
NEW Mac Quadra 950 Call

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M-F 8am-7pm (CT)
Sat 10am-2pm • 24hr fax
Ref: 17

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Texas Instruments

TI microLaser Plus PS/17 $1,245
9ppm engine, 300 dpi, 17 PostScript fonts
TI microLaser Plus PS/35 $1,565
9ppm engine, 300 dpi, 35 PostScript fonts
TI microLaser TURBO $1,995
9 ppm, PostScript level 2, 35 fonts
TI microLaser TURBO XL Call
16 ppm, PostScript level 2, 35 fonts

Scanners

UMAX

UMax UC630 Color Scanner
600 dpi • 24-bits • With Photoshop $1,245
UMax 1200S Color Scanner
1200 dpi, 30-bit color, with Photoshop 2.0
UMax Transparency Option $795
User-Installable for film transparencies & slides

Drives/Storage

PLI

PLI Infinity Floptical 21MB $499
PLI Infinity 44 Removable $559
PLI Infinity 88 Removable $799
PLI Quick SCSI Call
PLI Infinity Optical 3.5" $1,599

Complete Mac Systems

LC II Color System $1,995
Mac LC II, 4MB RAM/40HD, Sony 1320 14" Color Display, Apple Keyboard, Mouse, System 7, Norton Utilities & Hypercard

IIsi Productivity System $2,695
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- Invar shadow mask for increased brightness
- Reduced Magnetic Field™ technology
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- **UP HOOK 2400 SE**: 139

**Hayes**

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- **OPTIMA 2400**: 153
- **OPTIMA 9600**: 429
- **PERSONAL MODEM 2400 PLUS**: 914
- **SMARTMODEM 2400 & SMARTCOM**: 415
- **SMARTCOM 9.6 Kbps to the Mac**: 62
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If, for example, you thought 3D modeling was too big a leap from 2D graphics, you're in for a big surprise.

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Because MacroModel does what no 3D modeler has ever done before.

It combines all the numerical, "snap-to" accuracy you'd ever need for CAD with a simple user interface that'll never bog you down.

How did we accomplish such a feat?
By starting from scratch and writing a new core technology that models curved surfaces with accurate splines instead of imprecise polygons.

And by building a brand-new front end that lets you design and edit in 2D—with familiar graphics tools—and move in and out of 3D space in an instant.

Ready to know more? Then turn the page. You'll find all the details on MacroModel. Plus a whole lot of good news about our full family of professional multimedia tools.

The combined companies of Macromind, Paracomp, and Authorware

How about a whole new approach to 3D modeling?
3D ANIMATION

Life Forms
Create sophisticated human motion animations with this new, easy-to-use package. Access shape libraries of human figures in sitting, standing, jumping, sports and dance poses, and more. Life Forms automatically creates smooth human motion between any two positions you define. Add natural human motion to Swivel 3D, Director or Three-D productions. Save motion sequences as QuickTime movies. Suggested list, $495.

Authorware Professional
The premier multimedia authoring software for training and education. Visual programming allows non-technical users to build applications without scripting. Eleven design icons provide full authoring functionality and a powerful development platform. Full range of multimedia tools help you incorporate text, graphics, sound, animation and video in applications. Imports 3D models from Swivel 3D, animation from Director or Three-D, and export animations to Director. Supports video animation controllers, image special effects (bump and texture maps, shadows, etc.), TrueType fonts and RenderMan RIB. Version 1.7, Suggested, list, $1495.*

Authorware Professional for Windows

2D ANIMATION

Magic
This exciting, entry-level multimedia animation tool features a draw-like environment and tool palette for the creation of moving text and graphics with sound. Import, playback, animate, create and export QuickTime movies—even add transitions. Includes object transparency, pre-defined templates, and easy interactivity via on-screen buttons. The perfect intro to multimedia. Includes QuickPics, a $149 value, free. Version 1.1, Suggested list, $395.

MacroMind MediaMaker
Assemble and synchronize video, CD-Audio with Macintosh graphics, sound and animation to create custom video productions. Fully automated Print-to-Video command allows accurate, easy output to videotape. Version 1.0, Suggested list, $695. Add animated titles and credits to MediaMaker videos with MacroMind TitleMaker, $149.

Industry at Work, ClipMedia 2
This newest addition to our ClipMedia collection features more than 1,900 high-quality, royalty-free clips from aviation, computing, defense, education, finance, manufacturing, medicine, purchasing, retail and telecommunications and other major industries. Includes 500 sound effects, 150 animations, 35 music pieces and 700 graphic elements. Available on CD-ROM for Macintosh and Windows users. Mac version includes digital video and animation saved as QuickTime movies in addition to PICS. Industry at Work, ClipMedia 2, Suggested list, $295. Also available: Business & Technology, ClipMedia 1, Suggested list, $395.

SwivelArt 3D Clip Graphics

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3D MODELLING

**MacroModel**

*The first Macintosh 3D modeling program that combines the CAD-accuracy of spline-based modeling with familiar 2D drawing tools. Start with 2D objects, and extrude, lathe, sweep or skin them into 3D objects. Provides real-time visualization from any angle for instant, intuitive feedback. Supports System 7 and 32-bit color. Imports and exports polygon-based objects for compatibility with other modelers like Swivel 3D. Supports OXF for CAD compatibility; PICT for DTP. Add photorealistic rendering and 3D animation with MacroMind Three-D. Render still images with Pixar MacRenderMan. Export images into Authorware Professional applications or MacMind Director productions. Version 1.0. Suggested list, $1495.*

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*Professional 2.0

Create, rotate, scale and animate 3D models with this complete modeling and design environment. Hierarchically link object parts. Export 3D views and animation sequences. Swivel 3D models are compatible with MacroMind Three-D and Director for advanced animation and rendering of 3D models. Supports 24-bit color, full screen display, Pixar MacRenderMan output, AutoCAD DXF output, Adobe Illustrator EPS, PICT and PICS files. Version 2.0. Suggested list, $695.*

