E-Mail for Everyone

MacUser Labs Tests Five New Programs That Deliver

Hate to Type?
Let OCR Do It for You

Stuck with the Wrong Spreadsheet?
Step-by-Step Guide to Choosing the Right One

Color Prepress
Registration and Proofing Solutions

Hot Reviews:
- Photoshop
- FastBack Tape
- Image Analyst
- Enhance
During the past twelve months, the Nobell Chem Corporation pulled far ahead of the competition, through the diverse and strategic marketing of its Nitro Glycerin compound.

Nitro Glycerin, which was discovered in 1847 by Ascanio Sobrero and commercially developed by Alfred Nobel (later), has long been used in the manufacturing process of dynamic explosives. As a result of this development, Nobell Chem is now expanding its distribution channels.

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<th>Industrial Applications</th>
<th>Defense Applications</th>
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Explosive Growth Potential

- Medical Applications
- Industrial Applications
- Defense Applications
people thought the
nitro and glycerin.

If you own a Mac® you may already know what a phenomenally powerful piece of software Microsoft® Word is.

Likewise, you may also be aware of how powerful Microsoft Excel is.

Well here's something you probably don't know:

When Word and Microsoft Excel are combined, they're even more powerful. In fact, they're nothing short of explosive. Pun intended.

Because together Word and Microsoft Excel let you exploit the Macintosh's operating system in a way that has never been possible before.

We call this unprecedented feature "warm links." But you'll be more inclined to call it the best thing for revising documents since white out.

Imagine it's the end of the day and tomorrow's the BIG presentation. You've been working with the sales manager to incorporate his Microsoft Excel projections into your report. You're finally done. But wait. Suddenly he makes one of his famous last-minute changes to the spreadsheet.

This is where warm links saves the day (or the hour). No more antiquated manual moves of opening and closing your document, cutting, pasting and praying. With warm links, you simply open your Word document and select Update Link. Word automatically finds the latest Excel data and updates your report. It's as simple as it sounds.

Of course, because we're talking about the BIG presentation here, you'll want to go the extra step and blow them away. Enter Microsoft PowerPoint®. It's the easiest way to create attention-getting overheads and slides in black and white or color. Just cut and paste data from Word or Microsoft Excel into your presentation, draw, color, shadow, and take a bow.

As you probably know, Microsoft and the Macintosh have an unusually close relationship. We've been involved with the Mac since the beginning. Which means we know how to get the most out of it, now. So, if you want to coax ever more capability from your Macintosh, depend on these and the rest of the Microsoft line of business applications, that are always designed to get a powerful reaction from each other. And your Macintosh.

For a free brochure that describes how you can improve productivity by using Microsoft's Mac applications together, call (800) 541-1261, Dept. K30. And ask about The Microsoft Office—four of Microsoft's best-selling business applications at a great price.
Some people think there's no particular advantage to combining Microsoft applications.
The latest industry news, reviews, and more.

Choosing a Spreadsheet

BY KEITH BAUMANN

Good color printing requires a good color proof — without it you may not get what you expect. Here’s a roundup of ways to make your colors come out true.

Proof Positive

BY KEITH BAUMANN

The final touches in a word-processing project — tables of contents and indexes — often get slighted in the rush to finish. A good high-end word processor should generate them automatically in a fraction of the time, though. Here’s how you do it in Word, Nisus, FullWrite Professional, and WordPerfect.

Currents

BY HENRY BORTMAN

HP’s printers start talking LocalTalk, and FAXGATE Plus puts fax-modem technology onto the network.

Apple/DEC Alliance: Together at Last

BY STEPHAN SOMOGYI

What do you get when you cross DECnet with AppleTalk? A two-year wait and some pretty dynamite software: DEC LanWORKS for Macintosh.

Sharing without AppleShare

BY STEPHAN SOMOGYI

Want AppleShare capability but can’t afford to dedicate a Mac as a server? Here are some inexpensive alternatives.

Macs on the Internet:
Talking TCP/IP

BY SHARON FISHER AND DAVE HULL

TCP/IP networks are nearly ubiquitous in corporate America and on university campuses. Now the Mac can join the crowd.

Prepress: Cures for Poor Registration

BY STEVE McKINSTRY

Poor printing registration can ruin even your best color work. Here’s how to trap those problems.

Backmatic takes the drudgery out of backing up. Plus Disk Ranger, HardDiskUtil, The Debugger V2, and MacNesy, MicroRX

SEI, CleanPath Computer-Controlled Maintenance Kit, State Data, Better Working: The Resume Kit, KeyLock, Draw Tools, and Remember?

Reviews

Photoshop: Adobe’s 32-bit photo-retouching program manages to blend power with simplicity.

Image Analyst and Enhance: When it comes to image processing and analysis, these two packages cover both ends of the spectrum.

FastBack Tape: Popping an excellent tape drive and backup software into one box produces a solid one-stop backup shop with plenty of polish.

MacinStor 650 HCV, THS-2200 and DATAVault: This new breed of tape units takes backup into the realm of gigabytes.

Blueprint: A solid entry in the low-priced-CAD market with features that are particularly useful for doing architectural drafting.

Mobile Computer 400: Vision’s portable is a light, inexpensive non-Mac alternative to Apple’s high-priced heavyweight.

Formulator, MathType, Expressionist, and Milo: A quartet of equation writers for the mathematically minded, but there’s only one best answer.

After Dark and Pyro! 4.0: Two clever screen savers use everything from fish to fireworks to make sure your Macintosh stays interesting even when it isn’t doing anything.

Power Tools

Finishing Touches

BY LINDA BROFF

The final touches in a word-processing project — tables of contents and indexes — often get slighted in the rush to finish. A good high-end word processor should generate them automatically in a fraction of the time, though. Here’s how you do it in Word, Nisus, FullWrite Professional, and WordPerfect.

Beating the System

BY MICHAEL SWAIN

Sure you knew your Mac had windows, but did you know that you can customize them to look and work the way you want? Plus, the latest System 7 Watch explains the mysteries of IAC.

The Expert’s Edge

BY THOM HOGAN

We all need fonts, but the LaserWriter user’s are far different from the ImageWriter owner’s. Here’s a checklist of what you need to know about fonts, depending on how you print. These tips can help you get more out of any printer.
Special Report

On the Line with MacUser
BY BEN TEMPLIN
Get on-line and start talking back. Zmac, our new on-line service, lets you do everything from dial up a product review to download software.............................142

Power Programming
BY KURT W. G. MATTHIES
and THOM HOGAN
Scrolling windows are an important interface element, but this function isn't directly supported by Apple's Toolbox and most programming tutorials don't show you how to implement it. Don't worry, though. Here we cover everything you need to know so you can add working windows to an application.........................238

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COMPiled BY
GREGORY WASSON
Readers send us their favorite tips, tricks, and undocumented features for MacWrite II, Zapf Dingbats, PageMaker, FreeHand, Canvas, FullWrite Professional, HyperCard, Excel, and more..........................245

Help Folder
BY BOB LEVITUS
When you need a Macintosh question answered, ask the Doctor! This month, Dr. Macintosh tells you how to customize your desktop, where to find the answer to your crossword-puzzle prayers, how to get your Macintosh to send a telex, and more..............................251

MacUser Labs

Mail Call
BY MICHAEL MILEY
and THE MACUSER NETWORKSHOP STAFF
Electronic mail is fast becoming the undisputed standard for interoffice communications. MacUser NetworkShop tested five leading E-mail systems — cc:Mail 1.1, DaynaMAIL 1.01, InBox Plus 3.0, Microsoft Mail 2.0, and QuickMail 2.2.2 — to see which carriers best kept their appointed rounds.................92

Character Witnesses
BY PHILLIP ROBINSON AND THE MACUSER LABS STAFF
Automatic optical character recognition (OCR) will be a godsend as the information of the world slowly migrates from bits of paper to bits and bytes. But do the programs that promise automatic OCR — AccuText and OmniPage — deliver the goods? MacUser Labs tested them both for reading comprehension, and the scores are back..........................120

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Letters
Readers predict the future, offer CD-ROM advice, deliver spookier spools, and discuss "current" affairs........11
At last. A next-generation entry-level graphics program that doesn't limit its users to entry-level performance. Or entry-level results.

Fact is, UltraPaint does everything you want it to today. And tomorrow, too.

Run it on a MacPlus and SE, and experience the ultimate in high-resolution black & white painting, with the help of just about every tool you can imagine. And then some.

Add depth to your compositions, using a complete set of advanced drawing tools to create up to 8 independent object-oriented layers.

COLOR PAINTING Control the color of every dot on your screen with multiple customized 256-color palettes, a programmable multi-color airbrush, advanced mask & lasso, and professional special effects like blended fills, color gradients, and more.

GREY SCALE EDITING Manipulate scanned images like a pro, using powerful tools and effects like contrast & brightness controls, water droplet, sharpen & blur, lighten & darken, charcoal, smear, and smart selecting & masking. Produce quality half-tone printed proofs.

B&W PAINTING Work with all the traditional painting tools, plus 72-600 dpi precision and sophisticated features like a true-to-life airbrush, flexible masking, and lightening/darkening filters. Keep your tools all on their own layer, if you wish.

OR open UltraPaint up on a Mac II and watch it come alive with millions of colors and enough grey scale editing power to retouch, combine, or totally recreate images captured by any scanner.

UltraPaint's ultra-compatible, too, with import/export filters for MacPaint®, PICT1/2, TIFF, Startup Screen & even MacDraw I formats.

And thanks to its breakthrough Open Architecture design, UltraPaint lets you add new tools, filters and effects by simply dragging them into a special folder — which means you'll never be stuck waiting for upgrades again! UltraPaint. We've made it easy. Flexible. Powerful. Infinitely expandable. And, at $199 list, definitely underpriced.
Once again, Radius turns display technology on its ear. Introducing Pivot™, the first display that goes from portrait to landscape with only a gentle push. The new Pivot is the first display that changes orientation, in real time, to match the format of your project. For example, when you're writing a manuscript, you can see a full page in portrait position. And when you switch to spreadsheets, you can rotate Pivot to view all twelve months.
levels of gray are furnished, with upgrades to
16 levels for near-photographic quality images.

Ideal for graphic design and desktop pub-
lishing.  Pivot is compatible with virtually
every Macintosh application and may be used
with either the SE/30 or Macintosh II family.

- To find your nearby Radius reseller,
phone 1-800-227-2795." Then, before you buy
a display for your Macintosh, check out another
amazing way to look at things from Radius.

Please circle 142 on reader service card.
MenuFonts is an easy-to-use software utility that allows you to easily select fonts from your system. It includes a variety of features such as:

- Fixed point sizes from 9 to 24 point
- Deactivate font names in the menu
- Automatically update itself from specific applications
- Draw in color for color-equipped Macintoshes

MenuFonts is configurable. Configure MenuFonts via the Control Panel to:

- Display in point sizes from 9 to 24 point
- Deactivate font names in the Chicago font
- Include optional "FontShow" bar (shown above)
- Automatically update itself from specific applications
- Draw in color for color-equipped Macintoshes

MenuFonts is Easy & Compatable. Install it by dragging the MenuFonts folder into your System Folder. Works with many applications that use "Font" menus. Works with MultiFinder & Windows faster than FontCharter. Draws font menus instantly with no loss of performance. Runs on Macintosh 512K Enhanced and newer models.

MenuFonts includes the FastFormatter utility! Duplicate entire boxes of diskettes quickly and without hassle.

Each volume is a crammed full of what MacUser magazine calls the "best collection of ImageWriter fonts available" and includes utilities: MenuFont, BigCaps, and DefaultFont. Call or write for complete listings of all fonts, styles, and sizes. $79.95 per double volume (each contains three 800K disks).

About MacUser

When product vendors come to demo products to the MacUser editorial staff, they're often pleasantly surprised—and sometimes taken aback—by the number of tough questions they're bombarded with. "How come you guys ask so many questions? Nobody at the other magazines puts us on the spot like this. . . ."

Vendors may leave feeling as though they've just been through an IRS audit, but our hard-hitting questions benefit our readers and the vendors themselves. We don't settle for less than perfect. We dig to uncover bugs. And we ask vendors to add features we think users need. We all reap the reward when those features make an appearance in the next version of the product.

One of the most feared—and most welcomed, depending on your point of view—tough-question posers is Henry Bortman. MacUser NetWorkShop director and resident guru on everything from fonts to printers to PostScript to connectivity.

With his knack for cutting to the core of an issue, Henry is widely known as the Sam Donaldson of Mac press conferences. But although his pointed critiques can make rough going for the recipient, they can also pay off. Case in point: Henry's article "Font Woes" (January '90, page 245) took font makers to task for letting font menus get out of control. Here's what Henry had to say: "The Mac's handling of typeface selection is one of the most glaring examples of an interface that has outgrown its original design. The Font Manager is long overdue for an overhaul."

Of course, Henry did more than complain. He spelled out exactly how he thought font menus should work in a sane world and challenged Apple to do something about it.

We don't know if Apple was listening, but somebody was. Adobe's just-introduced Type Reunion utility was directly inspired by Henry's article: It organizes fonts according to family and weight and lets users choose font variants from a style menu. Just what Dr. Bortman ordered.

The Mac community has no shortage of critics, but there will never be enough original thinkers. MacUser editors such as Henry Bortman ask tough questions not just because we're interested in how good a new product or technology is—we want to know how good it can be. "The power to be your best" may have turned into something of a cliché, but we aren't ready to abandon the sentiment just yet.
Four reasons why 1990 will be the year of the workgroup.

It's already happening. More and more companies are embracing the idea of workgroup computing. For good reasons, too. Like the ability to swap files, send electronic mail, share printers, and work together more effectively than ever before.

Now, TOPS presents four more... the first complete family of powerful workgroup networking products of the 1990's.

The ideal workgroup network—just add people.
TOPS Network Bundle for DOS and TOPS Network Bundle for Macintosh are real “firsts.” The first complete workgroup tools in one box. Each gives you the power to share files, printers, and other resources with one person, your group, your department, or your entire organization.

And best of all, both packages come bundled with the all new TOPS InBox, the powerful, yet easy-to-use electronic mail system.

Complete mail in a box.
On its own, electronic mail can be the key to a successful workgroup. Which brings us to the new InBox. InBox gives your workgroup a fast, reliable and easy-to-use electronic mail system for up to 20 users.

And InBox Plus provides expandable communications to 100 users per Message Center. In fact, used with other InBox Plus Message Centers, or UNIX Mail, MCI Mail, PROFS, VMS, and other systems, InBox Plus lets you send messages anywhere in the world.

TOPS Network Bundle for DOS, Network Bundle for Mac, InBox, and InBox Plus. Four great products. Four great reasons to make 1990 the year of the workgroup in your company. And the best reasons of all to call TOPS today. 1-800-445-TOPS, ext. 407.

For distribution information outside the U.S., call TOPS International at +1-415-769-2449; TOPS Europe at +44 270-20440; or TOPS Canada at 416-769-8700, ext. 900. Copyright © 1989, Sun Microsystems, Inc.
It's Going Where No High-Speed Modem Has Gone Before.

There's nothing more advanced for Macintosh networks than the new high-speed NetModem V.32. Because the NetModem V.32 pushes performance to the limit. Just plug one into your network and every connected Mac can communicate at any speed up to a sizzling 9,600 bps with full V.32 compatibility. The NetModem V.32 is easy to use, even if you've never seen a modem before, with menubar 'LEDs' and familiar modem sounds fed back to your Mac as your call progresses. It's also economical, saving the expense of a dedicated Mac, multiple modems and extra phone lines - not to mention excessive telephone and online charges.

It even lets you dial in to your network from a remote site to access files, use TOPS,* AppleShare,® E-mail,* printers or any other network resource. And it lets any Mac on your network access a remote network thousands of miles away, creating a powerful, high-speed wide-area internetwork. The Hayes-compatible NetModem V.32 comes with Internet Manager software that lets you create network zones, control traffic, restrict access between zones - even check the location and status of every device in the system. The NetModem V.32 is setting a whole new standard. For more information, call Shiva at 1-800-458-3550.

*All product names are trademarks of their respective manufacturers.
Low-End Lowdown

All this talk of a low-end Mac... Do you realize you can get into a Mac Plus with a 30-megabyte hard drive for less than $2,000 if you shop right? How much more of a low end do you want? Go out and buy a low-end DOS machine, and I predict that inside of 90 days you'll wish that you'd spent that extra $500 to $1,000.

Matt Barkdull
Fairbanks, AK

Reader and Adviser

I was intrigued by Paul Somerson's predictions (April '90, page 23) and would like to add my own. Of course there will be more personal computers in the next ten years, but there will also be more confusion, more misuse, and more misunderstanding. As James Burke said, "Never before have so many people understood so much about so little."

The '90s will be the decade when we finally address the fact that, as far as computers are concerned, everyone is still in the dark. I don't mean we can't operate a computer, because we can certainly do that. The most important trend in computing in the next ten years will not be any new hardware or software. It will be a growing social capability to regulate our use of and dependency on technology.

When this happens, when we free ourselves from the mythology so many of us subscribe to, we'll see the first real personal computers.

Jim Everson
Phoenix, AZ

Shhhhh!

I was happy that you reviewed CD-ROM discs ("CD-ROM Hit Parade," April '90, page 160). This particular technology is of great interest to those of us in the library field, who must frequently physically sift through large amounts of printed information to find the answers to clients' questions.