**MacRecorder**

*Sound System Pro

The industry favorite for sampling, recording and editing sound to spice up multimedia productions. HyperCard stacks, even E-mail. SoundEdit Pro, an all new version of SoundEdit, includes an enhanced user interface, unlimited multiple tracks, play and record from disk, the ability to save sounds in 8- or 16-bit format at rates up to 48KHz, and more. SoundEdit Pro software, $295. MacRecorder Sound System Pro (includes digitizing hardware and software), $349. Upgrade to SoundEdit Pro for just $75.*

3D MODELLING

**ModelShop II**

*Create and manipulate spatial models, interactive design tools. Quickly create surface perspective. Add photorealism with Three-D. Render still images with Pixar. MacRenderMan. Create and manipulate spatial models, landscapes and visualizations. Add photorealism with MacroMind Three-D. The perfect tool for design professionals. Version 1.2. Suggested list, $89. QuickPics free, a $149 value.*

AUTHORING

**MacroMind Director**

*3.1

The leading animation and authoring tool for high-impact multimedia productions. Create, combine and synchronize graphics, text and animations with audio and video. Add full interactivity with buttons and scripts. Author, edit, playback, export and import QuickTime movies. Add interactivity to QuickTime movies with enhanced Lingo scripting. New expanded Help, increased Score functionality, and higher performance. Incorporate 3D models from Swivel 3D animation from MacroMind Three-D sounds from MacRecorder as well as all standard Mac file formats. Includes Macintosh Player for license-free production distribution, and Accelerator a $95 value, for smoother animation playback. Version 3.1. Suggested list, $1195.*

**Director Players**


PRESENTATIONS

**Action!**

*Macintosh 1.0

NEW!

Designed for business users rather than multimedia professionals. This easy-to-use tool helps you create dynamic presentations and shows complete with in-scene animation, motion, sound, text and graphics. Features 120 professional presentation templates, scene interactivity via buttons, 39 preset scene transitions, and a Scene Sorter. Supports 32-bit color and System 7. Control timing and flow with a simple timeline, instant links and buttons, and a VCR-like control panel. The best tool for presenting from your Mac. Also available for Windows. Action! Mac Version 1.0. Suggested list, $495. Special introductory offer, $295.
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How they complement each other so you always have the best tool on hand for the task at hand.

*MacroModel*, for example, is the hottest new tool for building accurate 3D objects.

While *MacroMind Three-D* is the tool of choice for adding animation and photorealistic rendering to those same 3D objects.

*ClipMedia* gives you digitized video, animations, graphics, music and sound to use in your productions.

And *MacRecorder* is famous for helping you sample and customize sounds of your own.

Pull it all together with *MacroMind Director* or *Authorware Professional* and you can create some of the best interactive productions and learning applications known to Mackind.

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What did you set out to do in designing MacroModel?

We wanted to create a modeling environment that was as easy to use as Swivel 3D, as fast as Swivel 3D, but very accurate and capable of doing anything from concept design through CAD.

We also wanted to build a core technology that would last five to ten years, that would be a key part of the technical equity of the company.

How is MacroModel more compatible with CAD than other modelers?

The accuracy is very important. So are CAD functions like 2D and 3D snapping, being able to snap to exact geometry.

That's a main difference between Swivel 3D and MacroModel. With Swivel 3D, pretty much all the modeling is approximate—it's great for presenting concepts—but with MacroModel you can actually start with a plan or drawing and by typing in numbers and snapping to points, come up with an exact representation of your object.

That you could then use to pass on to manufacturing?

Yeah, you could use it to develop a comprehensive set of drawings for engineering or to go out through DXF to a CAD/CAM environment.

What do you mean by 2D and 3D snapping?

That MacroModel is very similar to [Adobe] Illustrator and other illustration programs, in that you're always drawing on a 2D surface that's called the working plane. Most often that plane is flat on the screen, but you can place the plane anywhere in the world, say at an angle or on top of a building, and extrude a water tower, or whatever you like, in that plane.

The plan was to give people who are familiar with 2D CAD and illustration programs all of the tools they're used to using on 2D surfaces, but once they start extruding or sweeping they can jump off into the third dimension.

I think we've been pretty successful at it.

Now, for rendering, you'd really want to use Three-D or MacRenderMan, right?

That's true. MacroModel's rendering is what I'd call a draft-to-good quality rendering. For the real high-quality photorealistic rendering you'd want to go to [MacroMind] Three-D for animated rendering, or to [Pixar] MacRenderMan for still-life rendering.

You hear a lot about modeling speed. How fast is MacroModel?

Well, one of the main things we tried to achieve was to have smooth-shaded, hidden-surface images of objects be updated in a reasonable time as you model them. Basically we had to write a highly optimized renderer.

Just to give you an idea, right now we're essentially comparable with the speed of Swivel 3D, so we're rendering about 1,000 polygons per second on a Iki. And on a Quadra, just in terms of the interactivity and responsiveness of the edit, we're approaching a Silicon Graphics Personal IRIS kind of speed.

So Swivel 3D and MacroModel are both modelers with roughly the same speed . . .

Yeah, that's right. But they're pretty much different tasks—going from concept modeling [Swivel 3D] to having a real numerical model with curved surfaces [MacroModel] to prepare for CAD or working drawings, or to use in animations.

What we're seeing is that people who want to graduate from display modeling to models that have real dimensions—if they're trying to model real products, or extremely large worlds, if they need curved surfaces—then they should move up to MacroModel.

And MacroModel does spline-based modeling rather than polygons. What's the advantage?

Polygons are fine to model flat surfaces. But if you have objects with curved surfaces, the advantage to representing them with curved surfaces—splines—is that you can render at various levels depending on how much time you have or how much update speed you want.

In the long run, representing curves as polygons is just an approximation. It's not accurate.

What do you love the most about MacroModel?

The thing I enjoy as a user is that when you create an object, MacroModel remembers how you created it. So if you make a Bezier line or put out a letter that has an Illustrator-like outline and then extrude it, MacroModel doesn't forget that you extruded it from this profile.

So you can go back and edit the original object and the extrusion changes too?

That's right. That was a goal we had at the beginning—and we kept it for all the different object types—that you can go back and edit the defining geometry and get updates in a reasonable time.

Other things I like are all the neat user interface things like the trackball interface, the browsers, and the numerical updating. I think it worked out really well. I think people are going to be jazzed.

Does anyone else do all this?

They're beginning to. But this is the sort of stuff you have to do at the beginning—you can't go back and add it on. So I think a lot of our competitors, once they see this, are going to have to go back and rewrite everything.

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Adobe Photoshop only $449!

The latest version Adobe Photoshop 2.01! This is a special offer on the full, complete version—not a bundle or limited edition version.

Adobe Photoshop 2.01

STORAGE SYSTEMS

Removable Media

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Capacity</th>
<th>Price</th>
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<tr>
<td>OptiDisk 128</td>
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<td>OptiDisk 600</td>
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<td>Optical drive 2GB</td>
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<td>45 SR (SyQuest) w/cartridge</td>
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<td>80 SR (SyQuest) w/cartridge</td>
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<td>DAT drive 8GB</td>
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Disk Drives

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<th>Drive Type</th>
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<td>$499</td>
</tr>
<tr>
<td>External</td>
<td>120 MB</td>
<td>$599</td>
</tr>
</tbody>
</table>

Memory Upgrades

Third Wave manufactures a complete line of memory products for all Macs—1, 2, 4, and 8MB SIMMs, including low profile 16MB SIMMs for the Quadra 700.

We also manufacture pseudo-static PowerBook modules to 8MB and VRAM for the LC and Quadra!

Prices change often—call for the latest!

A SPECIAL OFFER FOR POWERBOOK OWNERS!

Quantum 60-80 2.5 inch 16MB internal drive with Third Wave’s 8 megabyte PowerRAM memory module—only $799.00!

A total of 80MB storage and 8MB pseudo-static RAM! Send us your PowerBook and we’ll install it free!
### Printer Prices

**All Printer Prices Include Free Toner**

<table>
<thead>
<tr>
<th>Printer</th>
<th>Price</th>
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<tbody>
<tr>
<td>microlaser Plus PS17</td>
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<tr>
<td>microlaser Turbo XL</td>
<td>$3125</td>
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### Macintosh Systems

**We Stock**
- PowerBook
- Batteries, Battery
- Chargers, Carrying Case, Mods and Display Adapters.

### CD-ROM

<table>
<thead>
<tr>
<th>CD-ROM</th>
<th>Price</th>
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<tbody>
<tr>
<td>Toshiba TX3201B</td>
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<tr>
<td>NEC CDR-36</td>
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### Modems

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<th>Modem</th>
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<td>Practical Peripheral 9600SA</td>
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<td>US Robotics Courier HST</td>
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<td>US Robotics Courier V.32bis</td>
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<td>Hayes Ultra 9600</td>
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<td>Global Village Teleport</td>
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### Articulate Systems

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<th>System</th>
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<td>Voice Navigator II</td>
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### QMS

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<th>Model</th>
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<td>PS810</td>
<td>$2625</td>
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<tr>
<td>CoStar</td>
<td>$279</td>
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### Emac

- Silhouette Trackball: $76

### Adobe

- PhotoShop 2.0: $399

### Quark

- Quark Express 3.1: $509

### Texas Instruments

<table>
<thead>
<tr>
<th>Model</th>
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<tr>
<td>microlaser Envelope Feeder</td>
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<tr>
<td>microlaser 2nd Paper Drawer</td>
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### Dove

- DoveFax: $169
- DoveFax Lan: $329

### RasterOps

- CorrectPrint 300: $6999

### Scanners

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<td>UC630 600 DPI</td>
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<td>UC1200 1200 DPI</td>
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<td>Microtek 600ZS</td>
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### Hard Drives

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<td>760 MB</td>
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<td>1.6 Gig</td>
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<tr>
<td>2 Gig</td>
<td>$3399</td>
<td>$3499</td>
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</table>

**Thirty-Day Money Back Guarantee!**

Prices valid 6/28/92 - 7/28/92
**SALE!**

40 MHz PowerCard 030
$649

30% Faster than a Macintosh II!

50 MHz PowerCard 030
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All PowerCards are brand new, in original DayStar boxes. 
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- Full Page Display (Mono) $449
- Full Page Display (Grey Scale) $599
- Dual Page Display (Mono) $879

Ikagami
- CT20" Sony Trinitron $2,749
- w/24 bit Color Card $2,899

Seiko
- CM-1445 14" $559
- With Micron XCeed 24 Bit $959

SONY
- 1504 17" $1,099
- 1304 14" $649
- 1320 For LC $399

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- 24Xli $1,845
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**Radius**

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- Pivot, Mono $749
- Precision Color Display/20 $2,755
- Rocket 25i $1,245
- Rocket 33 $2,095

**NewLife™**

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- SE 25 MHz $679

**Syquest**

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- 88 Meg $109

**Optical**

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**SuperMatch 20" $1699**

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**800-950-3726**

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- Monochrome Card $349
- VideoSpigot In Stock! $Call!