My advice to CD-ROM-disc publishers is this: It takes more than a rainbow-colored piece of plastic to make a useful CD-ROM database. Hypermedia doesn't just happen — talk to the researchers who are going to be using your product, and don't just dump the print version to disc and call it a day. The best CD-ROM disc I have seen so far is the Electronic Whole Earth Catalog: It is the standard by which publishers should be measuring themselves.

Jean Armour Polly
Liverpool Public Library
Liverpool, NY

Trillions and Trillions

I was disappointed to see our Knowledge Finder medical-literature-reference CD-ROM discs for the Mac were omitted from "CD-ROM Hit Parade" (April '90, page 160). They were some of the first discs to come to market, more than two years ago. Since then we've successfully delivered trillions of characters of data around the world. Clinicians, researchers, and educators in biomedicine now have access to a storehouse of knowledge that was previously inaccessible to them.

Lyndon S. Holmes, President
Aries Systems Corp.
Andover, MA

Swing, Swing, Swing

Thanks for your article "CD-ROM Hit Parade" (April '90, page 160). It couldn't have come at a better time. I'd just purchased an Apple CD-ROM player, and after I'd watched the demo that came with it a dozen times or so, it seemed that it might turn out to be the most expensive CD player I could have purchased. After all, did I really need the CD-ROM player just to listen to Benny Goodman at Carnegie Hall?

Paul Raymer
Las Vegas, NV

Hang on, the idea of buying a CD-ROM player for listening to jazz isn't that far-fetched. One of the projects that the folks at Voyager (of Beethoven's Ninth Symphony fame) have on the boards is a CD-ROM edition of The Smithsonian Collection of Classic Jazz. — JB

User Abuser

While I was looking through past issues, I discovered that I had missed a letter on page 20 of

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Letters to the Editor
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Foster City, CA 94404

All letters become the property of MacUser, and we reserve the right to edit any letters we print. Please include a return address and daytime phone number.
the December '89 issue wherein the writer complained that he would have to pay another $110 for version 2 (on top of the $330 he’d paid for version 1 and a fix) of a software program.

He called himself a “supporter,” as if that should bestow some benefits on him. In actuality, he is a “user.” He used the program for a year and a half. And if he spends the $110 for version 2, he will have the new $300 program and have paid only $140 for the benefits of version 1 for that year and a half.

What does he want, perpetual free upgrades? If he doesn’t want to pay for the programming that went into version 2, he should continue to “support” version 1.

Douglas Wells
Vienna, IL

Type for 2

Now that Adobe has loosened its algorithms on the world, and before Type 3 type becomes little more than a killer trivia question, I’ve gotta ask — was there such a thing as Type 2 type?

Patrick Atherton
Minneapolis, MN

Yes. — JB

Where’s Entertainment

Glad to see that you’ve finally brought back my beloved MiniFinders. However, the first thing I looked for and, sadly, didn’t find, was the Entertainment section. I had come to depend on that section and anxiously awaited the return of MiniFinders for just that feature.

Is the whole Mac community turning into a bunch of stuffed shirts with no time for a quick game of Tetris? I certainly hope not.

Kathy Pazzuto
San Bernardino, CA

Unfortunately, space limitations made it necessary to cut Entertainment, even though it’s one of the most popular sections in MiniFinders. That doesn’t mean it’s impossible to get the information, though. The entire MiniFinders database, in HyperCard format, can be downloaded from Zmac, MacUser’s new online service. — RI

Feeling Exstatix

Thank you for your thorough review of our Mac statistical-analysis package Exstatix (“Business Statistics,” April ‘90, page 114). Although your speed benchmarks were accurate for the version of Exstatix reviewed, your readers should be aware that we have since released a new version of the program (1.5) that now performs these computations up to four times faster. In addition, the new version automatically makes direct calls to the 68881 coprocessor for further increases in speed. Finally, the retail price of version 1.5 has been decreased to...
The Mac SQL Sequel

The first SQL database for Macintosh has enhanced connectivity and a new graphical Query Tool.

The first version of ORACLE for Macintosh was a big hit. Industry analysts gave it a thumbs up. Thousands of users gave it their support. And InfoWorld Magazine gave it Product of the Year.

Now Oracle announces ORACLE for Macintosh Version 1.2, with enhancements for both end users and developers.

Improved connectivity options make it even easier to access corporate data on servers, minis and mainframes. Version 1.2 supports virtually any network. Including Async, Apple's MacTCP, Novell's TCPort, Alisa's TSSnet, DCA's MacIRMA 3270 and Tri-Data's Netway.

The new HyperCard-based Query Tool, with the enhanced Application Generator and System Stack, lets users point and click to query data and then automatically transfer it to their favorite programs such as Excel, Wingz or Word. All without knowing SQL or writing code.

The Database Version includes the ORACLE database, Query Tool, Application Generator, System Stack, Hyper*SQL and Pro*C for $699. The Networkstation Version comes with everything but the database for only $299. And the Networking Option for Macintosh is just $299.

ORACLE for Macintosh Version 1.2 is backed by the largest database consulting and support organization of any software company.

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NEW ORACLE FOR MACINTOSH VERSION 1.2
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ENHANCED CONNECTIVITY
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PROGRAMMING
FEATURES

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Compatibility · Portability · Connectability
Pricey Features

I really enjoy your magazine and read every issue straight through. I think your articles are informative and cover the subjects thoroughly without including too much confusing information that you don’t really need.

But I have noticed a trend in the content. The feature articles have become more and more oriented toward what Mac products you can buy and which ones are the best. I know that not everyone can spend $500 a month on computer equipment, or even $250.

Jonathan Durkee
Sacramento, CA

Every month you’ll find productivity as well as product articles in our pages. Check out our PowerTools and Solutions sections for information on how to do more with what you already own. — JZ

You Raskin You

In the name of the many people who have made the Mac a commercial reality, I would like to thank MacUser for presenting us with the John J. Anderson Distinguished Achievement Award (see “Editors’ Choice Awards,” March ’90, page 92). When I first started the Macintosh project back in September 1979, even my most extravagant ideas could not match this reality. On the other hand, my original dream — to make the human interface become one of the primary issues in the choice of a computer and its software — has come true.

Jef Raskin
Menlo Park, CA

A Rewarding Journey

Thank you for the wonderful John J. Anderson Distinguished Achievement Award. It is to Steve Jobs’ credit that he was able to put together the unique, eclectic group of people who became the Mac Development Team. I was the messenger for the team, and it was (and still is) an extraordinarily powerful message.

It is particularly gratifying to see that the ultimate “greatness” of a product lies not in its clever advertising or persuasive public relations but in its ability to deliver better-than-average value to consumers.

The marketplace understands this concept and continues to vote with its pocketbook.

We used to say, “The journey is the reward.” As time passes, the true reward comes from seeing millions of people expanding their personal horizons by using a bunch of silicon and bits organized in a slightly better way.

Mike Murray
Redmond, WA

We hope Silicon Valley hears your message. These days, too many high-tech companies are employing more lawyers than engineers, and the overriding message is in danger of becoming “The jury is the reward.” — JZ

Free for All

In the March issue, in the Editors’ Choice Awards (page 92), you recommend a shareware program called Disinfector 1.2 as an antiviral program. Could you tell me where I could write or call to obtain a copy of this program?

Martin R. Knapp
Lakeside, MT

Send a blank, formatted floppy disk along with a self-addressed, stamped envelope to Disinfector’s author: John Norstad, Academic Computing and Network Services, Northwestern University, 2129 Sheridan Road, Evanston, IL 60208.

— JB

Jiminy Cricket Draw

I’m astonished that your April roundup of drawing programs (“Drawing the Line,” page 92) omitted Cricket Draw. I’ve found it superior to both MacDraw II and SuperPaint for my work — namely, making a variety of accurate drawings that are then imported into Microsoft Word documents. I used to despair when working with the “leading contender,” MacDraw II, whose drawings fell to pieces when imported into Word.

John Sladek
Eden Prairie, MN

Although CA-Cricket Draw is indeed a drawing program that serves in many applications, it was omitted from the roundup for several reasons. CA-Cricket Draw is no longer a mainstream program. It has had no significant upgrades, and its PostScript functionality — basic capabilities, color breadth, and working speed — is overshadowed by that of Illustrator and FreeHand. If a graphics application can save graphics in EPSF, many applications can import and print them.
It's like owning a disk drive with a bulletproof vest.

Introducing the Metro with SCSI Sentry

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

And only EMAC Metro drives have it.

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

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

When you add the SCSI Sentry to such reliable disk drives, you know your data's safe with Metro. If you want to own a disk drive with a bulletproof vest, call EMAC at 1-800-821-0806, extension 2222. It's just one more way that EMAC gives you more for your Mac.

Please circle 154 on reader service card.
You’re on the move, and Dynodex is the database that moves with you. It’s the “electronic rolodex” that prints Filofax®, Day Runner®, and other portable formats. Dynodex lets you “take it with you” in any loose-leaf binder, any time, anywhere.

Only Dynodex...
- Prints double-sided address book pages
- Prints Dynet, the credit-card size directory
- Completes utilizes a sheet of paper
- Performs faster than any Mac® database
- Flexibly imports and exports existing data
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with all their original quality. This is not a unique ability of CA-Cricket Draw.

The other applications covered in the roundup are all established and evolving. They each have their niches and desirable traits, such as being handy DAs; are easy to learn; or are drawpaint capable. — SP

Expense Report

Political activism has no place in software reviews (“Time Is Money,” April ’90, page 147). Can your political-consultant reviewer really be serious about downgrading a program (Project Billing), which he admits “does everything you could want,” just because it’s too expensive? Please, let those of us in the marketplace make that decision.

Craig A. McMillan
Tacoma, WA

Straight to the Chart

I really appreciate MacUser’s diagrams and explanations. The case I am particularly referring to is your graphical analysis of print spoolers (“Print Spoolers,” April ’90, page 223). It made the article much clearer — this is not to say that your writing staff is being vague. Just the opposite, but the chart helped me make up my mind as to what I should be using.

David W. Hickok
Fair Oaks, CA

PrepSpool

I read with enthusiasm the article in the MacUser Labs Brief on print spoolers (“Print Spoolers,” April ’90, page 223). I do question one statement, however. The article said that when PrintMonitor senses a PageMaker document coming down the pike, it turns spooling off rather than get embroiled in the prep-file dilemma.

I use PrintMonitor, and it has always seemed to me that I regain control of the Mac when printing PageMaker files almost as fast as when I’m printing everything else. To test this theory, I printed a six-page PageMaker file that was full of text and graphics on my LaserWriter IISC. When I printed it with background printing, I regained control of the Mac in 35 seconds. When I printed it without turning on background printing, it took 2 minutes and 50 seconds before I regained control of the Mac. If PrintMonitor is not spoiling my PageMaker file, then what is happening that would make this big time difference?

Could it be that my PageMaker files are not using the Aldus Prep file because my printer is not PostScript?

Terry Runé
Arvada, CO

You’re right: The LaserWriter IISC doesn’t use the Aldus Prep file. Aldus created Aldus Prep as an extension to the LaserPrep dictionary that Apple uses with its LaserWriter driver (the program that converts QuickDraw to PostScript) for use with PageMaker. This PostScript dictionary is used with a PostScript printer, such as a LaserWriter IINT. Since your LaserWriter IISC is a non-PostScript device, the Aldus Prep file has no function.

This same Prep file is the reason why many print spoolers choke on PageMaker files. It’s unusual for an alternative dictionary to be used with the Apple LaserWriter, and most spooling programs must deal with that circumstance in some special way.

SuperLaserSpool solves the problem by forcing PageMaker to redirect the PostScript file to disk; then it downloads that file to the printer (which is why it is so slow for PageMaker).

TurboSpool and TOPS Spool create a PostScript file regardless but require you to manually download the Aldus Prep dictionary to your printer the first time you spool a file.

PrintMonitor ignores PageMaker’s foibles completely by passing a PageMaker document to the printer without spooling at all. — PF

I’m not much of a fan of PrintMonitor, but you gave it the short end of the stick in your recent review of print spoolers. First, PrintMonitor does work with the LaserWriter driver 6.0. If you obtained the LaserWriter driver 6.0 on Apple’s color disk, you also got version 1.3 of PrintMonitor.

Second, PrintMonitor will notify you
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The Chinese language compresses words and phrases into simple pictorial characters. StuffIt Deluxe does the same to entire Macintosh files.

Huge files that once took up 1 megabyte of space now occupy as little as 16K. With StuffIt Deluxe, limited space is history.1,2

Jasmine Chapter 11

Your "101 Hard Drives" review (February '90, page 153) was by far the most comprehensive synopsis of the external hard-disk-drive menagerie. Comprehensive with the exception of one factor: company stability!

Your review provided me with that final ounce of initiative to purchase a hard-disk drive. In the the 40-megabyte category, the capsule review recommended three drives, one of which was the Jasmine DirectDrive 40, so I ordered one.

A month later, I called Jasmine, but all I got was a short recorded message that stated that it had filed for bankruptcy under Chapter 11. And if that wasn't enough, the company had already charged my credit card.

From an engineering perspective, Jasmine might have had a quality product, and the review was probably accurate when it was performed. But the actual hardware represents only part of the picture — company stability and commitment to customers is another. My heart goes out to those individuals who already own a Jasmine product — whom are they going to call when they need product support?

Ted F. Bowlds
Burke, VA

You're quite right — from an engineering perspective, Jasmine had a quality product. However, MacUser Lab reports are not intended to report on the financial stability of companies nor, unless specifically mentioned, on customer support. That said, at press time we had no way of knowing that Jasmine would seek bankruptcy protection under Chapter 11.

We work hard to make lab reports both fair and objective — mostly because our readers depend on them for accurate information but also because if they're done shoddily, they can be seriously detrimental to small, struggling companies.

We couldn't speculate in print about the financial stability of one company without thoroughly investigating the affairs of not only that company but also of every other company in the report. That's simply not feasible when you're

1 For those already familiar with the ever popular StuffIt, StuffIt Deluxe adds over 70 new features, including complete archive management (sorting, multiple windows, Finder-like operations, etc.), improved password protection, optional compression methods (zipping, virus detection, and one-step locking/unlocking StuffIt format). Added bonus: Two brand new drivers. Call us for more info.

2 For the record, Raymond Lau, the modern-day inventor of StuffIt Deluxe, is alive and well and living somewhere on the East Coast. StuffIt is a trademark of Raymond Lau. StuffIt Deluxe is a trademark of Aladdin Systems, Inc. and Raymond Lau.

Steve Baird
Baton Rouge, LA

Of a printing problem if you want it to. When PrintMonitor is open, simply select Preferences from the menu, and you'll see a dialog box that has preferences for the PrintMonitor window as well as choices for how it should inform you of problems with printing or manual-feed jobs. You have the choice of no warning, a blinking Apple logo on the menubar, or a work interruption.

Also, why didn't you review the TOPS spooler? I imagine there are enough people who use it or at least have the option of using it for it to merit a review, and I think it's pretty good.

I find that PrintMonitor tends to steal too many cycles from the machine, and I generally prefer the TOPS spooler because I usually don't even realize it's running.

Anthony R. Kenck
Coral Gables, FL

At press time, Apple hadn't officially released the LaserWriter driver 6.0 to the general public, so we couldn't run results based on what might not have been considered a "finished" product. We did note at the bottom of the features chart that the LaserWriter driver 6.0 would be supported in a future upgrade.

Regarding the TOPS spooler, we chose not to review it for two reasons. First, you cannot purchase it as a stand-alone product — you must purchase it bundled with TOPS networking software. Second, the software is identical in function to TurboSpool, except that TOPS Spool 1.81 currently supports the LaserWriter driver 6.0. If you're interested in the speed and performance of TOPS Spool, refer to the chart for TurboSpool. — PF

Your article regarding print spoolers addresses many of the concerns most users have about such software. I recently purchased SuperSpool and subsequently removed it from my system within a matter of days. Your readers with older machines (mine is a Plus with 2.5 megabytes of RAM) may find its sluggish operation as exasperating as I did. I have no idea how well print spoolers work with the newer machines, but it is clear that they have a long way to go with older ones.

What spooler developers really need to address is the capability of printing from several printers simultaneously. How terrible it would be to have one printer printing envelopes or labels while another is printing letters. That would make print spoolers really worthwhile applications!

Ted F. Bowlds
Burke, VA

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LETTERS

doing in-depth testing of more than 100 hard-disk drives.

If you're planning to buy a big-ticket item through mail order, though, you can cut your risks. One of the best ways is to tap into the combined expertise of the Mac community through on-line services such as our own Zmac. A message posted in an on-line forum will produce a flurry of opinions on any product or company.

As for Jasmine owners who've been left without support, one resource is an on-line technical document that was created by the tech-support team at Jasmine. You can download it from our Zmac on-line service. (For more information on Zmac, see "On the Line with MacUser" in this issue). — AE

Uncommon Marketer

I've just read and framed John Dvorak's criticism of marketing types! ("A Mark[et]ed Man," March '90, page 292). Here's my perspective — both engineering and marketing are needed for the best product success. Remember it was a "marketing guy" who developed the Mac: Jobs. And it was another "marketing type" who reworked the power/memory to appeal to corporate America: Sculley.

A "marketing guy" would never have developed MS-DOS. I rest my case.

David Keenan, V.P., Marketing
Tigen Voice Messaging
Dallas, TX

Electronic Mail Plus

Do you answer electronic letters to the editor?

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Philadelphia, PA

If you write one, we will. The best place to post one is on Zmac, which has already been thoroughly plugged in this Letters section. — JB

CLARIFICATIONS

J. Lawrence Enterprises, Inc., distributor of the limited-edition Ishido, has set a retail price of $295 — substantially lower than the list price set by the game’s publisher, Publishing International (and cited in our May '90 review of Ishido, page 71). Only 1,000 signed copies of the four-disk game were made available.

The price for Image Grabber was listed incorrectly in Bobker's Dozen (May '90, page 38). The correct price is $49.
SuperLaserSpool™ makes "Waiting for LaserWriter" a thing of the past, and lets everyone get back to work immediately. Because it takes care of printing in the background, while you take care of business in the foreground.

SuperLaserSpool comes complete with the LaserQueue™ desk accessory for efficient document handling—to prioritize or redirect documents to other printers. It includes document preview, and notifies users when print jobs are complete. Plus SuperLaserSpool works with just about any printer your Mac can drive. It also supports virtually all Macintosh® applications, including PageMaker.

No wonder it's the single most popular spooling utility available for Macintosh.

So go to your nearest SuperMac dealer and pick up a copy of SuperLaserSpool. Or an economical five-pack. Then get back to work. Immediately.
Introducing Today's Multimedia Solution: New ColorSpace Plus/SE.

The Affordable Multimedia Solution: New ColorSpace Plus/SE.

Take the new ColorSpace Plus/SE, add an ordinary Macintosh Plus, SE or SE/30.

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Because now with the new ColorSpace Plus/SE multimedia system, you can create exciting full-color, full-motion video productions with an ordinary Macintosh Plus or SE.

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ColorSpace Plus/SE uses innovations that give you studio capabilities at a fraction of the cost. Like our advanced genlocking and keying technology that lets you overlay black-and-white Mac text and graphics in color on live or recorded composite NTSC or S-video input. Or special vertical filtering that gives you clean, flicker-free broadcast-quality output.

No special training required.

With ColorSpace Plus/SE you'll be up and running from the minute you sit down. It works with software you already know. Like HyperCard and most other popular Mac design and graphics software. So any titles, graphics
and animations you create on your Mac can come alive on video.

You already have most of the equipment you need.

No need to buy expensive, professional equipment. Color-Space Plus/SE comes with multiple NTSC and S-video inputs and outputs that let you use televisions, laserdisc players, VCRs, and VTRs for prerecorded input—and camcorders for live input. Equipment you probably already have.

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On a recent flight west, I sat in front of two yo-yos in nearly identical yellow power ties, guys who looked as if they burned rain forests and put Gordon Gekko quotes on their office walls and spoke about Van Gogh paintings not in terms of color or form or texture but of how much they were likely to fetch in Tokyo.

Somewhere over Nebraska, the two started going at it heatedly over "time and space." A bit surprised, I tuned into the conversation, wondering if they were referring to some Einsteinian thought experiment. Turned out they were debating the profits in television versus print ad sales. Further into the flight, my journalist ears perked up when they began talking magazines and clips. A few sentences further into the conversation, I realized they were discussing guns.

Things aren't always what they seem.
Here's another example: We get a good deal of feedback about each issue. Last week I received a phone call from someone who wanted to talk about the magazine. Well, not exactly "talk." Full insite is more like it. The staffer who forwarded the call to me explained that it was about our technical section.

MacUser readers are an extremely knowledgeable group; they can hold their own in any technical discussion and are the most savvy power users in the industry.

Not this caller. He reminded me of someone who sits behind you in a funny movie and laughs in all the wrong places. Or the type who signs up for a magazine with no intention of reading it, just so he can write a nasty letter to the editor and cancel his subscription.

"I was looking at a friend’s copy," the caller began, "and I couldn't believe it. You filled the whole back of the issue with a story on... programming!" He chewed dyspeptically on every syllable like a televangelist pronouncing the word *subpoena*.

I started to answer, but he plunged on. "Nobody cares about programming! What you should be running is lots of articles for beginners. Programming stories belong in... DOS magazines." The word *DOS* was delivered with the special contempt most people reserve for child-beaters or congressmen.

I wanted to find out more about this caller. "Are you a reader? And what kind of Mac do you use?"

"No, I don't read your magazine. And, no, I don't have a Mac yet, but I'm right on the verge of getting one. Just as soon as they come down in price." And — click — he was gone.

MacUser never was a "beginners’ magazine" and never will be. While it's true that nobody can be an absolute expert in every area, all industries have a core group of users who know the system inside out. This top layer of expertise drives the industry. Power users such as these are the ones who know which products to buy and why, how to set up and troubleshoot everything, and how to wring the maximum horsepower out of every system.

At the other end of the scale, casual and beginning users who want a little hand-holding are drawn to publications that are easy — warm, fuzzy, and soft.

But serious business users who need to know which products to buy and how best to use them require something with a lot more punch.

**More Power to You**

Fine. But why do we run pieces on programming?

To understand the answer, you have to understand the question. And the question is a bit like asking, "Why do you run pieces on spreadsheets? Aren't those just for bean counters?"

Long ago (circa 1980), spreadsheet programs were strictly an arcane tool for accountants. Now they're a mainstay of every businessperson's repertoire. And the reason that happened is that several bright people (such as Bob Frankston, Dan Bricklin, and Mitch Kapor) realized that, with a personal computer, the spreadsheet metaphor could easily be *programmed* to reflect a single user's what-if questions.

Here's another question: "Why do you run pieces on word processing? Aren't those just for writers?" It's a question that might have made sense in 1980. But in 1990, the question isn't just rhetorical; it's ludicrous — writing is a part of practically everyone's job, and the many word processors available for the Mac make that job immeasurably easier. And one big reason why is because they can be *programmed*. When you check off your preferences in Microsoft Word and define a few new styles, you're programming your very own customized word processor. With a few clicks of the mouse, you're performing a programming job that used to be mammoth enough to keep a bevy of programmers busy for weeks on end.

The same thing for database programs, page-layout programs, utilities, and so on. In other words, the reason we write about programming is because virtually everyone who uses a Mac is a programmer — although only a few would cite it on their 1040 under Occupation.

Here's a partial list of things that you already know (or ought to know) how to program on the Macintosh:

**Virtually everyone who uses a Macintosh is a programmer — even though only a few would cite it as their occupation.**
- Telecommunications: Any Hayes-compatible modem uses a programming language to control the flow of data. Most people rely on default settings in their telecom software, but a little exploration can pay off with improved throughput, and that translates into faster transmission and lower phone bills.

- MacroMaker: As most of you know, macros are basically miniprograms consisting of sequences of keystrokes and mouse clicks to be recorded, stored, and played back on demand. Lots of application software—such as spreadsheet programs and telecom software—has macro capabilities (often called something like a Watch Me feature), and there are several stand-alone macro-creating packages. MacroMaker is free, as part of the system software.

- HyperCard: Most power users have experimented with Apple's entry-level general-purpose programming tool.

- System 7: The Mac is the hands-down best user platform on the market; good solid custom programming can make it even better. Apple clearly believes in the power of programming and is building tools and hooks into future System releases to facilitate this. Apple-Events—part of the forthcoming System 7—will open things up dramatically and become the first truly enabling technology for user scripting.

It's already starting to happen. Any company that seriously wants to kick performance into high gear will need Mac programmers to hot-rod things and fill in the gaps—if it doesn't already have a programmer or two on-staff.

This doesn't mean that everyone will suddenly have to learn the intricacies of Pascal or C. Program generators, advanced versions of scripting languages built in to future applications, and AI-based programming tools will all help pour on the power.

So, if you're still asking why we run programming pieces, it's because programming is the power in power user. It's the power in our own Power Tools section. And putting power into the hands of individual users is what it's all about.

The Control Panel: Armed with a few cdevs, the Control Panel is like a mini object-oriented-programming environment. Check a few boxes, and you've customized your system.

- ResEdit: Thanks to the modular nature of the Mac's system software, you can use this little gem to switch a host of features on and off that control the all-important look and feel of your Mac.

- PostScript: Every time you send a PostScript document to the printer, you're actually downloading a little program. If you learn a bit of the language (as we'll be showing you in an upcoming issue), you can speak to the printer directly.

- MacroMaker: As most of you know, macros are basically miniprograms consisting of sequences of keystrokes and mouse clicks to be recorded, stored, and played back on demand. Lots of application software—such as spreadsheet programs and telecom software—has macro capabilities (often called something like a Watch Me feature), and there are several stand-alone macro-creating packages. MacroMaker is free, as part of the system software.

- HyperCard: Most power users have experimented with Apple's entry-level general-purpose programming tool.

- System 7: The Mac is the hands-down best user platform on the market; good solid custom programming can make it even better. Apple clearly believes in the power of programming and is building tools and hooks into future System releases to facilitate this. Apple-Events—part of the forthcoming System 7—will open things up dramatically and become the first truly enabling technology for user scripting.

It's already starting to happen. Any company that seriously wants to kick performance into high gear will need Mac programmers to hot-rod things and fill in the gaps—if it doesn't already have a programmer or two on-staff.

This doesn't mean that everyone will suddenly have to learn the intricacies of Pascal or C. Program generators, advanced versions of scripting languages built in to future applications, and AI-based programming tools will all help pour on the power.

So, if you're still asking why we run programming pieces, it's because programming is the power in power user. It's the power in our own Power Tools section. And putting power into the hands of individual users is what it's all about.
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OrchidFAX™ is the networkable 9600 bps fax and 9600 bps data modem for the Macintosh computer. Now you can fax or send files direct from your Mac — 24 hours a day. OrchidFAX comes equipped with everything you’ll need to get started, including an extended version of BackFAX, the premier fax processing software.

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"One keystroke can end this rat race."

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"If you want finger exercise, play the piano. If you want productivity, use QuicKeys."

Want to know why users and reviewers love QuicKeys so much? Because an active computer user will stroke the keys over 1.5 million times—and race the mouse endless miles each year. QuicKeys is a fast, simple way to eliminate the boring, repetitive keystrokes you do over and over—and delete hours of tedious menu yanking from your life every year.

Sure, you increase productivity and save time. Big deal. The real value is all the little shortcuts that make computing so much more tolerable.

"QuicKeys makes your Mac do the walking."

"QuicKeys makes your Mac do the walking."

It lets one keystroke eliminate a lot of mousing around. Have one QuicKey launch a program or set up a page. Define keys that enter entire paragraphs, or insert addresses, names or formulas. Anything you do repetitively, you can do in less time, with less aggravation. A stroke of genius.

"Reviewers have spared no keystrokes in praise of QuicKeys."

"Reviewers have spared no keystrokes in praise of QuicKeys."

"MacUser gave QuicKeys a four-mouse rating and an Editor's Choice Award. Robert Wiggins, of MacUser, says 'It could send your mouse to retirement.' MacWorld named QuicKeys as one of the Goodies You Can't Be Without. MacGuide readers awarded it the Golden Gavel. Byte says, 'QuicKeys is right up there with sliced bread, the Great Pyramid of Cheops, and other wonders.' The raves go on and on."

"Go to a dealer and try it."

During the first half of 1990, Apple employees and Apple watchers lost confidence in both Apple and Apple's future. Oh, there were occasional bright moments, such as the rollout of the Mac IIx at an aggressive price and the long-overdue announcement of a one-year warranty, but the overall picture was bleak. Layoffs, internal power struggles, delays and more delays in System 7.0, and a general lack of focus combined to make Apple a less pleasant place to work — and less fun to watch. Apple continued its profit-maximization strategies at what many — mainly third-party developers — felt was the expense of increased market share.

The message that seemed to be coming loud and clear was that Apple didn’t care about its employees, its developers, or even its customers. All Apple seemed to care about was the bottom line. How did the mighty Apple, center of the microcomputer revolution and legendary folk company, come to be perceived as even more money-hungry and less caring than its monolithic, behemoth competitor, IBM? Many theories have been proposed for this reversal, from blaming everything on Steve Jobs, to blaming everything on John Sculley, to — more recently — blaming everything on Jean-Louis Gassée. But if you look way back to some classic behavioral theory, namely the infamous seven deadly sins, you’ll find that Apple has just succumbed to the same lures that have plagued humanity for thousands of years.

1. Pride. Although some might call it arrogance, Apple’s attempts to wrest the trademark on the word Apple away from England’s Apple Corps (the Beatles’ company) is an extraordinary example of pride, not to mention zealousness on the part of its lawyers. In case you don’t know the story: It seems that long, long ago, the two Steves made a secret agreement with Apple Corps for the use of the Apple name. One of the provisions of this agreement was that Apple Computer would never get into the music business. But when Apple brought out its MIDI interface and CD-ROM drive, Apple Corps felt the agreement had been breached. But rather than negotiate a new agreement, Apple’s lawyers went to court in Europe to try to have Apple Corps’ trademarks ruled invalid so that Apple Computer could then trademark Apple itself. Apple lost and managed to irritate the normally laid-back Apple Corps to the point that Apple Corps could end up forcing Apple to change its name, which would be an expensive lesson in pride indeed.

2. Sloth. A company with almost $1 billion in cash that uses a momentary drop in profits as an excuse to cashier hundreds of loyal employees is clearly interested in the shortest possible path to increased profits with the minimal amount of work and with a total lack of concern for who gets hurt in the process. What makes this all the more amazing is that Apple’s employees individually work very hard and often put in long hours, yet the company as a whole can be slothful. In this case, the whole is less than the sum of its parts, thanks to management’s shortsightedness.

3. Lust. This particular sin isn’t committed by Apple as a company, although many Apple employees are guilty of lusting for power, and not just the power to be their best. Apple is notorious for its internal power struggles. Chief Operating Officer Michael Spindler’s ascendance and Gassée’s departure were just the most visible recent examples of Apple’s power politics at work. Many former Apple employees recall the constant incredible political turf battles as one of the reasons they left. And everyone remembers the famous battle that ended with Sculley’s wresting control of Apple away from Steve Jobs.

4. Gluttony. Apple’s attempts to maintain its 52-percent gross-profit margin is gluttony in its purest form. You might also recall the short-lived price increase allegedly due to the DRAM shortage but in fact due to more of Apple’s gluttony for profits. The continuing delays in announcing a low-cost Macintosh are also due to Apple’s gluttony and attempts to skim the market, wringing the most profit out of the existing customer base before trying to increase market share.

5. Envy. Apple envies many companies, chief among them IBM, and has hired many managers and executives from outside in an attempt to emulate its competitors, only to have to let many of the newcomers go when they can’t adapt to Apple’s lack of structure (aside from its Byzantine political organization).

6. Anger. Apple demonstrated a definite capability for
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unreasonable anger with its firing of David Ramsey, a well-known programmer with a well-deserved reputation for helping Apple's customers on his own time. The excuse was that Ramsey had disclosed confidential information over CompuServe's MAUG forums, but the firing was really a reaction to many other leaks of company secrets. In its frustration at being unable to uncover the true sources of its anger, Apple misdirected its ire at someone who was trying to help the company.

7. Avarice. The really bad news is that what Apple seems to covet most is the money in its customers' wallets. Instead of trying to increase market share, the strategy has been to wring the maximum amount of money out of each sucker... or customer. There are cars that cost less new than Apple's Macintosh Portable, IIC, and IIfx—and they get better mileage too.

So is Apple doomed? Apple's sins may seem overwhelming, but contrition is always possible and almost everyone stands ready to forgive Apple even its most heinous transgressions. The golden Apple may be tarnished, proving that Apple does indeed have a lot of brass, but most of us would love to see the shining, gleaming Apple that we remember from the glory days of the Apple II, and later the Macintosh, again.

Let's face it: We all want Apple to succeed, if for no other reason than to continue to give us an alternative to DOS and OS/2. Most Apple watchers expected Gassée to be the catalyst that would pull Apple out of the doldrums when he ascended to the throne. Now that he's gone, we'll have to wait and see if Herr Spindler, the new crown prince, has got what it takes.

Apple still has a lot of potential, and if the sins of the past can be avoided in the future, there's still a good chance that Apple can prevail. If Apple introduces a low-cost Mac later this year, if the company makes an aggressive attempt to build market share, if System 7.0 finally sees the light of day (even with a reduced feature set), and if employee unrest and unease can be stifled, Apple may yet succeed in spite of itself.

But if the current course isn't corrected, 1990 could be the beginning of the end.
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<th>Integra 20</th>
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MacZone page 8 of 8
If you can think of better ways to spend your time than backing up your hard disk, you need Fastback II. It's the world's fastest and most reliable backup software for the Macintosh. It's also the easiest to use, with simplified file selection, adaptable data compression, advanced error correction and other features to make your backups fast and foolproof.

You can even schedule automated backups to take place at any chosen time. Even when you're otherwise occupied.

After all, you have better things to do.
Reviewing Reviews

I never had to worry about product reviews because I used to get everything for free. Now I have to pay for stuff, so accurate reviews mean a lot to me. I've been a developer and a consumer, and although I've never written a review, many reviewers have poured their hearts out to me. My conclusion is that the review process kind of sucks but we can make it much better with a little effort.

The Problems

Reviews in some magazines generally overpromise and underdeliver. Most of us think we are reading in-depth, perceptive, and meaningful reviews that will enable us to make smart purchasing decisions. Instead, we get reviews that are:

Inaccurate. Many reviews don't include any benchmarks and contain simple mistakes and omissions. Reviewers claim products can do what they cannot do and cannot do what they can do. Sometimes it seems the only qualification of a reviewer is to be able to move the mouse and read a table of contents.