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- 40 MHz PowerCard 030 $649
- 50 MHz PowerCard 030 $999

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**LAPIS**

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**IKAGAMI**

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- w/24 bit Color Card $2,899

**SEIKO**

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- with Micron XCeed 24 Bit $959

**SONY**

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- 1304 14" $649
- 1320 For LC $399

**SMALL MACHINES**

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**SYQUEST**

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- 128 Meg $49

**SUPERMAC**

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- Spectrum/8 24 PDQ $849
- Monochrome Card $349
- VideoSpigot In Stock! $Call!
America’s Macintosh Hardware Specialists

Quantum

All MacLand Drives are pre-tested, pre-formatted, and come complete with our own installation and reference manual, DiskMaster Plus™ formatting and utility software, cables and two-year warranty. Internal hard drives also include bracket kits to fit your particular Mac.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>INTERNAL</th>
<th>$</th>
<th>EXTERNAL</th>
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<tr>
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<td>425MB</td>
<td>$1199</td>
<td>$1299</td>
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1—30 Day Price Protection On All Advertised Items.
2—30 Day Unconditional Money Back Guarantee On All Advertised Products. All You Pay For Is Freight.
3—Guaranteed In-Stock Policy. If We Don’t Have An Advertised Product In Stock The Day That You Place Your Order, We Will Pay For The Freight And Ship It To You Via 2 Day Air Express Service!

SyQuest

All MacLand Removable Hard Drives come with our own installation and reference manual, DiskMaster Plus™ formatting utility software, cables, and a one-year warranty. Cartridge not included.

<table>
<thead>
<tr>
<th>Capacity</th>
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<td>44 MB</td>
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<td>48 MB</td>
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Cartridges:

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<th>Price</th>
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<tr>
<td>5 Pak-ea.</td>
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<tr>
<td>Singles</td>
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<table>
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<td>$99</td>
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<tr>
<td>Singles</td>
<td>$105</td>
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</table>

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Don’t Take Chances On Your Hardware Purchases. Here’s Why Buying From MacLand Makes So Much Sense...

• MacLand Is A NASDAQ Publicly Traded Company With Over $3 Million In Assets.
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MacLand, Inc. 4685 S. Ash Ave., Tempe, AZ 85282 (602) 820-5802
24 Hr. Fax: (602) 345-2217

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Monitor & 256 Color Card $669
Monitor & Million Plus Color Card $799

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Monitor & 256 Color Card $729
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MacUser Magazine, June 1991

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- Fast 12 Pages Per Minute
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MacLand, Inc. 4685 S. Ash Ave., Tempe, AZ 85282 (602) 820-5802
24 Hr. Fax: (602) 345-2217
Circle 150 on Reader Service Card.
### Quantum

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Int'l</th>
<th>Exit</th>
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<tr>
<td>52MB/12ms</td>
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<td>$299</td>
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<tr>
<td>105MB/10ms</td>
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<td>425MB/13ms</td>
<td>$1139</td>
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**Read/Write Optical**

- **Tahiti II External**
  - 1020MB/35ms: $2998
  - Cartridges: $249

### SyQuest

**External**

<table>
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<tr>
<th>Capacity</th>
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<td>1.2/15 speeds</td>
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<td>105MB/10ms</td>
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<td>120MB/10ms</td>
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<td>240MB/10ms</td>
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<td>425MB/13ms</td>
<td>$1139</td>
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**Internal Quantum**

<table>
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<tbody>
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<td>240MB/10ms</td>
<td>$625</td>
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**Mayors Special**

- Internal Quantum: 240MB/10ms $625
- External Quantum: 44MB w/Cart $439
- 88MB w/Cart $559
- Addl Cartridges $66

**SyQuest**

- Ext Internal Quantum: 1.2/15 speeds near the top in all performance tests.
- MacUser July 1991

### Exabyte

**External Tape Backup**

- 8200: 2.2GB and Tape $1999
- 6500: 5.0GB and Tape $1999

### Seagate

**Internal**

<table>
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<td>426MB/14ms</td>
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<td>1352MB/12ms</td>
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**External**

- Toshiba External Kit: $559

### CD ROM

- Toshiba External Kit: Includes "Nautilus" CD $559

### MacTown

- 1431 S. Cherryvale Rd, Boulder, CO 80303
- (800) 338-4273 FAX (303) 442-0501

**CD-ROM**

- Includes "Nautilus" CD $559

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  - $3,549
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- **Quada 700 with ColorPage T-16**
  - $6,909
  - Quadra 700, 20mb RAM, 240mb Hard Drive, 1.44mb Apple FDHD, Mouse, Keytronic MacPro Plus Extended Keyboard, E-Machines 16" ColorPage T-16 Monitor, 832x624 resolution, 24-Bit Built-in Color.

- **Refill StyleWriter & DeskWriter Cartridges**
  - For Half the Cost of Buying New!
  - $16
  - FREE shipping with purchase of three two-packs.

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- E-Machines T-19: Call
- ColorPage T-16, E-16: Call
- ColorPage T-16 II: $1495
- Futura EX 24 bit color card: SALE! $899
- Futura SX (works on any monitor): $899
- Radius Pivot: $1305

**Reel/Write Optical**

- Tahiti II External:
  - 1020MB/35ms: $2998
  - Cartridges: $249

- **Maxtor**
  - Int'l | Exit
  - 60MB/17ms | $244  |
  - 80MB/17ms | $294  |
  - 120MB/15ms | $344  |
  - 213MB/15ms | $564  |
  - 340MB/13ms | $949  |
  - 535MB/12ms | $1099 |
  - 675MB/17ms | $1354 |
  - 1020MB/13ms | $1749 |
  - 1500MB/13ms | $2474 |

**Over 6000 other Products. Call for your Prices.**

**MacUser System**

- 3.5GB (302 August 1992 MacUser)

**Macllci System**

- $3,549
- Macintosh IIci, 5mb RAM, 105mb HD, 1.44mb Apple FDHD, Mouse, Extended Keyboard, 14" Color Monitor, 8-bit color.

**Quadra 700 with ColorPage T-16**

- $6,909
- Quadra 700, 20mb RAM, 240mb Hard Drive, 1.44mb Apple FDHD, Mouse, Keytronic MacPro Plus Extended Keyboard, E-Machines 16" ColorPage T-16 Monitor, 832x624 resolution, 24-Bit Built-in Color.