Shallow. Magazines compete to be the first to review a new product. Thus, reviewers are forced to review products quickly so that their magazine can beat the others. The rationale is that the first magazine that does a review is on top of things, that the magazine that is on top of things gets more readers, and that the magazine with more readers can charge more for advertising.

Inconsistent. Ever notice that reviews for similar products within a given magazine are often done by different people? If the same person did them, we could compare the reviews of competing products over time and get a feeling for how products compare with each other.

Deceptive. We assume that reviewers have no conflict of interest. That's not always the case. FileFaker consultants who write FileFaker reviews know the product well, but they may also depend on leads and referrals from FileFaker, Inc.

Incomplete. Reviews in car magazines often cover car use over two or three years and 15,000 to 30,000 miles. Such reviews tell us what it's like to own the car months after the honeymoon. In the computer market, reviews cover two or three weeks and 15 to 30 launches. That's not a fair appraisal—no one can thoroughly review PageMaker or QuarkXPress without having published at least one book with the program.

The Victims

One thing you have to say about the review process is that although it sucks, it sucks for everyone. For example:

Reviewers. Pity the poor reviewers. They get three weeks to review four products in 2,000 words for 25¢ a word. That's $500—or roughly what a laid-off Apple employee gets for a half day of doing his old job as a consultant. Reviewers are expected to understand, measure, and critique software plus hundreds of pages of documentation that took three to four man-years to create.

Developers. Developers spend three to four man-years creating a product that a bad review can destroy in a week. Most developers would say that it's OK if the reviewer accurately and fairly finds faults that matter, because no product is perfect. It often doesn't happen this way, however. Rule of thumb: The amount a reviewer harps on a shortcoming is inversely related to how much it affects people.

Magazines. When magazines print reviews, they are earnestly trying to provide a valuable service to readers. In return, they get angry threats of lawsuits and cancellations of advertising by developers, calls and letters from upset fans of products, and demoralized reviewers.

Users. Above all, pity the poor users who read reviews and then buy stuff based on them. Knowing what I know about products and then reading reviews of them, I shudder to think that users are making buying decisions based on what they read.

The Cures

Let me recommend some cures for the problems with the review process:

Compensation. Pay reviewers more. If magazines paid more for reviews, they'd get better people to do them. To get the money, magazines should stop throwing those ridiculous, $100,000, party-envy Macworld

BY GUY KAWASAKI

GUY KAWASAKI

MacUser July 1990 41
how DiskExpress II instantly puts the speed back into your hard disk

Until now, conventional disk optimization was a grindingly slow process which tied up your computer too long and played Russian roulette with your spinning hard drive. Not anymore. Now, ALSoft's new, improved DiskExpress II Release 2.04 is the very fastest and safest disk optimization software ever developed for the Mac. Using revolutionary Disk Optimatic™ technology, only DiskExpress II has the intelligence to work intuitively and automatically to keep your drive optimized forever. DiskExpress II also has built-in extra sensitivity to any kind of user, serial or file activity, making it totally transparent in a work situation. So, you'll not only notice much faster disk performance than ever before, you'll see a dramatic improvement in file access times and in your productivity, right from the very first time you optimize. After all, when it comes to speed and your hard drive there's always a little varoom for improvement. To order the new, improved DiskExpress II Release 2.04, call ALSoft today.

ALSoft, Inc.
P. O. Box 927 • Spring TX 77383-0927
713/353-4090 SALES • 713/353-9868 FAX

Please circle 71 on reader service card.

Expo bashes. What would you rather have, better parties or better editorial?

Patience. Give reviewers more time to use the products. And give them fewer products to review. This means that magazines need the courage to believe that good reviews are more important than immediate reviews for their readers.

Openness. Contact the developers prior to publishing a review, to discuss the problems and shortcomings. Give developers the opportunity to explain why the problems and shortcomings aren't as serious as they seem. (This recommendation will never fly, because magazines believe that developers will get upset if they know what's coming and will call their ad-sales reps to try to squelch the review.)

Commitment. Commit to longer-term reviews. Magazines and reviewers need to commit to reviews of multiple products over a longer term. Then we can get a better idea of how programs compare with each other and what it's like to use a product after the honeymoon.

Full disclosure. Provide more information about reviewers, such as educational and professional background. It's OK to be a FileFaker consultant and review FileFaker, as long as readers are aware of the bias. Any person who's a consultant for the developer or its competitors should be banned from the category. Period.

One Last Thing

This column isn't going to change the system, so you know that reviews will still be flawed. That's where common sense comes in. Reviews provide only a starting point to help us make our decisions, so we need to ask around. Rule of thumb: Talk to two people for each $100 that the product costs.

Ultimately, we have the most to gain by making an intelligent product purchase and the most to lose by making a dumb one. It's our responsibility to separate fact from fiction.

[We know Mr. Kawasaki can't be talking about us; MacUser's review/reviewer policies coincide with nearly every item on his wish list—except he left off the one about properly compensating the tireless editors who have to deal with all those well-paid columnists . . . —Ed.]
This mouse will glide you across the big screen.

Abaton engineered the ProPoint to whisk you around your big screen faster and smoother than the average mouse. You see, the original Mac mouse was designed for the original nine-inch screen. And while displays have grown, the original mouse hasn’t. The Abaton ProPoint was designed specifically to help desktop publishers glide around large displays with ease.

With the ProPoint, you move just the billiard-sized ball — instead of the whole mouse. So you can cover your desk with papers and still cover your entire display with just a flick of the wrist. Using optical technology (rather than the traditional mechanical), and electronic acceleration, the ProPoint moves quickly across even the largest screen. And our lock button lets you select and reposition an item, paragraph, or group without holding down a button while you move. Giving you greater accuracy and agility with less effort.

Which makes design, illustration, and paste-up much easier on the Mac.

If you own a big screen, shouldn’t you own the mouse designed to glide around it. Call Abaton at 1-800-444-5321. With the Abaton ProPoint, all your big ideas will be easier to publish.

Abaton

Please circle 56 on reader service card.
Not an unusual claim for a 4-star restaurant. But for a monitor, it’s quite a story. With NEC’s multiple-frequency technology, our monitors can accept all kinds of video cards for applications ranging from standard desktop software to large-screen graphics design. And your NEC dealer has several different Macintosh-compatible MultiSync® monitors he’d be glad to show you. In fact, he might even take plastic.

MultiSync GS2A Superior gray-scale monitor, 14" flat-surface screen. Supports the Macintosh II video card and compatibles. Ideal for desktop publishing.

MacSync™ Series Designed exclusively for Macintosh II video card and compatibles. Available in both non-glare and new high-contrast 14" screens.

All major
cards accepted.


MultiSync 4D Resolution from standard Macintosh II card, 800 x 600, up to 1024 x 768. Choose your own dpi on a 16" screen. Microprocessor digital controls.

MultiSync 5D Resolution from Mac II card and compatibles up to 1280 x 1024 on a 20" screen for graphics design. Microprocessor digital controls.

For literature call NEC at 1-800-868-2255. For details call 1-800-FONE-NEC. In Canada, call 1-800-868-3997.

Please circle 83 on reader service card.
A Day in the Life

In the movie Look Who's Talking, Bruce Willis provided a vocal narration of a typical day in the life of a post-baby-boomer baby. That made us wonder about what kind of internal dialog your Mac has with itself. Mr. Willis nixed our proposal for a sequel, so you'll have to provide your own audio track for our version of what your Mac really thinks about everything you put it through.

By Guy Kawasaki

8:00 A.M.
Man, it's early. I don't know why they leave me on all night. They think it's cute to have all those fireworks going off all night, but those dumb things give me nightmares so I can't sleep. It was cold last night—I felt like my disk drive was stuck in glue.

6:00 P.M.
I just know I've got a virus—I've been unexpectedly quitting all afternoon. I'm feeling a little raw around the resource fork. I tried telling these yoyos that they should buy SAM. I hope everyone leaves me alone for a while. Fireworks aren't so bad. It sure beats doing Windows.

10:00 A.M.
Right on, here comes Beth. (And people wonder why my startup icon smiles. I love what she's done with her hair.) She's setting me up to automatically read and print her E-mail. Don't leave me! OK, OK, I'll get the mail. Not much here—just a bunch of junk mail from developers.

10:10 A.M.
Might as well print the mail and get it over with. Yo, AppleTalk, you awake? Oh . . . you were going as fast as you could. Yo, LaserWriter. For the royalty you get, you ought to print a little faster.

5:30 P.M.
Oh no. Here he comes. Joe Red-Hot-MBA Puke-Yellow Tie. What's he doing here this late? Must be trying to impress someone. He's booting PowerPoint. It figures—he's got to do one more of those content-free presentations. I'm going to fragment my memory. Here you go, bozo—"PowerPoint cannot be launched. Most likely you don't have enough RAM. Try quitting another application." It worked. He's going to the PC.
A box is coming. I wonder what's in it. What's a Radius Pivot? Uh, oh, they're opening me up and sticking in a board — wait a minute, did I ask for this? Now I'm seeing double, and one eye is bigger than the other. Whoa — why are you rotating me? Things are getting dark. I think I'm passing out.

Seconds later: Now everything's wider than taller, and the landscape looks different. Ha! My buddies with the Apple monitor can't do this.

2:00 P.M.
Oh gawd, here he comes: Mr. Geek Chic. Nice of you to drop in so early. It's bad enough that his hair sticks up like Dennis the Menace's and his breath smells like a swamp, but he has to check AppleLink, MCI Mail, CompuServe, and America Online ... like anything important is going to be there since he last checked an hour ago. Good, he's going to play foosball.

3:00 P.M.

NewsLine
Reports and Analysis

JUDGE JUNKS XEROX SUIT
SAN FRANCISCO, CA — Less than four months after Xerox sued Apple Computer, charging the computer maker with copying Xerox's Star system for the Lisa, Macintosh, and Finder, U.S. District Judge Vaughn Walker threw out five of the six counts in the $150 million suit. Xerox plans to appeal in August, when the remaining count will be heard.

APPLE BUSTS CLONE MAKER
TAIPEI, TAIWAN — Taiwanese police, working on a complaint filed by Apple Computer, raided the offices of Akkord Technology and Pile Computer, makers of the Mac clone known as the Jonathan. Apple obtained a unit and found that it contained allegedly illegally copied Mac ROMs and other software. Akkord's spokesman said that the Jonathan was not being sold and had only been constructed as a demonstration model. Apple's complaint charges five people with copyright and trademark infringement.

JUDGE SQUASHES '030
AUSTIN, TX — In a bizarre climax to a fractious copyright-infringement suit between Motorola and Hitachi, U.S. District Judge Lucius Bunton issued a ruling that bars Motorola from selling its 68030 chip — the heart of most of the Mac line — in the United States. The ruling ordered the companies to pay fines to each other. It also banned Hitachi from selling its HS microprocessor and Motorola from selling its 68030 chip for the duration of the Hitachi patent. The judge charged both companies with violating each other's patents and strongly criticized both litigants for bringing the suit in the first place. Bunton agreed to stay the enforcement of his ruling to allow time for Motorola to file an appeal. Industry observers believe that Bunton's ruling was intended to force the companies to reach an out-of-court settlement as soon as possible.

LOTUS EATS NOVELL
CAMBRIDGE, MA — Lotus Development and Novell have agreed to a $1.5 billion stock swap that will merge the two companies and thus create the largest independent personal-computer-software publisher, relegating Microsoft to the unfamiliar position of No. 2.

MacUser July 1990 47
Bobker’s Dozen

1. **Disk Doubler**
   - The price of permanent storage keeps dropping, but hard-disk drives are still expensive and floppies can hold only so much. Disk Doubler is a neat package that helps you make the most of the space you already have. The main working part of the package is an INIT that puts a DD menu into all your applications. This short menu has file-compression and -expansion options that let you store files in substantially less disk space.
   - Disk Doubler is a very efficient compressor. It’s noticeably better (that is, the compressed files are smaller) than Stuffit, the current standard. There’s a Disk Doubler application, so files created by the INIT can have distinctive desktop icons and can be expanded with a double-click.
   - Performance is outstanding. I’ve discovered no conflicts with any of my INITs. If only Disk Doubler could read Stuffit files — that’s promised for an upcoming version — it would rate as the best of its kind.
   - Salient, 3101 Avalon Court, Palo Alto, CA 94306; (415) 852-8597. Version 1.0. $59.95.

2. **DiskExpress II**
   - The best hard-disk optimizer recently got better. DiskExpress II is much quicker and better than its predecessor, DiskExpress. It is by far the best hard-disk optimizer (or defragmenter) available.
   - DiskExpress II is controlled by a well-designed cdev and can be set to run automatically (Disk Optimatic), in the background (or at a regular preset time), or manually. Since I don’t trust any program that’s running automatically in the background, I rarely use the automatic mode. That’s OK, because DiskExpress II is fast enough to run manually (after, of course, a full backup). DiskExpress II is capable of several levels of optimization, and when used judiciously, it does a perfect job of optimizing your disk.
   - Also, P.O. Box 267, Spring, TX 77383-0267; (713) 353-4090. Version 2.04. $89.95.

3. **Disk Ranger**
   - Disk Ranger is primarily an excellent file-cataloging program. It’s quick and has superb filtering abilities (so you can catalog exactly what you want and no more), plenty of useful sorting options, and good report-printing ability. It would rate highly even if that were all it could do.
   - It comes with a DA, Ranger Reader, that reads the catalog files Disk Ranger creates and searches effectively for files. Disk Ranger also prints decent labels — on ImageWriters only, but in color if you have a color ribbon. The package comes with a supply of pinfeed labels. Disk Ranger can also “scrunch” — or defragment — files of a user-specified size and larger.

4. **Hard Disk Util**
   - Some useful programs are still blighted by copy protection. That’s unfortunate but a fact of Mac life. As long as such programs exist, you’ll need tools such as Hard Disk Util. The latest version of this old standby (along with its ancillary utilities) is still a useful and excellent performer. It can put an unprotected copy of virtually every business application that is still protected onto a floppy or hard disk. It also deprotects many education and entertainment programs. Operation is quick and simple. Just be sure to check that Hard Disk Util can handle the software you need to deprotect.

Everything works quite smoothly. The optimization isn’t of DiskExpress quality, but it’s OK.
**BOBKER'S DOZEN**

6 **MicroRX SE1**

Who do you call when your SE breaks down? Certainly not Ghostbusters. If you have the MicroRX SE1 stack, you can use it (on another working Mac) to diagnose the problem and either fix it yourself or tell your repairperson exactly what’s wrong. The details are meant for qualified service techs, but anyone can use MicroRX to gain a much better knowledge of what’s inside the SE.

MicroMat does repairs and also sells do-it-yourselfers the necessary parts. This volume is the first in a planned series that will cover all Apple CPUs and printers (the price includes four updates). It’s nicely done and easy to use and can save you a lot of money if your SE fails. It can also help you learn more about your Mac.

*MicroMat Computer Systems, 7075 Redwood Blvd., Bay 4, Novato, CA 94947; (800) 828-6227 or (415) 889-6227. Version 1.0. $100.*

7 **CleanPath Computer-Controlled Maintenance Kit**

The power in your computer is electronic, but its human/computer interface is physical. The interface gets dirty and degrades performance. Discwasher provides tools and software (in a large plastic case) that let you clean your screen, keyboard, floppy-disk drive, and dot-matrix printer (print head and platen). The kit provides special cleaning fluids, wipes, swabs, and two drive-cleaning disks. The supplies should last for more than a year if you have a single computer with one or two floppy-disk drives. The cleaning materials are high quality, easy to use, and effective.

*CleanPath Computer-Controlled Maintenance Kit. The product name is a bit misleading. The kit contains crude software that can tell you if it’s time to use the cleaning tools, and each element of the kit has on-screen instruction sheets. This is not computer-controlled. You might be able to find the cleaning materials separately for less, but having them all together in a storage case is useful for the cleaning-impaired. Even if your work environment is reasonably clean, dust can collect on your Mac pretty quickly. Regular cleaning can keep your Mac healthy longer.*

*Discwasher, 4310 Transworld Road, Schiller Park, IL 60176; (708) 678-9600. $59.95.*

8 **State Data**

As sources and amounts of data increase, so does their ability to overwhelm us. State Data is a series of stacks that presents a tremendous amount of information about the 50 states. Teachers will find these well-designed and -integrated stacks a useful resource, and curious students will get a taste of what sort of data is available.

There are some flaws. The data sources are several years old. If you want more-current data, you can gather and enter it yourself. Although extensive, the data set often seems limited, and some of the selections, such as those of places to visit, seem strange. In sports, the emphasis is entirely on professional teams. State Data is a nice supplement to a social studies or geography course, but it isn’t a stand-alone tool.

*State Data is a series of stacks that presents a tremendous amount of information about the 50 states. Teachers will find these well-designed and -integrated stacks a useful resource, and curious students will get a taste of what sort of data is available.*

*State Data is a series of stacks that presents a tremendous amount of information about the 50 states. Teachers will find these well-designed and -integrated stacks a useful resource, and curious students will get a taste of what sort of data is available.*


[Box 9]

Better Working: The Resume Kit

The résumé is one of those staple documents most of us like to have up-to-date and handy. It's reassuring as well as useful. Better Working: The Resume Kit is a port of a fairly popular MS-DOS program. It does an adequate job of structuring simple résumés but ultimately isn't much better than a good word processor.