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**Circle 17 on Reader Service Card.**

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**Circle 48 on Reader Service Card.**
Why Buy a POWERDrive from HDI?

**Good Reason #1**
More Megabytes for Your Buck
For aggressive pricing, nobody we surveyed comes close to HDI. - MacWorld

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**Good Reason #2**
Mac Toll-Free Hot Line
Have a question about setup and operation of your new POWERDrive? We have the answer - seven days a week!

**Good Reason #3**
Choices
Plenty of brand name hard drives, CD-ROM, tape backup, removable and memory to choose from.

**Good Reason #4**
Solid Quality
- Pre-tested / pre-formatted
- Low-heat steel cases
- 50-pin daisy chain connector
- Everything you need to get up and running fast!

**Good Reason #5**
Satisfaction Guaranteed
Each product includes a 30-Day "Worry-Free" Guarantee PLUS a 1 Year Replacement Policy.

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All POWERDrive Kits include: Oezeck Disk Manager, cable and installation guide

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**POWERDrive**

Call us today! 800-998-8024


Note: Prices are subject to change without notice. Mfrs and New. P.O.也算是是很可能有的。METC 20. Discount for AOW/PO orders. P.O. & 6-Day Guarantee / 1 Year Warranty may be subject to restrictions. Dropshipping not available. All trademarks are the property of their respective owners. POWERDrive is a trademark of HighTech Distribution. Inc. ©Manufactured by Western. All Rights Reserved. NOO
Together Again

Seybold (se‘bold), n. 1. the definitive conference and exposition for people who use computers to communicate information; 2. the company which creates and produces these milestone events; 3. The Jonathan.

San Francisco (san‘fran sis‘kō-) n. 1. seaport on the coast of north central California, separated from Oakland by an inlet, and from the rest of the U.S. by a state of mind; 2. setting for fabulous restaurants, entertaining diversions and memorable encounters; 3. where Seybold (see above) will be this September.

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300 DPI Postscript Level 2 240 PC-Mac Switching
6 pages per minute • 55 resident fonts

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Macintosh II x/30 $225
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Macintosh IIcx $295
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Macintosh IIgs $399
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Macintosh PowerBook 140 /400 $209
Macintosh PowerBook 140 /440 $249
Macintosh PowerBook 170 /440 $359
Macintosh PowerBook 170 /480 $377
NEW! Quadra 560

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Apple MacCon 3+ 16/64k 137/195
Apple EtherPrint EtherPrint Plus 169/225
Farrari Star Controller EN 799/975
Phonecard 10 Pack $188
QuickMail 10 User V.25 $359
Shiva Ethergate FastPath-4 1262/1590
Shiva NetBridge Terminal $389

INPUT/OUTPUT
Apple Extended Keyboard $170
EAIC Silhouette $75
Kerrington Turbo Mouse $101
Keyboard MacPro Plus Keyboard $115
Mac Recorder Driver Only $89

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Global Village Express 288k $175
Global Village Full Fax $255
Global Village Full Fax & Receive $215
Global Village Powerport $465
Log/Code Quad IIl Delta $374
Prometheus 8955 Send/Receive $599
Shiva Net Modem x2 $109
Super V.32 Modem $349
US Robotics Course 9600 V.32 Dual $799
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Alston LaserCop LX $1099
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Microtek 1850s $1489
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808
Great Mac Drives!
Find Out Why Maxtor is the Fastest Growing Name in the Mac Market

- Maxtor has a full line of Macintosh SCSI drives, including internal options for the Mac Classic, LC and si.
- Maxtor stands behind their products with a full two-year manufacturer's warranty and an MTBF of at least 150,000 hours.
- Maxtor has drives "performance matched" for Apple's high-performance Macs.

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APS provides internal hard drives for most Macintosh models and external zero-footprint or compact, portable hard drives. Prices and Specifications are subject to change without notice.

Fujitsu

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800 MBs in your SE, SE/30, Ci, Q-700

Just ask away...When you phone, you have a right to expect courtesy, logic and a helpful attitude. Many people ask us questions about hard drives, SCSI addresses, termination, etc. We may not know all the answers, but we'll try to find any we don't have. If you decide to place an order, that's nice too.
Nautilus: Intro ·
Sherlock Holmes: Consulting Detective

Monitors
Model
TriAm Full Page $399
16 gray's w/Macintosh Si, Ci and
Quadra built-in video
256 gray's w/Lap is card for SE/30,
LC, Mac lls ...................... $799
Sampo Dual Page Mono $699
Sampo Dual Page Grayscale $499
256 gray's w/Lap is card..............$849

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Includes Seven-disc APS Reference
and Entertainment Library

SyQuest
Model
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SQ-5110 $599
Dual 44 $899
Dual 88 $1199

For a limited time—With any drive purchase, you can buy Redux or Init Picker by Microseeds Publishing, and Calendar Make only one, $20; any two, $33.95; any three, $44.95 or DiskTop by CE Software for $29.95.

- 30-Day Money-Back Guarantee
- All drives products carry a 30-day money-back guarantee. Your risk in the transaction is the cost of shipping.
- Disk-For-Disk Replacement Warranty
- Maxtor, Quantum, Syquest, Toshiba and DAT drives carry a two-year "parts and labor" disk-for-disk replacement warranty.
- WREN, TEAC drives and cassette cartridges carry a one-year "parts and labor" disk-for-disk replacement warranty. Fujitsu drives carry Fujitsu's five-year warranty.
- Prices & Specifications Subject to Change Without Notice

- Brackets and Cables Included
- All hard drives include brackets, cables, cords and LEDs required for operation in the specified Macintosh. All hard drives come pre-formatted with Apple's latest stable all-platform System Software. 9.2 mb of compacted publicly distributable software, and APS Technologies' "ALLIANCE POWER TOOLS" SCS formatter/editor program.
- Toll-Free Technical Support
- Toll-Free Technical Support, 9 am to 7 pm Monday-Friday, Central Time. Ascend or for as long as you need.

Circle 148 on Reader Service Card.

M-F 7AM-9PM CST SAT 10AM-4PM CST
Visa/MC, Discover, AMEX—No Surcharge

Alliance Peripheral Systems, 2900 S. 291 Hwy., Independence, MO 64057
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The cost-effective buying venue that provides sellers of Macintosh-compatible products an advertising option. Premier, Classified and Business Card to meet their specific advertising goals, reaching 382,000 Macintosh Business Buyers. All sections are set up by product category and offer reader service.

313-319
320-339
340-341

PREMIER
The four-color showcase that spotlights leading-edge products and services.

CLASSIFIED
Flexible-format display advertising that offers diverse sizes plus two and three-color options. Section meets dynamic advertising needs for all Macintosh products and services.

BUSINESS CARD
A forum for innovative, unique, low-cost and hard-to-find Macintosh hardware, software, and miscellaneous products and services.

PRODUCT CATEGORIES

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<tr>
<th>Size</th>
<th>Price</th>
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<td>40MB</td>
<td>$248</td>
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<tr>
<td>105MB</td>
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<td>105MB</td>
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<th>Model</th>
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CIRCLE 262 ON READER SERVICE CARD

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<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>1 Megabyte</td>
<td>70 ns</td>
<td>$36.00</td>
</tr>
<tr>
<td>1 Megabyte</td>
<td>80 ns</td>
<td>$32.00</td>
</tr>
<tr>
<td>1 Megabyte</td>
<td>100 ns</td>
<td>$30.00</td>
</tr>
<tr>
<td>2 Megabyte</td>
<td>80 ns</td>
<td>$62.00</td>
</tr>
<tr>
<td>4 Megabyte</td>
<td>80 ns</td>
<td>$109.00</td>
</tr>
<tr>
<td>8 Megabyte</td>
<td>80 ns</td>
<td>CALL</td>
</tr>
<tr>
<td>16 Megabyte</td>
<td>80 ns</td>
<td>CALL</td>
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## Video RAM

<table>
<thead>
<tr>
<th>Type</th>
<th>Speed</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>4 Bit to 8 Bit Upgrade</td>
<td>24.00</td>
<td>$24.00</td>
</tr>
<tr>
<td>256K Quadra URAM</td>
<td>39.00</td>
<td>$39.00</td>
</tr>
<tr>
<td>512K Mac LC URAM</td>
<td>59.00</td>
<td>$59.00</td>
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## Cache Cards, Etc.

<table>
<thead>
<tr>
<th>Card Type</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>II si 64K Cache Card</td>
<td>$149.00</td>
</tr>
<tr>
<td>II ci 64K Cache Card</td>
<td>$145.00</td>
</tr>
<tr>
<td>II si 2-slot Card + 68882</td>
<td>$119.00</td>
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</table>

## Printer Upgrades

<table>
<thead>
<tr>
<th>Printer</th>
<th>Price</th>
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<tbody>
<tr>
<td>T.I. MicroLaser 1 MB</td>
<td>$55.00</td>
</tr>
<tr>
<td>HP 2 MB Upgrade</td>
<td>$99.00</td>
</tr>
<tr>
<td>HP 4 MB Upgrade</td>
<td>$199.00</td>
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## 68030 25Mhz Accelerators

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Quick30&quot; for Mac SE, Plus, 512Ke</td>
<td>$139.00</td>
</tr>
<tr>
<td>Runs at the speed of a Mac IIci</td>
<td></td>
</tr>
<tr>
<td>System 7/Virtual compatible</td>
<td></td>
</tr>
<tr>
<td>Add up to 16 Megabytes of RAM</td>
<td></td>
</tr>
<tr>
<td>Includes 68882 Math CoProcessor only</td>
<td>$529.00</td>
</tr>
</tbody>
</table>

## FPUs (chip only)

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>68882 16 Mhz</td>
<td>$65.00</td>
</tr>
<tr>
<td>68882 20 Mhz</td>
<td>$75.00</td>
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<tr>
<td>68882 25 Mhz</td>
<td>$109.00</td>
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<tr>
<td>68882 33 Mhz</td>
<td>$149.00</td>
</tr>
<tr>
<td>68882 50 Mhz</td>
<td>$175.00</td>
</tr>
<tr>
<td>68881 16 Mhz</td>
<td>$49.00</td>
</tr>
<tr>
<td>68881 20 Mhz</td>
<td>$55.00</td>
</tr>
</tbody>
</table>

## Miscellaneous

<table>
<thead>
<tr>
<th>Item Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMU for Mac LC (to run Virtual)</td>
<td>$139.00</td>
</tr>
<tr>
<td>Mac Classic 1 MB Bd</td>
<td>$55.00</td>
</tr>
<tr>
<td>Mac Classic 3 MB Bd</td>
<td>$119.00</td>
</tr>
<tr>
<td>SyQuest Cartridges</td>
<td>$65.00</td>
</tr>
<tr>
<td>512Ke to Plus Upgrade</td>
<td>$255.00</td>
</tr>
<tr>
<td>68851 16 Mhz PMMU</td>
<td>$79.00</td>
</tr>
<tr>
<td>Mac Portable RAM</td>
<td>CALL</td>
</tr>
<tr>
<td>KeKT Memory</td>
<td>CALL</td>
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</tbody>
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  - $579
- **Transwarp LC 33mhz**:
  - $919
- **Transwarp LC 40mhz**:
  - $1259
- **Transwarp Accelerator 40mhz**:
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- **Transwarp Accelerator 50mhz**:
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  - 40mhz w/FPU: $1049
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- **FastCache III 64K**:
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- **FastCache III 64K w/FPU**:
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## Technology Works

- **4x8x80**:
  - Mac II/IIs: $135
  - Mac IIx: $135
  - 64K IIC: $145
  - MacII Adapter - 20MHz: $95
  - LC 512K VRAM: $9

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  - Accelerator for SE: $525
  - ImagePro 16MHz for SE: $675
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- **Mac Rescue**:
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## Syquest Drives

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- **Applied Engineering Mac LC Modem With V.42 Send/Rec Fax**: $329
- **Quicksilver Xeba Send/Rec Fax**:
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- **Lexus Turbo Modem**: $95
- **Global Village Powerport Full Fax**:
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- **QuadrantLink**: $182
- **Quicksilver Video**: $89
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- **PMOD/MC6808**: $395
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- **SIMM 1x8x80**:
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2400 V.42bis/MNP5 Modem $115.