For example, I sometimes found it impossible to select a font; more formatting options are clearly needed. What the program could really use is some good examples and templates. The Resume Kit is a good place to start, but that's not really enough.

Spinnaker, 1 Kendall Square, Cambridge, MA 02138; (800) 323-8088 or (617) 494-1200. Version 1.0. $59.95.

[Box 11]

Draw Tools

MacDraw II is an excellent draw program and the best-seller in its category, but it could be better. Draw Tools self-installs three DAs directly into the application.Sizer does exact scaling and dimensioning; calculates enclosed areas; and lets you resize a drawing, either absolutely or relatively. You can lock corners or edges before doing any resizing operation. Adjacency brings together any two selected objects; it's more precise and much faster than zooming and manually moving elements. Tools adds a handy menu that lets you clip or extend existing lines and build fillets.

These valuable features add significant CAD power to MacDraw II. There are some limitations on when the tools can be used, however (they don't work on imported bit maps, for example), and sometimes they're a bit awkward to use. Overall, though, they make an excellent add-on for users of regular MacDraw II.


[Box 13]

Remember?

Remember? is a nice shareware INIT that lets your Mac remind you of what you said you'd do. Every time you start up, if you've entered a note for the day via Remember?'s DA, it puts up a window with the details. The occasion list is easy to maintain. The DA also lets you check your calendar for the week ahead and other time periods.

Implementation is clean — Remember? lacks only a keyboard command equivalent to make it go away — and it behaves well. Sometimes the window appears when you think something else will happen, but nothing has ever been harmed or damaged. And with Remember? helping me, I now get to most of my meetings.


[Box 10]

KeyLock

Computer security is never simple one-step process. Just as there are many ways to breach the defenses of a computer, there are many ways to keep it safe. KeyLock, a Swedish product, deals with two of the doors into your computer. The most important element is a piece of hardware that is inserted into the floppy-disk slot and physically locked. It prevents other people from bypassing your software security by booting from a floppy disk. It's also useful for computers that are displayed on dealer's floors or at shows. The number of people who walk up to such computers and attempt to copy software from them is astounding. KeyLock stops that practice cold.

The software portion of KeyLock, called PSW, consists of an INIT that demands a correct password during startup and a DA that darkens the screen and requires the same password in order to give up control. Both parts are reasonably effective but — without the hardware lock — can be bypassed by booting with a floppy that has a System and Finder.

VikingTech, 533 1/2 Via De La Valle, Suite E, Solana Beach, CA 92075; (619) 762-1386. $129.95.

[Box 12]

Backmatic

Most computer users don't back up nearly often enough. Remembering to do an incremental backup at the end of the working day is often one chore too many. Backmatic is a tool designed to solve that problem. It's an INIT (with a clever) that scans your hard disk whenever you shut down and backs up all files that have been changed since it last ran. The backup can be to floppy or to a folder on your hard disk or server.

Since you may neither want to back up all changed files nor have the room or time to do so, the ability to exclude files is important. Backmatic has wide-ranging and easy-to-use exclusion abilities.

Backmatic isn't quick (it scans all the disks on-line before acting), but it is utterly reliable. Backing up is an essential part of safe computing, and the one thing that stops users doing it regularly is that it's tedious. For automating a daily backup, there's no better utility.

Magic Software, 2206 Franklin St., Bellevue, NE 68005; (402) 842-6243 or (402) 291-0670. Version 1.03. $99.95.


EYESORE VS. EYE PROTECTION

As today's monitors get bigger and brighter, anti-glare filters become less of an option and more of a necessity.

The right filter can combat eye fatigue, help eliminate headaches, even reduce overall body stress.

Yet, the irony is that something so good for your eyes can be such an eyesore.

In fact, most filters look like they belong to someone else's system.
The fit is sloppy. The colors don't match. The materials are different.

Kensington has a different idea.
Instead of making a filter that will fit on any monitor, we make filters that will only fit a specific monitor.

An example is our Maccessories® SE Anti-Glare Filter.

It looks so much a part of the SE, you would think it was designed by the same people who designed the SE.

The styling is complementary. The color identical. Even the same material is used.

And unlike generic filters, the fit is perfect.

So light passes through the filter, never around it.

Kensington uses only optical quality glass with a ceramic anti-reflection and scratch-resistant coating.

The result is a 96% reduction in glare. And an improvement in contrast and clarity of up to 20 times.

In short, the most advanced eye-protection system you can find today—it even filters out VLF and ELF radiation and dissipates static.

Kensington has custom designed screens for the Mac, Mac Plus, Mac SE, Apple IIgs, as well as for the entire Mac II family of large screen monitors.


Maccessories, Kensington and the Kensington logo are registered trademarks of Kensington Microwave Ltd. Apple and Macintosh are registered trademarks of Apple Computer, Inc. © 1990 Kensington Microwave Ltd.

Please circle 171 on reader service card.
Death
Taxes
Software Piracy

We can save you from one of them.

Sorry. Death we can't do anything about. As for taxes, when you use our product you'll probably wind up paying more. But software piracy: there we offer some help. Our family of software protection devices (dongles) have improved unit sales for over 2,000 companies around the world. Our products can be used in the Macintosh, MS-DOS, and OS/2 environments.

Build Your Own Custom Protection Environment

Use our patented “dual-locking” ASIC chip as the basic building platform. Next, add options like: on-the-fly read/write memory, write-once or multiple-write locking codes. Then add your own programming creativity to build a protection environment best suited to your product.

Users attach the device to their SCSI port, and programs won't run without it. Back-up copies, hard disk and AppleTalk operation are not interfered with.

Your Intellectual Property Belongs To You

And if you don't protect it, who will? Our products offer the most equitable way to protect your interests without sacrificing the rights of your customers. Call us today for information and demonstration units.

Software Security

1011 High Ridge Road - Stamford, CT 06905
1-800-333-0407 ext. 107
203-329-8870 Fax 203-329-7428 BBS 203-329-7253
AppleLink™ D2379

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Macintosh, AppleTalk are trade marks of Apple Computer Inc., Activator, Macivator are trade marks of Software Security, Inc. Illustration: detail from Michelangelo's Last Judgement
Photoshop
Adobe's 32-bit photo-retouching program blends power with simplicity.

Photoshop combines powerful image-editing capabilities with an unintimidating interface. It's easy to use right away, and the more you get to know it, the more you benefit from Photoshop's tools, modes, options, and special layers.

POWER WITHOUT PENALTIES You don't need a megasystem to run Photoshop, but a hard-disk drive with adequate free space is a must. In 2-megabyte or MultiFinder configurations, Photoshop uses its own virtual-memory scheme. Photoshop also lets you work with 24-bit images, even on 16- or 8-bit hardware. The dithered colors are quite acceptable. As much of Photoshop's work is compute-intensive, graphic accelerators don't help, but a faster CPU does.

Photoshop's editing tools extend the typical set found in retouching software. The eraser, pencil, brush, airbrush, smudger, and edge-softening water drop are there, plus a sharpening tool, a graduated-fill tool for linear or radial gradients, an anti-aliased (nonjagggy) line with optional arrowheads, and a rubber stamp that lets you easily duplicate part or all of an image by simply painting it, instead of copying and pasting. Both the eraser and rubber-stamp tools can erase a part of the current image down to its last saved version.

Teamed with ATM, Photoshop applies smooth-edged, anti-aliased text to your image. The image-editing tools style or process text in infinite ways.

Most tools have customization settings to determine how quickly they act and what aspects of the image they modify. Some basic modes include Normal, Color Only, Darken Only, and Lighten Only. The paintbrush and airbrush can take advantage of Wacom's line of pressuresensing digitizing tablets (see the review, June '90, page 64).

FLYING COLORS Photoshop includes important photo-editing functions such as brightness and contrast control, color balance, hue/saturation modification, and equalization—all of which you can fine-tune to your specifications. When it's time to apply new colors to an image, you can select hues in a variety of ways, including using a special color picker or an Option-key-activated color sucker that grabs a color from any open document. Or you can do it visually or numerically with RGB, CMYK, or HSB entries. You can also mix your own colors with the floating color palette, which has its own paint-mixing area.

The paint's transparency can vary from 0 to 100 percent, letting you create ghost-like overlays, simulated reflections, blended edges, and subtle tints. You can make custom tool shapes (up to 64 x 64 pixels) and custom color patterns from any rectangular image selection.

Photoshop's Paste Controls let you control the interaction between a pasted selection and the receiving site, so you can adjust the overall transparency and high and low ranges of all the colors that comprise the final overlay. For example, you could prevent all the reds in a selection from being pasted or project the background's bright greens from being affected by a paste.

Photoshop can work with documents in several color depths. The 8-bit-indexed-color mode, regardless of your display's capability, limits editing actions to selecting, cutting, and pasting. You can't do anything directly to the image colors—any changes you make must be done to the 256-color palette, which will create color changes overall. In gray-scale mode, you're limited to 256 gray, but you can still use all the tools. You can also convert a document from one color mode (1-, 8-, 16-, 24-bit) to another, but you'll lose some aspects, such as smoothness in color transitions and diversity in the color palette, if you convert down to a shallower format.

NATURAL SELECTION Photoshop's selection tools, with capabilities similar to those in Silicon Beach's Digital Darkroom, give you excellent control over selection areas. Tools include a marquee, an oval, a lasso (which can also serve as a polygonal selector), and a magic wand worth its weight in 32-bit pixels. The wand automatically seeks the edges of the color region in which you click. You can vary its color-seeking range from exact to approximate, so clicking in a yellow spot can either capture only very similar yellows or extend into orange areas. A selection made with any tool can also be expanded manually to include areas of similar colors. You can even select discontinuous areas of similar colors everywhere in the image.

Using selection tools and key modifiers, you can add or subtract areas from an existing selection. You can also toggle between selected and unselected areas. And in order to blend the edges of a selection into its receiving site, you can feather its borders.

Photoshop packs a lot of power into a package that's still easy to use. This image is a composite of two scans plus gradient-filled anti-aliased text. The paintbrush in the Color Only mode turned the headband from pink to blue without effecting details. The vase contains several extra flowers that are modified clones.
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Selection tools offer a quick way to mask the rest of the document from accidental change. Paint and other editing actions affect only selected areas. You can apply ordinary and special effects to just a selection or to the whole image. Effects include those of all the color tools and image filters, plus resizing, distorting, and rotating.

**INS AND OUTS** Photoshop is able to import and export more than a dozen file formats, including EPSF, TIFF, PICT file, PICT resource, Amiga IFF/ILBM, Compuserve GIF, MacPaint, PIXAR, PixelPaint, Scitex CT, TGA, and ThunderScan. Given enough information, it can even import files in new or undocumented formats. Output options include whole-image printing and color separations. You can control halftone screen type, frequency, and angle and apply a set of duotone factors, called Transfer Functions, that enable you to adapt Photoshop's halftone printing to the idiosyncrasies of your imagesetter, printer, or stock.

**THE BOTTOM LINE** Photoshop is an excellent investment for any organization, whether it handles color bit maps. Although it’s not a complete substitute for a high-end dedicated system, it makes powerful photo editing accessible, painless, and easy. It's an excellent choice for most day-to-day image work.

— Salvatore Parascandolo

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**GRAPHICS & DESIGN**

**Image Analyst and Enhance**

**When it comes to image processing and analysis, these packages cover both ends of the spectrum.**

Now that both image processing and photo retouching have come down to the Mac from mainframes, the distinctions between the two techniques are blurring at the edges. Some image-manipulation tools (such as filters) traditionally used in image processors are now found in graphics programs such as Adobe Photoshop (see the preceding review). But with scientific image processing for medical research, aerospace, and robotics, the goal is not to alter the picture but to extract quantifiable data. Image Analyst takes the high-end data-analysis road, while Enhance tread a fuzzy line between graphic arts and measurement.

**IMAGE ANALYST** Those familiar with image processing on high-end hardware will be amazed at what Image Analyst can do. In a matter of minutes — and without any programming — you can set up a process to identify and analyze any element of an image. Measurements and statistics can be automatically or interactively generated from TIFF or PICT files or from captured video images.

Image Analyst recognizes items in images based on size, shape, and position. In fact, Image Analyst grew out of Automatix’s RAIL (the Mac version is called MacRAIL) programming language, developed specifically for image processing and robot vision and control. For those who want a custom application, IA/Source ($6,000) contains the Image Analyst/MacRAIL source code and development environment.

Image Analyst directly supports the Data Translation and Scion frame grabbers. A menu command lets you capture images from a video camera, VCR, or other NTSC or PAL device. You can even buy a microscope hookup from Don-santo, a distributor of Nikon microscopes. Image Analyst controls your captures,

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**Get Info**

**Photoshop**

Published by: Adobe Systems,
1585 Charleston Road, P.O. Box 7900, Mountain View, CA 94039-7900; (415) 951-4400.

Version: 1.0.
List Price: $895.
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Image Analyst is a high-end tool for image analysis. This microscope image was originally gray scale, but color was added for greater definition. The rectangles are areas in which automatic analyses can be set up. Statistics are automatically generated in the Blob and Samples windows. The Profile window is displaying the gray values along a line below it.

and you can calibrate each image so that measurements are reported in real-world values: metric, English, or pixel. The color can also be calibrated with the ILUT (input lookup table) tool to change pixel values before you do any processing.

There are two types of files: the image itself and a Sequence file, which contains the processing, measurements, and analysis you set up. Sequences can be named and saved independently of an image, so you can easily keep track of common measurements. You benefit from having separate files because sequences can be used over and over on different images, and you have to set them up only once.

Automated sequences are set up in ROIs (regions of interest), which are represented by movable, resizable boxes on top of an image. Inside an ROI, Image Analyst can find the distance between edges or the centers of holes, the area of a shape, or the average thickness of a cell wall. You don't even have to define the measuring points: Image Analyst finds the center, edge, or other positions for you.

In addition to using the automatic sequences, you can work interactively, using the 12-item tool palette. The profile tool can help you pinpoint the exact edge of an object by displaying a graph of the pixel gray value along a line you draw. A cursor on the graph corresponds to a moving cursor on the line.

You use the measurement tool to make interactive measurements. Just draw a line anywhere on the image, and the line's measurement appears in a small window. The blob tool automatically generates statistics for shapes, and the sample tool generates statistics for pixel or line measurements. Both tools let you save a statistics file, which can be updated from within Image Analyst.

I have focused on measurement, but Image Analyst's image-manipulation features are substantial and very useful for filtering out nonessential elements or for bringing out features in an image. You can select color ranges for processing in several ways — via histograms, a CLUT (color lookup table) tool, or the ILUT tool.

The standard Apple Color Picker is used to change the color of any of the graphs, text, and lines, as well as the palettes in the CLUT and ILUT. You can make text permanent on the image or leave it in editable windows.

It's not difficult to learn Image Analyst, but the process is hampered by a poor manual. Although well illustrated, it's not well written, often using terms without defining them. Also, the images used in the tutorial are not provided with the package. In fact, no sample images are provided. For $2,000, you expect a little more help.

**ENHANCE** Enhance is a low-priced image processor suited for researchers with lighter data-extraction needs or graphic artists who are familiar with image processing. It doesn't have nearly as many measurement tools as Image Analyst does, but it does have a densitometer, and tools to measure things like center of mass and perimeters are in the works. What really carries Enhance are the graphics tools of a first-class photo-retouching program.

The ruler tool works like Image Analyst's measurement tool, except that it also gives you angle measurement.

Lengths are displayed in both metric and English units, from microns to kilometers and inches to miles. The calibration isn't automatic as in Image Analyst: You have to tell it how many pixels per yard. It is not as accurate either, because it doesn't account for nonlinear effects from lenses.

Enhance can alter images so that a trained eye can get qualitative information from them. Filters — special effects based on mathematical algorithms — are one way to bring out hidden features. If you count the variations, Enhance has approximately 80 filters, all menu choices. If you know what a "Laplacian, Medium Noise" filter is, you're in luck; if not, you'll have to learn what the filters do in order to get the most out of them. You can easily modify filters or create them from scratch by using the Convolution command in the Filters menu.

A very nice image-handling feature is the buffers palette, which can display up to three thumbnail versions of the image you're working with. If you want to prevent alteration of a version, you can lock a buffer. The buffer tools also enable you to display two of the buffers as a split screen in the full-sized window.

Enhance comes with a good stable of paint tools, including a spray can, brush, pencil, and smudge to blend colors. There are also text and shape-drawing tools. Enhance's masking abilities are also quite useful to graphic artists. To create a mask, you can select an area to fill in black or

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Enhance blends technical-image processing with high-level graphic-arts tools. Two different versions of an image, taken from the buffer palette at the left, are shown here in split-screen mode. The magnifier tool is used on the moth on the right. The histogram and color palette are also shown.
use the filtering tools to create black areas.

Other tools give you lots of control over your image. The zoom tool is one of the best I've seen, offering several methods of enlarging or shrinking images. Even more useful is the magnification tool, which turns your cursor into a square magnifying glass and magnifies a portion of the image as you pass over it.

Files can be saved as TIFF, PICT, EPSF, or text, although EPSF files cannot be imported. Like Image Analyst, Enhance suffers from a weak manual. There are plenty of sample images but no tutorials at all.