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<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW!!! RasterOps PaintBoard LI</td>
<td>$899.</td>
</tr>
<tr>
<td>NEW!!! RasterOps PaintBoard 24 System</td>
<td>$CALL</td>
</tr>
<tr>
<td>19&quot; RasterOps Trinitron with 24 bit accelerated video board</td>
<td></td>
</tr>
<tr>
<td>NEW!!! RasterOps MediaTime</td>
<td>$1795.</td>
</tr>
<tr>
<td>24 bit board w/ real time digital video and 16 bit digital audio.</td>
<td></td>
</tr>
<tr>
<td>NEW!!! RasterOps 16&quot; Color Monitor</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps own technology. Made in USA</td>
<td></td>
</tr>
<tr>
<td>NEW!!! RasterOps 24 MxQ</td>
<td>$CALL</td>
</tr>
<tr>
<td>NEW!!! RasterOps MxTV</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps New 24STV Board</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps NEW 24XLI 2075 System</td>
<td>$CALL</td>
</tr>
<tr>
<td>NEW!!! RasterOps 8XL 1960H System</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps 8L/24L 2075 System</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps 264 30/24SX</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps NEW 21&quot; Mono System</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps 19&quot; Greyscale System</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps 803 Accelerator for STV</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps Video Expander II</td>
<td>$CALL</td>
</tr>
<tr>
<td>RasterOps Expresso Personal Slide Scanner</td>
<td>$CALL</td>
</tr>
<tr>
<td>DoveFax Desktop / DoveFax NuBus</td>
<td>$189/$229.</td>
</tr>
<tr>
<td>2400 bps data/9600 bps fax modem.</td>
<td></td>
</tr>
<tr>
<td>DoveFax + / DoveFax + NuBus</td>
<td>$259/$299.</td>
</tr>
<tr>
<td>2400 bps data/9600 bps fax modem plus voice mail!</td>
<td></td>
</tr>
<tr>
<td>DoveFax LAN / LAN NuBus</td>
<td>$369/$459.</td>
</tr>
<tr>
<td>2400 bps data/9600 bps fax network modem.</td>
<td></td>
</tr>
<tr>
<td>SuperMac</td>
<td>$3299.</td>
</tr>
<tr>
<td>E-Machines T-16 Trinitron With any board purchase</td>
<td>$1295.</td>
</tr>
<tr>
<td>16&quot; monitor. Top rated three years running.</td>
<td></td>
</tr>
<tr>
<td>24 bit accelerated video board. Incredible Value!</td>
<td></td>
</tr>
<tr>
<td>NEW! E-Machines E-16 Monitor</td>
<td>$995.</td>
</tr>
<tr>
<td>16&quot; color monitor for on board video. Quadra ready</td>
<td></td>
</tr>
<tr>
<td>TechWorks</td>
<td></td>
</tr>
<tr>
<td>NuBus 10 Base T, Ethernet Card</td>
<td>$199.</td>
</tr>
<tr>
<td>NuBus 10 T, Thin, AAIU Ethernet Card</td>
<td>$269.</td>
</tr>
<tr>
<td>GraceLAN Std. 50 User Version 2.0</td>
<td>$329.</td>
</tr>
<tr>
<td>GraceLAN Asset Manager</td>
<td>$559.</td>
</tr>
<tr>
<td>Seiko</td>
<td></td>
</tr>
<tr>
<td>CM1445 24 Bit Color Bundle</td>
<td>$1229.</td>
</tr>
<tr>
<td>14&quot; RGB monitor with RasterOps 24SX 24 bit color board</td>
<td></td>
</tr>
<tr>
<td>CM1445 8 Bit Color Bundle</td>
<td>$779.</td>
</tr>
<tr>
<td>14&quot; RGB monitor with RasterOps CB208 color board.</td>
<td></td>
</tr>
</tbody>
</table>

---

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<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Resolution</th>
<th>Color Depth</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>20&quot; Trinitron 256 Colors</td>
<td>640 x 480</td>
<td>256 Colors</td>
<td>$2,899</td>
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<tr>
<td>20&quot; Trinitron 256 Colors</td>
<td>640 x 480</td>
<td>256 Colors</td>
<td>$1,999</td>
</tr>
<tr>
<td>20&quot; Trinitron 16-M Colors</td>
<td>640 x 480</td>
<td>16 Colors</td>
<td>$2,899</td>
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</tbody>
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### RasterOps

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>RasterOps 'Sweet 16' Pkg</td>
<td>2,249</td>
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</tr>
<tr>
<td>RasterOps '256' Pkg</td>
<td>2,549</td>
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</tr>
<tr>
<td>RasterOps '512' Pkg</td>
<td>2,849</td>
<td></td>
</tr>
<tr>
<td>RasterOps '1024' Pkg</td>
<td>3,149</td>
<td></td>
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</table>

### SyQuest Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>SyQuest 4MB</td>
<td>449</td>
<td></td>
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<tr>
<td>SyQuest 8MB</td>
<td>649</td>
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<tr>
<td>SyQuest 16MB</td>
<td>849</td>
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<tr>
<td>SyQuest 32MB</td>
<td>1,049</td>
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</tr>
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</table>