**THE BOTTOM LINE** Image Analyst is to scientific image processing what Photoshop is to image manipulation. Enhance falls short of both Image Analyst and Photoshop, but it is the only package on the market that combines elements of both. I can recommend both of these programs, but for different users: Image Analyst is for high-end-data gatherers, and Enhance is for lower-end-data gatherers with high-end graphic needs.

Both are 8-bit-color, gray-scale programs with excellent interfaces (although you'd never know Enhance was a color program from looking at its black-and-white packaging). Both require a Macintosh II or later, but Image Analyst needs 5 megabytes of RAM (I recommend 8 megabytes); Enhance requires only 2 megabytes. Enhance is a great value as a graphics program; Image Analyst costs five times as much but is a bargain compared with similar technical software on minicomputers and workstations.

— John Rizzo

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### STORAGE

**FastBack Tape**

Packing an excellent tape drive and backup software into one box produces a solid one-stop backup shop.

Fifth Generation Systems recently entered the Mac hardware market with FastBack Tape, a 128-megabyte tape drive bundled with a new version of the firm's general-purpose backup utility, FastBack II.

**THE TOTAL TAPE SOLUTION** FastBack Tape includes everything you need to back up your precious data in one convenient package: an FB120 tape drive, FastBack II 2.10, manuals for both, a SCSI terminator block, one preformatted DC 2110 minicartridge, and all the necessary cables. (For a review of FastBack II 2.0, see October '89, page 62.)

The FB120 tape drive is a SCSI device, with a push-button switch on the back for setting its SCSI ID. It contains the same 3M MCD Series II mechanism used in the Tecmar QT-Mac80, which garnered the only five-mouse rating in our December '89 Lab Report, "Getting It on Tape," page 189. These drives read from and write on quarter-inch tapes adhering to the QIC-128 standard, and they can also read from — but not write on — tapes created on QIC-100 drives, most notably the Apple Tape Backup 40SC.

The DC 2110 minicartridge is smaller than a pack of cigarettes but can hold up to 86 megabytes of data. An extended-length version of this tape, the DC 2165, can hold 128 megabytes. And with the improved data-compression algorithm of FastBack II, you can squeeze up to 80 percent more information onto a tape, depending on the contents of your files.

**BACKUP BENCHMARKS** Using a Mac II with 2 megabytes of memory and the Control Panel RAM Cache set to 32K, I timed the FB120 as it backed up a 5-megabyte data set from an internal Quantum 40 hard-disk drive. The FastBack Tape had a respectable showing of just under 2 megabytes per minute. That may sound mighty fast, but keep in mind that other backup media, such as 44-megabyte SyQuest removable cartridges, offer even better performance.

FastBack Tape is a solid piece of hardware, and the new version of FastBack II is a good program done one better (it now features DAT support, file selection by color, and preservation of AppleShare privileges. In addition, Fifth Generation Systems offers free — but not toll-free — telephone support from 8 A.M. to 5 P.M. CST, Monday through Friday. You can obtain technical help on-line through AppleLink, Compuserve, GEnie, MacNET, and Fifth Generation's own bulletin-board system.

**THE BOTTOM LINE** FastBack Tape is a combination of a 120-megabyte tape drive and the latest version of FastBack II in one package. The FB120 can store more than 128 megabytes on a single minicartridge.

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Get Info

**Image Analyst**

Published by: Automatix, 755 Middlesex Turnpike, Billerica, MA 01821; (508) 667-7900.

*Version: 7.1.*

*List Price: $2,000.*

**Enhance**

Published by: MicroFrontier, 7650 Hickman Road, Des Moines, IA 50322; (800) 388-8109 or (515) 270-8109.

*Version: 1.01.*

*List Price: $375.*

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**FastBack Tape**

Manufactured by: Fifth Generation Systems, 10049 N. Reiger Road, Baton Rouge, LA 70809-4559; (800) 873-4384 or (504) 291-7221.

*List Price: $1,395.*
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*Most manufacturers (including Apple) get a little nervous about non-authorized personnel (that means you) working inside their machines. Be advised that opening your Mac may void the warranty, so check with your dealer if you're concerned.
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5910 FileMaker II & MacWrite II Bundle... $289.
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<td>MicroWrite II</td>
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<td>3455 MicroPhone II 3.0—New version of top-selling telecom software. Build graphic front-ends to remote services &amp; corporate mainframes. Supports XCMDs &amp; XFNs, ZMODEM, icons, European languages, color &amp; sound $215.</td>
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**Dow Jones** ... 30 day MBG | $1786.00 |
**Electronic Arts** ... 30 day MBG | $1543.00 |
**Fox Software** ... 30 day MBG | $5572.00 |
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**Franklin Software** ... 30 day MBG | $7070.00 |
**Informix** ... 30 day MBG | $4955.00 |
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2864 Excel in Business Book... $18.
5454 The Microsoft Office... $525.
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5048 EndLink 1.1.3... $58.
4600 EndNote 1.2.1... $75.
2884 WordPerfect 6.0B... $177.
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2865 Excel 2.2A... $245.
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6926 myDiskLabeler III 3.0—Designs, reads and prints disk labels.......................... $49.
4976 StickyBusiness 1.2—Merges text and prints graphics for over 300 different labels, cards, and envelopes for over 89.
6927 StickyBusiness Plus 1.2—Prints bar codes 149.

*Portfolio Systems ... 30 day MBG
6916 Dynex 1.1 .................. 57.
*Preferred Publishers ... 30 day MBG
4781 Vantage 1.5 .................. 52.
4780 DataBase 1.5 .................. 68.
*ProVUE ... 60 day MBG
4582 Panorama 1.5 .................. 249.
3320 BulkMailer 3.25 .................. 75.
*Reference Software ... 30 day MBG
6268 Grammatik Mac 1.0 .................. 51.
3375 Sensible Grammar 1.5.8 .................. 51.
4692 Bookends 1.2 .................. 51.
*Softsync ... 30 day MBG
7129 Accountant, Inc. Professional 1.03 .................. 345.

*Spinnaker ... 30 day MBG
6506 The Resume Kit .................. $35.
*Survivor Software ... 30 day MBG
6097 Invoicit 1.01 (reals. MacMoney) .................. 49.
3289 MacMoney 3.5 .................. 59.
*Symantec ... 30 day MBG
3422 More 3.0 .................. 265.
6069 KeyPlan 1.0 .................. 243.
*Symmetry ... 30 day MBG
4504 Acta Advantage 1.02 .................. 63.

*Synergy ... 30 day MBG
6617 KalediaGraph 2.0.2 .................. 145.
*TIMESLIPS ... 30 day MBG
2986 Timeslips III 2.0 .................. 169.
3639 WriteNow 2.2 .................. 117.
*WordPerfect ... 60 day MBG
3800 WordPerfect Mac 1.3.3 .................. 229.

*Working Software ... 30 day MBG
4699 QuickLetter 1.02 .................. 72.
*Zedcor ... 60 day MBG
6742 DeskWorks .................. 229.

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7117 DIGIVIDEO 1.0 .................. 399.
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5750 Adobe Type Manager 1.2 .................. 55.
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6098 TypeAlign for ATM 1.0 .................. 59.
6985 Adobe ATM/TypeAlign Pack .................. 89.
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6931 Adobe Type Set 1 & 2/ATM Pack .................. 149.
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1138 Collector's Edition (Symbols, etc.) ... 79.
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5425 Art Importer 2.0 .................. 69.
6499 Metamorphosis 1.0 .................. 149.
1195 Fontographer 3.1 .................. 249.
*Bitstream
MacFontTypeface Packages each 89.
*Bright Star Technology
3962 HyperAnimator 1.5 .................. 98.
6093 InterFace 1.0 .................. 249.

*Broderbund Software
1427 The Print Shop 1.3.1 .................. 35.
6281 TypeStyler 1.01 .................. 115.

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5841 Moriarty's Revenge—An intriguing detective game. Track a suspect around the world and determine his characteristics to catch him.
Increasing difficulty. Computerized detective's notebook and over 1,000 clues ........ $32.

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1117 MacDraw II 1.1 w/ATM .................. 289.
5911 MacDraw II & MacWrite II Bundle .................. 365.
4814 Claris CAD 1.0V3 .................. 579.

Computer Associates/ Cricket
1668 Cricket Graph 1.3.2 .................. 125.
1670 Cricket Presents 2.0 .................. 319.

*Creative Software ... 30 day MBG
6645 Easy Color Paint 1.1 .................. 42.

*Custom Applications ... 30 day MBG
6517 Freedom of Press 2.1A .................. 255.

*DeltaPoint ... 60 day MBG
6095 DeltaGraph 1.5 .................. 97.

*Denbea Software ... 30 day MBG
6365 UltraPaint 1.0 .................. 125.
1769 Canvas 2.1 .................. 189.

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6385 On Location 1.0—This DA is the fastest way to find and view files. Find files by name or specific words they contain. Then view and copy text, including fonts and styles. Open, move, copy, rename, delete files ........ $75.

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  1016 Tempo II 1.02 ... 93.
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  6169 Shortcut 1.02 ... 46.
- ASD Software ... 30 day MBG
  6740 StuffIt Deluxe 1.0 ... 63.
- FileGuard Extended 2.5 (1 user) ... 145.
- Berkeley Systems ... 30 day MBG
  5737 After Dark 1.1C ... 22.
- Casady & Greene ... 60 day MBG
  5725 Disklock 1.0 ... 106.
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  4689 MockPackage Plus Utilities 4.4 ... 31.
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- Casady & Greene ... 60 day MBG
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  5040 Copy II Mac 7.2 ... 23.
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  6123 Virtual 2.02 (for SE/30, IIcx, IIfx) ... 115.
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  5255 Retrospect 1.1 ... 149.
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5517 Cosmic Osmo .......................... 40.

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5986 Star Wars (CP) ...................... 23.
4099 Shufflepuck Cafe (CP) .............. 23.
1421 Ancient Art of War (CP) .......... 26.
1421 Ancient Art of War at Sea (CP) ... 26.
6516 The Playroom (CP) .................. 29.
4229 WhereWorld Carmen Sandiego? (CP) 29.
5755 WhereEurope Carmen Sandiego? (CP) 29.
5233 WhereUSA Carmen Sandiego? (CP) 29.
6394 PlayMaker Football (CP) .......... 29.
4966 SimCity 1.1 .......................... 29.
5871 SimCity Supreme .................... 47.
6516 SimCity Terrain Editor ............ 16.
1422 Geometry 1.2 (CP) ................. 58.
4067 Calculus 1.2 (CP) .................. 58.
1426 Physics 1.2 (CP) .................... 58.

**Freesoft ... 60 day MBG**
6115 White Knight 11.4—Supports XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe Error Correcting protocols. Includes Oxyto 1.0, a Mac-to-Mac file transfer program, and a free subscription to GENIE ........... $85.

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**Learning Company ... 30 day MBG**
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2276 KidsTime 1.2 (ages 3-8) ............. 26.
4334 NumberMaze 1.1 (ages 5-12) ......... 26.
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2273 ConcertWare + 4.0 ................... 38.
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6604 Verbal Aspect — Inter. (Russian) .... 105.
6611 KanjiMaster — Beg. (Japanese) ....... 105.

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5643 Talking Math Rabbit 1.0 (ages 4-7) .... 30.

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6927 Sticky Business Plus 1.2 ............. 149.
5177 XTreeMac 1.02 ........................ 50.

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**Accolade**
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6760 Test Drive II-The Duel ............... 31.

**Davidson & Associates**
1734 Math Blaster! 1.0 (CP) .............. 26.
6126 Math Blaster Mystery (CP) ........... 26.

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6297 Hall of Montezuma .................... 26.
6716 Pipe Dreams ........................ 17.
6663 Sands of Fire ........................ 29.
5554 Bard's Tale ........................... 32.
4064 Chuck Yeager Flight Simulator ....... 32.
6594 Starflight ............................ 39.
1846 Deluxe Music Construction Set 2.5 .... 84.

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5841 Morality's Revenge (CP) ............. 32.

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**Carina Software**
5726 Voyager 1.2 ........................... 89.

**Casady & Greene ... 60 day MBG**
2268 Crystal Quest 2.2T ................. 25.
4119 Crystal Quest w/Critter Editor 2.2T ... 39.

**Coda Music Systems**
5854 MusicProse 1.0 ........................ 187.
5604 Finale 2.0 ............................. 559.

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2765 Fool's Errand 32.
2765 Mindscape
5253 The Puzzle Gallery 26.
5967 Fool's Errand 32.
5967 Mindscape
4030 Balance of Power 9000 (CP) 29.
5967 Fool's Errand 32.
4596 Deja Vu II (CP) 29.
5263 Crossword Magic (CP) 29.
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4588 Life & Death (CP) 32.
6111 Cribbage King-Gin King 39.
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3464 Tetris 1.1 (for Mac II & SE) 19.
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3459 Falcon 2.2 30.
(* Spinnaker ... 30 day MBG
2328 Sargon IV (CP) 28.
2920 SAT Score Improvement 1.0 (CP) 57.
(* SubLogic ... 60 day MBG
4698 Jet (CP) 31.
3571 True BASIC, Inc. 45.
(* Unicorn ... 30 day MBG
3756 Math Wizard (CP) (ages 5-10) 27.
(* Wayzta Tech ... 60 day MBG

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<td>6778 Remote/Network Cable</td>
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<td>7058 Soft-FC/AYEGA Module</td>
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<td>6265 2400EX with QuickLink II</td>
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6375 3 1/2" HD Disks 3 Pak (30) ... 56.
6659 CD2000 40 MB Data Cartridge ... 19.
Two of the driving forces behind the demand for increased hard-disk storage are desktop-publishing and photo-retouching packages, which create multi-megabyte files in no time flat. Fortunately, hardware vendors have kept up with the software so that users can quickly and easily build a system with several gigabytes of hard-disk storage.

With such mainframe-class storage requirements, backing up on floppy disks or even small, streaming-tape units would easily take a dedicated worker all day. Coming to the rescue is a new breed of tape-backup units that use helical-scan technology to record more than 2 gigabytes on an 8-millimeter video cartridge or more than 1 gigabyte on a 4-millimeter DAT (digital audiotape) cartridge.

MACINSTOR 650 HCV

The Storage Dimensions MacinStor 650 HCV is a 650-megabyte (formatted) external disk drive built around the legendary Maxtor XT-8760S, one of the first high-capacity 5.25-inch Winchester disk drives. (Maxtor owns Storage Dimensions.) The drive, which is enclosed in a well-built cabinet measuring a svelte 7.25 x 4 x 15 inches, features an access time of 16.5 milliseconds, a maximum transfer rate of 15 megabytes per second, and an outstanding 40,000-hour MTBF (mean time between failures) rating. When tested with MacUser's DiskBasher! benchmark program, the 650 HCV turned in a record-breaking 19.66 seconds. In comparison, the fastest, largest hard-disk drive that MacUser Labs tested for the February '90 lab report ("101 Hard Drives: Buyer's Guide"), the 90-megabyte Relax Hard 90 Plus, required 27.9 seconds for the same test.

TECMAR THS-2200 AND DATAVault

In order to back up this large hard-disk drive, I turned to Tecmar's 2.2-gigabyte THS-2200 and its new 1.3-gigabyte DATaVault. The THS-2200 is built around an Exabyte 8-millimeter tape unit; the DATaVault uses a Wangtek 4-millimeter DAT unit. The THS-2200 is housed in a 5-x-9-x-12-inch enclosure, and the DATaVault enclosure is 7.11 x 4.0 x 14.75 inches.

Both tape units utilize a recording technology called helical scanning, which Ampex pioneered in the 1950s for its first videotape recorder. Instead of moving the tape past a stationary read/write head, as is done in audio cassettes and 9-track computer tape, the tape is pulled from its enclosure and wrapped around a rotating drum that reads data from and writes it onto the tape in diagonal swatches.

In the case of the THS-2200, the tape moves past the head, which is rotating at 1,800 rpm at a speed of .429 ips (inches per second). This translates into an effective head-to-tape speed of 150 ips. The tape is written at an incredibly dense 43,200 bits (or 5.27K) per inch. The DATaVault, on the other hand, has a head that rotates at 2,000 rpm, and its effective head-to-tape speed is 123 ips. The drive writes data at an even higher density of 61,000 bits (or 7.44K) per inch.

The low-cost 8-millimeter videotape cartridges can be purchased in most department stores for less than $10, but the DAT tapes are in much shorter supply and cost more than $30 in the few record and stereo stores that carry them. The tapes have to be formatted before use, but that takes only a few minutes. Both kinds of tape can be ordered from Tecmar in quantity.

Tecmar's QTBakcup software ships in the optional Mac accessory pack (the drives are designed to be platform-independent, so the interface kit determines whether you can connect them to a PC or to a Mac). This sophisticated software lets users back up a disk by using a complete image, selected files, modified files, or a partition method. The image backup is the fastest but does not allow users to select files when they restore backed-up files; the whole image must be restored to a disk of the same size as the original one. Selected file backups retain folder information, so users can restore a subset of files to a disk other than the original one.

QTBakcup contains a sophisticated file-selection feature called PowerTag that lets users select files on their hard disk by matching a partial name, creation date, or file type and creator. Other powerful features of QTBakcup are its automated scripts and MultiFinder-compatible automatic backups. After creating a script that tells the software which drive and files to back up, the user can schedule the backup and forget about it.
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job by using a calendar metaphor. After selecting a date, the user designates a time to perform the backup and sets a repeat interval (if any).