### Hard Disk Drives - Internal & External

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>Toshiba 30.0GB</td>
<td>2,699</td>
<td></td>
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<tr>
<td>Toshiba 70.0GB</td>
<td>3,999</td>
<td></td>
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<tr>
<td>Toshiba 105.0GB</td>
<td>6,299</td>
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<tr>
<td>Toshiba 135.0GB</td>
<td>8,599</td>
<td></td>
</tr>
<tr>
<td>Toshiba 170.0GB</td>
<td>10,899</td>
<td></td>
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### Erasable Optical

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>Fujitsu 265SA 5.25&quot;</td>
<td>1,049</td>
<td></td>
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<tr>
<td>Fujitsu 325SA 8.5&quot;</td>
<td>1,099</td>
<td></td>
</tr>
<tr>
<td>Fujitsu 425SA 14&quot;</td>
<td>1,149</td>
<td></td>
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</tbody>
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### Quantum

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>Quantum 3-1/2 IPS 20MB</td>
<td>139</td>
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<tr>
<td>Quantum 3-1/2 IPS 40MB</td>
<td>229</td>
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<tr>
<td>Quantum 3-1/2 IPS 80MB</td>
<td>419</td>
<td></td>
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<tr>
<td>Quantum 3-1/2 IPS 160MB</td>
<td>419</td>
<td></td>
</tr>
<tr>
<td>Quantum 3-1/2 IPS 40MB</td>
<td>849</td>
<td></td>
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</table>

### DAT - ExaByte - Tape

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
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<td>DAT ExaByte</td>
<td>1,359</td>
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<tr>
<td>DAT ExaByte</td>
<td>1,359</td>
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<tr>
<td>DAT ExaByte</td>
<td>1,359</td>
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### Seagate

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Seagate 2GB</td>
<td>1,359</td>
<td></td>
</tr>
<tr>
<td>Seagate 4GB</td>
<td>2,029</td>
<td></td>
</tr>
<tr>
<td>Seagate 8GB</td>
<td>3,999</td>
<td></td>
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### Relax Technology

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Relax 512K</td>
<td>649</td>
<td></td>
</tr>
<tr>
<td>Relax 1M</td>
<td>1,199</td>
<td></td>
</tr>
<tr>
<td>Relax 2M</td>
<td>1,999</td>
<td></td>
</tr>
</tbody>
</table>

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Substance Abuse

Do the Mac and other WYSIWYG computers produce only pretty documents devoid of content? That’s the claim behind an interesting reader commentary that appeared in the Digital Media news letter, published by Seybold. In it, Rudy Berger, an imaging-software consultant, moans about style over substance. Here’s a tidbit for you to digest:

“Although, as a nation, they are extremely style conscious, Japanese spend almost no time at all making internal corporate documents look pretty. Content is emphasized over style, thus Japanese corporate presentations often use materials that look very crude in comparison to their slick U.S. counterparts.”

Berger goes on to explore multimedia and visual presentations, calling multimedia a “black hole for creative individuals.” His basic theme is that our preoccupation with style is bad and a time killer.

Although I, MacUser’s anti-editor, should be going along with all this, I can’t honestly agree. In fact, in today’s world, I believe that style is more important than substance, because the style message usually contains more information than the substance message. Subconsciously, Mac users have always sensed this — hence their original attraction to the Mac. It’s no coincidence that most artists and creative types use Macs.

As I wrote last month, I’ve always been amused at how easy it is to spot a letter written by a Mac user as opposed to a letter written by a PC user. One look, and I immediately know what kind of computer the person owns. This informational transmission is a function of style. If the information had to be conveyed only by substance, then the person writing the letter would have to actually tell me that he owned a Mac or a PC.

The style message is an efficient gestalt. Depending on the style, you can instantly know many things about a person or a company. For instance, if you walked into a beauty salon that was decorated in hot-pink plastic flowers with an unprofessional hand-painted sign over the door, you probably wouldn’t expect the staff to deliver a stunning coiffeur that would wow them at the opera. You know that a restaurant with dirty windows and cheap, unclean tableware is not going to deliver a healthy gourmet meal. All the elements are part of a gestalt, and each is a reflection of the whole.

In fact, a beautiful high-style presentation — the kind that Berger moans about — tells us that whatever effort went into the presentation probably went into the substance as well. I’ve seen some Japanese substance-oriented presentations, and they are poorly thought out but loaded with information — mostly useless raw information.

Although I frequently chide the Mac community for its mindless kowtowing and fanaticism, I personally wouldn’t want to use anything but a Mac for document production. It’s like wearing a good Italian suit. A Mac-produced document says something in addition to the mere words. What it says is that you care. Caring is much of what style is all about. And people want care more than they want raw data.

If you don’t believe me, just look at advertising, an entire industry that’s dedicated to the proposition that style matters more than substance if you’re trying to get a message across. Do you really think it takes Ray Charles, the Raelettes, and a silly song to tell people that you want them to buy your soft drink instead of the other guy’s? Only if you want the audience to pay attention. As an old soft-drink marketer, Apple’s John Sculley understands this. So do the Windows people. IBM, on the other hand, may never get it.

If style didn’t matter, then television ads would consist of nothing more than excerpts from Consumer Reports read in a monotone by a man in a conservative suit. All the raw data — the substance of the message — would be intact, but the viewers would be bored stiff.

Care is not an aspect of substance. You can’t tell people how much you care. Well, you can, but it won’t do any good. You have to show care. You show it with form and style.

Berger bemoans the preoccupation with style as a time-consuming waste. And when you go through reams of paper before you get a document to “look just right,” you might agree. But, as with any form of craftsmanship, getting things perfect takes time. A subtle and important message is conveyed to recipients when they receive the “looks just right” document. They sense that the sender cares. The style message is transmitted, and an interpersonal transaction is completed. In the scheme of things, if you choose style, you’ll win and the slob will lose — whatever the game.
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