The one major drawback of QTBackup is that it does not include a feature that would allow users to create a printout of approximately 3 minutes for the DATaVault and about 19 minutes for the THS-2200. The time difference is due to the more sophisticated tape-indexing and search technology of the DAT unit.

Overall, I was able to get a total of 2,033 megabytes (2.0 gigabytes) onto the THS-2200 and 1,024 megabytes (1.0 gigabytes) onto the DATaVault. I noted only two operational problems with the DATaVault. The progress bar on the image backups did not function correctly with this drive, and the QTBackup software occasionally crashed after perfectly completing the save set on a 2-megabyte Mac IICx.

THE BOTTOM LINE

The Tecmar DATaVault combined with the MacinStor 650 HCV would make the ultimate Mac storage subsystem and be an ideal choice for a file-server and backup system. If several 650 HCVs have to be daisy-chained, the higher capacity of the THS-2200 tips the balance in its favor. Whether you deal with large files or a lot of little files, you should consider these units for your storage and backup needs.

— Jeffrey A. Steinberg

If you deal with a lot of data, you should look into Storage Dimensions' MacinStor 650 HCV, a speed-record-breaking 650-megabyte hard-disk drive, and Tecmar's fast THS-2200 and DATaVault tape drives.

all the files in a "save set." With 2 gigabytes distributed over as many as 170 save sets, finding a file becomes a tedious task. The only mechanism that QTBackup has for logging files is a rudimentary, non-hierarchical journal file that is optionally created with each backup. It needs a more robust reporting feature.

To compare the performance of the two drives, I performed an image backup and restore of 555,350K of data (542.3 megabytes), a selected-files backup of 3,600 files totaling 143,309K (141.9 megabytes), and a single-file restore from the eighth backup save set on each tape.

The THS-2200 required 71.63 minutes for the image backup, compared with 52.6 minutes for the DATaVault (see the "Maximum Backup in Minimum Time" chart). These times indicate an average transfer rate of 129.21K per second (or 7.57 megabytes per minute) for the THS-2200 and 175.96K per second (or 10.31 megabytes per minute) for the DATaVault. The superior transfer rate of the DATaVault is due to its higher recording density. Restoring the image save set required 47.71 minutes with the THS-2200 and 50.68 minutes with the DATaVault.

For the selected-files benchmark, the THS-2200 required 22.80 minutes, compared with 21.88 minutes for the DATaVault. Restoring a single 1K file from the eighth save set on each tape required 3,600 files to total 145,309K (141.9 megabytes) for the THS-2200.

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— Jeffrey A. Steinberg

If you deal with a lot of data, you should look into Storage Dimensions' MacinStor 650 HCV, a speed-record-breaking 650-megabyte hard-disk drive, and Tecmar's fast THS-2200 and DATaVault tape drives.

approximately 3 minutes for the DATaVault and about 19 minutes for the THS-2200. The time difference is due to the more sophisticated tape-indexing and search technology of the DAT unit.

Overall, I was able to get a total of 2,033 megabytes (2.0 gigabytes) onto the THS-2200 and 1,024 megabytes (1.0 gigabytes) onto the DATaVault. I noted only two operational problems with the DATaVault. The progress bar on the image backups did not function correctly with this drive, and the QTBackup software occasionally crashed after perfectly completing the save set on a 2-megabyte Mac IICx.

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Or write E-Machines, at 9305 SW Gemini Drive, Beaverton, OR 97005.

Please circle 151 on reader service card.
Blueprint

The maker of MiniCad now has a solid entry in the low-priced-CAD market.

Blueprint is a 2-D-CAD program with features that, as the name implies, are particularly useful for architectural drafting. The program takes up only 590K on a hard disk and runs comfortably with 1 megabyte of RAM, making it a good choice for users on a budget.

**DRAWING TOOLS**

Blueprint opens to an uncluttered display with a fixed-size drawing window, two floating tool palettes, and a menu bar with some unusual symbols. One palette is a standard set of drawing tools, and the other is a set of constraints that modify these tools. One menu heading, a delta symbol (Δ), includes items for changing (rotate, move, send, align); another menu (headed by the cryptic symbol = =) includes items for layering, grouping, assigning classes, and creating symbols. These are the same menu markers Graphisoft uses in Azimuth (see April ’89, page 76) and MiniCad+(see December ’89, page 67), which makes these symbols consistently non-standard in all Graphisoft products.

Blueprint’s drawing window, unlike those of many Mac drawing programs, does not have scroll bars. Instead you use the “pan” tool (a hand cursor) to grab your drawing and shift it around. You use arrow keys to jump up or down, or left or right, half a screen at a time. The screen automatically scrolls as you draw beyond its edges. Zooming is simple: Click on the Zoom In or Zoom Out icon, and drag a rectangle around any desired area to reduce or enlarge it by a factor of 2. There are keyboard shortcuts and modifiers to change the zoom factor to 4, but there is no on-screen indication of the current magnification — a omission I found incomprehensible: you should always know your current viewing size, especially in a CAD package. This is made worse by the absence of any rulers at the edges of the drawing.

Blueprint supports one geometric entity that is missing from many drawing programs: the point, or locus. It is particularly useful for surveyors, cartographers, and other drafters who work with precisely located reference points. You can snap any object to a point, which makes working with reference points easier.

Blueprint’s treatment of color ranks with the best I have seen in any drawing program. With an 8-bit-video card you have access to the system palette of 256 colors. Colors can be separately assigned to the outline of an object, its solid fill, or the foreground and background of any monochrome fill pattern. There are 72 fill patterns; 36 of them can be edited and changed — they’re saved along with the drawing. You can also assign one color to all the objects on a layer.

Unfortunately, the beautiful color palettes are stuck two levels down in a hierarchical menu — they would be easier to use if they were tear-off or floating palettes.

Along with a number of layers limited only by your available RAM, Blueprint lets you create classes that are a class by default, but you can create classes such as “electrical fixtures,” “hex nuts,” or “parking lots.” You can hide or gray out members of a class by using easily accessible dialog boxes.

Dimensions in Blueprint are not associative; that is, the text does not automatically change when you resize the object it refers to. Dimensions are “autosized,” however; if you select the dimension as well as the object when you resize, the dimension text will reflect the change.

**GETTING IT ON PAPER**

Blueprint supports very high precision, both for the drawing itself and on the output device. On a Linotronic or similar imagesetter, the program can deliver resolution of up to 2,400 dpi. Since the standard PICT format cannot save data with such precision, Blueprint also offers the option of exporting drawings in EPSF, so your drawings can be pasted directly into page-layout programs without distortion or loss of accuracy — a real plus.

The MiniCad plotter drivers designed to work with Blueprint are sold as a separate $300 package, which saves money for users who do not intend to use a pen plotter (although some competing products include plotter drivers free). On the other hand, a DXF translator (which imports or exports drawings in the format used by AutoCAD) is built into Blueprint at no additional cost.

Blueprint ships with a 330-page user manual in a three-ring binder and two disks of sample files and symbol libraries. The manual provides a glossary and a comprehensive index, but its pagination is confusing (for example, 3A.34b, 3A.7, 3H.17, 4.11).

**THE BOTTOM LINE**

In the category of low-cost (less than $100), Mac 2-D-CAD programs designed to run on systems with only 1 megabyte of memory, there are many excellent products: Canvas 2.1, Dreams, and PowerDraw, for example. Blueprint is a newcomer that deserves serious consideration.

— Mike Markowitz

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**Get Info**

**Blueprint**

Published by: Graphisoft, 8370 Court Ave., Suite 202, Ellicott City, MD 21043; (301) 461-9488.

Version: 1.0V6.

List Price: $449.
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“As we said before, CE Software’s QuickMail is the best electronic mail package on the Mac, and the latest updates have only increased its lead over Microsoft Mail and Inbox.” MacWeek, 8/8/89

“Rather than exercising 20-20 hindsight, start out with QuickMail.” Dave Kosiur, Connections, July-August/89

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HARDWARE

Mobile Computer 400

It isn’t a Mac Portable, but Psion’s portable is light and inexpensive and has a bright future.

The Mac Portable is a fine technological accomplishment, but it’s not what every Mac owner needs in a portable computer. It’s too heavy and bulky to carry everywhere and too expensive for most of us, which is why many people have had to search for non-Mac alternatives if they want a portable machine. But making do without Mac compatibility doesn’t mean abandoning a Mac-like interface entirely.

GET UP AND GO

Psion, maker of the first mass-market hand-held computer, has now come out with a machine that’s portable enough to carry around with you — and it’s relatively cheap as well. It has a proprietary operating system, but uses pull-down menus and a pointer that’s controlled by a built-in touch pad. These features should make it reasonably intuitive for Mac owners.

Because the Mobile Computer 400 is neither Mac- nor PC-compatible, it has to rely on a small selection of built-in programs. This lets Psion make the machine less heavy and less expensive than similar DOS-compatible portables (even less than its own DOS-compatible version, MC-600, which costs over $1,000 more than the MC-400 and has a much shorter battery life). To be really useful these days, a DOS or Mac portable must have a hard-disk drive and a megabyte of memory. The MC-400 is quite usable as it is with just its 256K of RAM and 256K EPROM. Psion has added a few unusual features to the operating system. For example, it is multitasking, and like the Mac Portable, it can be switched off at any point and then immediately on again to exactly where it was before, without any tedious startup procedure.

The machine itself is quite remarkable. It weighs less than five pounds and isn’t much larger than a hardback book, yet it includes a full QWERTY keyboard, a touch pad, and a full-sized 640-x-400-pixel screen that is remarkably readable in most conditions, even though it’s not backlit. The MC-400 uses eight non-rechargeable AA batteries for power and can squeeze an estimated 60 hours of continuous life out of them. If you carry a spare set of batteries, you need never worry about losing power.

It has four slots for matchbox-sized "solid-state disks" — a fancy name for plug-in memory that can be used for both...
In addition, the MC-400 has two expansion slots in the back for various peripherals. These include a 2,400-bps modem and a "voice processor" that Psion boasts will offer CD-quality audio recording with a high level of real-time compression/decompression. Psion claims you can store ten minutes of speech in 64K of memory, or almost three hours of speech in a megabyte.

GOT UP AND WENT Unfortunately, despite the many interesting future developments predicted for the Mobile Computer, its present lack of software limits it. Since no third-party software is currently available, the MC-400 lacks some important programs: A spreadsheet program won't appear until about the time you read this (at the earliest) and a full-featured word processor is not due until the fall of this year. (Psion has plans to bundle the spreadsheet and word processor with the MC-400 around the end of 1990, but no formal plan or schedule has been announced.) The MC-400 ships with a diary that has alarms, a simple text editor, a basic terminal program, OPL (Psion's own BASIC-like programming language), a calculator, and a Rolodex-style database manager that can access some of the functions in OPL.

The MC-400's CPU, a 7.68-megahertz 80C86 — a speeded-up version of the chip found in the original IBM PC — is another limiting factor. The Mac-Psion interface was still in development at press time (it's scheduled for a fourth-quarter release), but I understand that it will be run from the Mac and will resemble Apple File Exchange or the Font/DA Mover in operation, showing the Mac's files on one side and the MC-400's on the other. If the MC-400 proves a big success among Mac users, Psion will pay more attention to the Mac link, perhaps by providing a HyperCard-based interface that would allow two-way sound transfers and diary entries, as well as text. For the moment, the only way to transfer files is via a telecom package. More alternatives are on the way, though — in addition to the Mac Interface Cable and software, Psion will also be offering a...
With the HP DeskWriter, you can...
Expressionist is an equation-writing DA and application that's more flexible than MathType and comes with excellent documentation. Its screen can get confusing, with boxes around all the places you can add to your equation — fortunately, this feature is easy to suppress.

MathType lets you select the palette that appears across the top of your screen. The default has a section of template reminders (each with its own "list" available) and a section of common operators. When you switch between MathType's window and your word processor's, the menu bar automatically switches too — a very attractive feature that makes matrix creation easy. As a DA, MathType beats Expressionist in most ways, but it has its disadvantages. It incorporates "the rules of mathematical typesetting" into whatever you do, which can make it hard to set integrals with words that contain common operators, such as "lim" or "sin." You can work around the defaults, but if you use a lot of equations that contain words, you might not want to take the time.

Expressionist, from Prescience (formerly Allen Bonadio Associates), on the other hand, does not assume that you will want to follow any specific approach. On-screen, Expressionist puts the palette along the side. This palette is three standard SE-sized screens deep, but you can't scroll through the length of it. Instead, you click on a button that shows you one screen's worth at a time, which is not particularly convenient. Standard expressions are mostly in the first screen, however, and the second and third are devoted to Greek letters and less-common operators. Saving equations is a nonintuitive process that takes six steps and involves cutting and pasting your work into a new document. Expressionist comes with exceptional documentation; instead of an

MathType comes as a DA and an application, and for general use, it's better than Expressionist. In MathType, clicking on one of the icons in the upper rows opens a menu of related templates, allowing easy generation of complex expressions.

have it all. (But keep it to yourself.)

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

With a small size and a $1,195* price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and has both serial and AppleTalk interfaces. It even includes scalable and outline fonts. Combine that with the DeskWriter's whisper-quiet operation, and keeping it to yourself will be that much easier.

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The HP ScanJet Plus scanner provides 8-bit photographic-quality scanning.

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For all its amenities, ease of use, good image quality, and low price, Publish! recommends the HP ScanJet Plus as their “Best Buy.”
REVIEWS

tutorials are duplicated with more detail in the manual, all of which run under Milo. These help you understand the mind-set of Milo’s creators and make final copy a lot easier to generate. Para-comp tends to use a little more jargon in its documentation than the other three companies, but the difference is slight. And its support people are the friendliest on the telephone.

THE VERDICT For writing a lot of equations that can be pasted into word-processing files, MathType is best for general use; for word-oriented applications, Expressionist is more flexible and has the best printed documentation by far. For mathematical-manuscript production, for which you’re willing to put in a fair amount of time learning a system you can stay with, Milo is easier to learn than Formulator, has much more training material than any of the other programs, and is the easiest for mathematically semisophisticated users. Its printed documentation is less useful than that of Formulator or MathType. The tech-support people at all the companies were available, intelligent, and helpful when I called them. Para-comp also has a bulletin board and newsletter for registered users, making it much easier to get in touch with the company at unusual hours (although you may have to wait until business hours for a reply — BBSs work 24 hours; people don’t).

THE BOTTOM LINE If I could have only one equation writer, it would have to be Milo, with Expressionist a close second. All the programs are adequate; Milo and Expressionist are the most useful.

— Tom Whitmore

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Get Info

Expressionist  
Published by: Prescience, 814 Castro St., San Francisco, CA 94114; (415) 282-5864.
Version: 2.03.  
List Price: $129.95.

Formulator  
Published by: ICOM Simulations, 648 S. Wheeling Road, Wheeling, IL 60090; (708) 540-4440.
Version: 1.1.  
List Price: $149.95.

MathType  
Published by: Design Science, 6475-B Pacific Coast Highway, Suite 392, Long Beach, CA 90803; (213) 433-0685.
Version: 2.11.  
List Price: $149.

Milo  
Published by: Paracomp, 123 Townsend St., Suite 310, San Francisco, CA 94107; (415) 543-3848.
Version: 1.0.  
List Price: $249.

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got it made in the shades.
**FileMaker Pro** is the fourth iteration of the popular flat-file database. In addition to its new name, FileMaker Pro boasts 100 new features, with particular improvements in its reports, multi-user functions, and scripting. Layouts can now be named and are available in the Browse mode. The Layout mode includes an 8-bit-color draw environment; MacPaint, PICT, EPSF, and TIFF graphics are supported, as are radio buttons and check boxes. Also, any graphic can be a button that either triggers a script or performs any FileMaker Pro function. There are now 83 built-in calculation functions, and mandatory fields are supported. Zooming from 25 to 400 percent is available in all modes. FileMaker Pro also offers users greater control over imported files. With an interface that's similar to that of the Font/DA Mover, users can specify which fields in the imported file should be matched to which fields in the FileMaker Pro file. Users also have much greater control over file-access privileges, including creating work groups and accessing control down to the individual field level.

$299; $99 for any registered owner of FileMaker II or IV. Claris, 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168; (408) 987-7000. ETA: June '90.

**Electric Image** is a high-end 3-D-rendering and -animation package that has played a big part in Apple's demonstrations of the high-end power of the new Mac IIx. Users import images from one of many 3-D modeling programs and then add attributes including shading, transparency, luminance, reflectance, color, and texture. Objects can be shaded according to flat, Gouraud, and Phong models. Resolutions can range from 32 x 32 to 4,000 x 4,000 pixels, and animations can be previewed on-screen in real time.

$7,595. Electric Image, 9690 Telstar Ave., Suite 225, El Monte, CA 91731; (818) 444-1819. ETA: June '90.
After Dark and Pyro! 4.0

The two top screen savers can keep your Mac interesting, even when you're not doing anything.

The leaders of the screen-saver pack are After Dark and Pyro!, and new versions of both have just been released. Both offer numerous modules, so your idle screen can be as exciting or as busy as you want. Both are excellent utilities.

**After Dark**

After Dark was the first screen saver to use drop-in modules that allow you to pick what appears when your screen is idle. The current version comes with 18 modules. New modules are being released on MAUG (the Mac area of CompuServe). As of press time, there was an After Dark version of the Moiré screen saver and of Shredded Crystals.

**Pyro! 4.0**

Early versions of Pyro! had only its trademark fireworks and a clock. The current version has 12 modules, and you can select as many of them as you want. Each time it engages, it displays a different module, although you can specify one to be the primary module. The first additional Pyro! module, Flashlight, is being finished as this review goes to press.

**The Verdict**

The external appearance and effects of these two programs are more alike than different. You control both Pyro! and After Dark via the Control Panel. After Dark takes about 50K to start up and then an average of 8K after that, depending on which module you're using. Pyro! uses up 38K of memory. Both sets of controls are intelligent and nicely done, but Pyro! has better options for engaging and disengaging. Both have manuals that are clear enough for beginners and complete enough for experienced users. The After Dark manual contains information for programmers who want to develop their own modules, and both programs come with a folder of development examples.

Each program has an option for locking the screen with a password when the program becomes active. I'm not a fan of such slight protection, but it's only an option, not a mandatory feature. And some people really like it.

The extensive features lists that both programs sport bring up the question of whether you really need so many features and choices in a screen saver. After all, these aren't productivity tools, and the modules don't add anything except choices and variety.

The current version of After Dark has

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HP offers other LaserJets with Adobe PostScript software. The LaserJet IID printer with increased paper-handling capability. And the affordable LaserJet IIP printer. For character-building information and the name of your nearest authorized HP dealer, call 1-800-752-0900, Ext. 1168.

There is a better way.
Pyro! 4.0 has followed After Dark's lead and adopted a modular approach. In the Aquarium module, the big fish eat the little ones.

You can probably run both Pyro! and After Dark at the same time, but that isn't a good practice. If one is set to activate before the other, you'll just be wasting disk space with the one that never gets used. If both are set to activate at the same time, the results are unpredictable and could prove undesirable.

THE BOTTOM LINE You won't go wrong with either of these utilities. After Dark has more modules, but with the exception of Puzzle, I prefer Pyro!'s modules. They are more interesting visually. Pyro!'s Aquarium, which is a bit of a memory hog, is the best of all the modules, and Pyro! has better control options.

I've never had any problems with Pyro! and have experienced only insignificant difficulties with the new version of After Dark. If you have version 1.0 of After Dark, you can obtain a slick free upgrade package from user groups, BBSs, and national on-line services. Pyro! upgrades cost $15 from the publisher.

— Steven Bobker

Pyro! 4.0 Published by: Fifth Generation Systems, 10049 N. Reiger Road, Baton Rouge, LA 70809-4558; (800) 873-4384 or (504) 291-7221.
Version: 4.0.
List Price: $39.95.

After Dark Published by: Berkeley Systems, 1700 Shattuck Ave., Berkeley, CA 94709; (415) 540-5535.
Version: 1.1.
List Price: $39.95.

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HEWLETT PACKARD
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For sample output and the name of your authorized HP dealer, call 1-800-752-0900, Ext. 1167.

Please circle 392 on reader service card.
Color displays are in a state of flux, with exciting developments underway on two fronts.

In the purely physical realm, the long-awaited portrait-mode color display is coming. But most observers will be surprised to see that it'll be coming from across the Pacific, not from across the Atlantic, not from across the Pacific. A French CRT maker has developed a new technology that, for the first time, makes relatively small production runs feasible. The prototype quality is said to be better than that of Sony's Trinitron.

Apple is known to be negotiating for exclusive rights to the first 500,000 units, but several other West Coast monitor makers are also in on the bidding action. That might result in relatively expensive units. But then again, it might not. The CRT manufacturer has invented not only a better technology but also a much cheaper one. It would like its initial foray in the U.S. market to involve a lower-priced unit. The idea is to get some very favorable press so it can move into the much more lucrative commercial television-set market.

A bit further off, but still very important, is the invention of a color inert-gas-plasma screen whose pixels are small enough that it can work with a Mac. The maker is a large Japanese electro-optical giant. Previous plasma-based designs have been too slow and have required far too much power to be really practical. This new unit was actually designed from the beginning to run off small, user-replaceable batteries (four AAs last three hours, we hear), which would mean a screen with a power supply independent of the CPU, making the screens practical for laptops. The speed has been brought up to snuff by use of some very expensive rare-earth components. Since the image is plasma-driven, there's no radiation of any kind. The final feature is the thickness of the unit: three-quarters of an inch. It sounds almost too good to be true. There are, however, some serious problems to overcome. One is unexpected color display is coming. But most observers will be surprised to see that it'll be coming from across the Atlantic, not from across the Pacific. A French CRT maker has developed a new technology that, for the first time, makes relatively small production runs feasible. The prototype quality is said to be better than that of Sony's Trinitron.

The CRT manufacturer has invented not only a better technology but also a much cheaper one. It would like its initial foray in the U.S. market to involve a lower-priced unit. The idea is to get some very favorable press so it can move into the much more lucrative commercial television-set market.

Price, based on the prototype, is astronomical. A Ferrari would be cheaper. And no one yet knows if mass production is even possible.

Our U.S. mail address is Rumor Manager, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Our electronic addresses are MacUser (on MCI Mail), 78411,204 (on CompuServe), and MacUser.Edit (on AppleLink). No calls, please.
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Electronic mail on the Mac is only five years old—a fairly long life, considering that the Mac itself just celebrated its sixth birthday. But it’s been an active five years for E-mail, as this messaging and file-sharing office necessity has come to be known. Features and performance have improved while different delivery strategies fight for market dominance. And developers aren’t standing still. Hosts of new features are promised for future releases: electronic report distribution, archival services, computer conferencing, and forms-routing systems, to name a few.

Whether or not these future features materialize, E-mail users will always be concerned with one central issue—getting the mail through fast. MacUser NetWorkShop dissected five major Mac E-mail products to test how well they responded to this eternal need. We asked two basic questions: How do E-mail products work? and how does their structure affect performance?

We tested cc:Mail from cc:Mail, Inc.; DaynaMAIL from Dayna Communications: InBox Plus from TOPS (WorkStation InBox, for 20 users, comes bundled with TOPS; InBox Plus, for 100 users per server, is sold separately); Microsoft Mail from Microsoft; and QuickMail from CE Software. A sixth major E-mail program, 3Com’s 3+Mail, was not tested, because it is a fully integrated component of a suite of network-management applications and is not sold as a stand-alone E-mail product (see the “3Com’s 3+Mail” sidebar).
Delivering the Mail

When you set up a LAN (local-area network) in your office, you enable work-group activities such as sharing printers and modems; setting up multiuser databases; and exchanging files, using servers and transfer programs. When you install an E-mail system, you increase your network's value by permitting a user to send messages and files directly to any other user.

**Messaging and storage.** There are two fundamental strategies for exchanging messages and files between Macs on a network: point-to-point and store-and-forward exchanges. In a point-to-point strategy, one node sends a file—or message—directly to another node. Store-and-forward systems use a central repository, usually a file or mail server, where all messages and files are stored and sent on to their destinations as needed or requested.

Point-to-point file transfer doesn't have centralized store-and-forward file sharing's one major advantage: the ability to retrieve stored files from the central server at a later time. This is important in cases where users are continuously logging on to and off of the network, because messages and files can still be sent to them even when they are not on-line.

Simple file-transfer strategies—both point-to-point and store-and-forward—are considered "blind," because recipients are not notified that a file has been placed on their Macintosh's drive. This intelligence is now being added to both methods. Products such as Apple's Oscar and Beagle Bros' Flash have added notification to point-to-point transfers. E-mail systems use a sophisticated store-and-forward method of file exchange, which combines the intelligence of message notification with the capabilities of centralized file storage.

Most E-mail packages use a client/server model wherein individual users (clients) log in to a centralized mail server, where they're notified of messages and files and where they can pick up and deliver messages and files for other users. E-mail can also operate on a point-to-point basis, but having it do so sacrifices store-and-forward capabilities.

We tested all five products in a store-and-forward configuration. In each case, the message center was a Mac Ilex with 4 megabytes of RAM and a 40-megabyte Jasmine hard-disk drive (see the "Testing, Testing, Testing..." sidebar and Figures 1, 2, and 3).

**File server versus mail server.** When we were testing the five programs' performance, the first major differences showed up in relation to their server configurations. Some E-mail packages, such as cc:Mail and DaynaMAIL, must be installed on top of a file server, such as AppleShare; other programs operate by using their own mail-server software.

The file-server setup has the advantage of letting you pick your server platform more easily. File servers compatible with AFP (AppleTalk Filing Protocol, recommended for file servers on AppleTalk networks) are available for Mac, PC, and VAX systems. The disadvantages of a fileserver-based system center on performance: In order to preserve the

---

**3Com's 3+Mail**

3+Mail, from 3Com (one to five users, $195; unlimited users, $1,190), is a solid E-mail package that runs only in the 3Com network environment and is not sold as a stand-alone messaging application. 3+Mail runs on a variety of 3Com servers with Mac and PC clients, as well as the AppleShare-compatible 3+Open networking strategy. Its many features include icons for message status, a filter for name listing, local (personal) name lists, aliases, groups, multiple enclosures, and notification of undeliverable mail. Users can reply, forward, and register messages for return receipt, as well as set options for mail management. 3Com Corp., 3165 Kifer Road, Santa Clara, CA 95052-8145; (408) 562-6400.

---

**Figure A:** This composite 3+Mail screen shot shows incoming mail, with unread and opened icons and attachment folders. Overlaid is the Network Names Viewing Option box, which lets users select and deselect users, aliases, and groups.
server’s interoperability among platforms, these E-mail systems sometimes require the client to execute operations that in other programs would be performed by the server. DaynaMAIL, for example, replicates a file when sending the same message to several people, whereas cc:Mail opens user-index files from across the network to notify the recipients that a message has been posted. Either operation can tie up a user’s Mac for considerable amounts of time as well as increase network traffic.

DaynaMAIL and cc:Mail require a file server as a base. When testing these two products, we first installed AppleShare on the Macintosh Iicx servers and on the clients’ Sie. Only then could we install the server and client software for DaynaMAIL and cc:Mail. Both of these programs were generally slower than the three mailserver-based systems. InBox, however, was slower than QuickMail and Microsoft Mail, since TOPS chose to make the InBox client do more work than QuickMail’s or Microsoft Mail’s clients do.

File copying versus databases. A crucial aspect of an E-mail program’s performance is its structure, or the

Figure 1: E-mail performance is measured in terms of two factors: speed and consistency. All tests were done once in normal network traffic and then again with 30 other messages flooding the server at specific intervals. We tested each E-mail system six times — each bar shows the range of performance of these six tests. Inconsistent performance prevents users from being sure of how fast a mail system will send a message under varying conditions — a definite drawback, as uncertainty leads to frustration.

The single-message test sets the basic win/loss pattern: The front-runners are QuickMail and Microsoft Mail, with Microsoft’s program showing a little more speed. The next tier includes cc:Mail and InBox, with InBox showing faster times but less consistent performance. DaynaMAIL has the slowest times and the most inconsistent performance.
way messages and files are sent and stored in the E-mail server. Some E-mail programs send, copy, and store messages and files as separate items in several folders—one for each client. Others store messages and files as a single item inside a database (see the “How It Works” sidebar). In the first case, data insurance is bought at the cost of greater server activity and disk fragmentation. In the second, data efficiency is bought at the cost of putting all the eggs in one basket.

Our tests show a direct correlation between client/server structure and performance. Structure has a direct bearing on how users perceive an E-mail system’s performance—some packages, such as DaynaMAIL, InBox, and—to a certain extent—cc:Mail, make users wait while they deliver messages addressed to several users. Administrators, on the other hand, don’t look too kindly on a package, such as QuickMail, that can overtax a server’s hard-disk drive by rapidly filling it with messages and files.

Each structure does have its advantages, however. Mail programs that replicate files (DaynaMAIL, InBox, and QuickMail) ensure that all users sent a message get their own copy. The programs that keep a single copy in a database (cc:Mail and Microsoft Mail) ensure efficiency by storing 1 copy of a message—rather than 5, 10, or 30—thus minimizing disk usage.

Setup and Administration
Setting up a fast and reliable E-mail system requires good planning. You can enhance performance by using a fast CPU with at least 2 megabytes of RAM and a fast hard-disk drive as the server. Also, use zoning strategies that don’t put too
many devices in one zone or too many users on one E-mail server (see “How to Set Up the Perfect Network” June ’90, page 142). Avoid having users access servers over routers — routers can degrade performance and make users lose connection with their mail center.

If you use AppleShare as your file server for DaynaMAIL or cc:Mail, consider whether the file server should be active at the same time as the E-mail system. All the E-mail packages reviewed here are compatible with AppleShare, giving you the economical option of running both servers on the same Mac. The more traffic there is on either of the servers, however, the poorer the performance of both. To avoid this situation, many companies recommend that you dedicate a Mac to mail serving alone.

**Setup and user lists.** DaynaMAIL and cc:Mail are the least friendly to use when you’re setting up the E-mail system and establishing user lists, in part because they reside on a file server. Users can’t use the E-mail service unless the server volume is mounted and their names are registered on the file server; they must also be registered with the E-mail server.

InBox, QuickMail, and Microsoft Mail are easier to set up. Their manuals provide comprehensive information on setting up your network, and

---

**Figure 2: Enclosed-File Performance**

<table>
<thead>
<tr>
<th>Normal load</th>
<th>Heavy server use</th>
</tr>
</thead>
<tbody>
<tr>
<td>QuickMail</td>
<td>Microsoft Mail</td>
</tr>
<tr>
<td>cc:Mail</td>
<td>InBox</td>
</tr>
<tr>
<td>InBox</td>
<td>cc:Mail</td>
</tr>
<tr>
<td>Microsoft Mail</td>
<td>QuickMail</td>
</tr>
</tbody>
</table>

Under normal conditions, our front-runners remain Microsoft Mail and QuickMail. Although it turned in the fastest times, Microsoft Mail is less consistent than QuickMail. When the load on the server goes up, however, the leaders faller, and both cc:Mail and InBox show more consistent — and faster — performance.
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### Table 1: Features of E-Mail Systems

<table>
<thead>
<tr>
<th>Feature</th>
<th>ccMail 1.1</th>
<th>DaynaMail 1.0</th>
<th>InBox Plus 3.0</th>
<th>Microsoft Mail 2.0</th>
<th>QuickMail 2.2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mouse rating</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
| **List price**                    | 26 users, $495  
next 75 users, $595  
next 100 users, $595  
cocoaMail for DOS, $995 | 5 users, $295  
next 10 users, $249  
ext 100 users, $249  
next 100 users, $249  
cocoaMail for DOS, $995 | 100 users, $995  
next 10 users, $995  
ext 100 users, $995  
cocoaMail for DOS, $995 | 1 user, $189.95  
5 users, $339.95  
10 users, $499.95  
30 users, $2,299.95 | 1 user, $189.95  
5 users, $339.95  
10 users, $499.95  
30 users, $2,299.95 |
| **Multiple-copy handling**        | Single copy | Each address  
 unlimited | Each address  
 unlimited | Single copy  
 unlimited | Single copy  
 unlimited |
| **Messages**                      | Single copy | Each address  
 unlimited | Each address  
 unlimited | Single copy  
 unlimited | Single copy  
 unlimited |
| **Enclosures**                    | Single copy | Each address  
 unlimited | Each address  
 unlimited | Single copy  
 unlimited | Single address  
 unlimited |
| **Maximum users per server**      | 65,000     | 100          | 100           | 100               | 100             |
| **Number of enclosable files**    | 20         | 1            | 100           | 100               | 16              |
| **Server platforms**              | Mac  
PC/XT  
VAX  
Others  
Client PC option | Mac  
PC/XT  
VAX  
Others  
Client PC option | Mac  
PC/XT  
VAX  
Others  
Client PC option | Mac  
PC/XT  
VAX  
Others  
Client PC option | Mac  
PC/XT  
VAX  
Others  
Client PC option |
| **Messages are stored in**        | Database  
Files | Database  
Files | Database  
Files | Database  
Files | Database  
Files |
| **User features**                 | Configurable address groups  
Keyboard addressing  
Customizable forms  
Voice message  
Real-time conferencing  
Remote dial-up utility  
Message sorting  
By priority  
By subject  
By sender  
By date  
Search message for string  
Mail log  
Unsend message  
On-line help | Configurable address groups  
Keyboard addressing  
Customizable forms  
Voice message  
Real-time conferencing  
Remote dial-up utility  
Message sorting  
By priority  
By subject  
By sender  
By date  
Search message for string  
Mail log  
Unsend message  
On-line help | Configurable address groups  
Keyboard addressing  
Customizable forms  
Voice message  
Real-time conferencing  
Remote dial-up utility  
Message sorting  
By priority  
By subject  
By sender  
By date  
Search message for string  
Mail log  
Unsend message  
On-line help | Configurable address groups  
Keyboard addressing  
Customizable forms  
Voice message  
Real-time conferencing  
Remote dial-up utility  
Message sorting  
By priority  
By subject  
By sender  
By date  
Search message for string  
Mail log  
Unsend message  
On-line help | Configurable address groups  
Keyboard addressing  
Customizable forms  
Voice message  
Real-time conferencing  
Remote dial-up utility  
Message sorting  
By priority  
By subject  
By sender  
By date  
Search message for string  
Mail log  
Unsend message  
On-line help |
| **Administrator features**         | View passwords  
Read user messages  
Server data compression  
Backup-and-restore utility  
Update name directory  
Manual  
Automatic  
Return undeliverable mail | View passwords  
Read user messages  
Server data compression  
Backup-and-restore utility  
Update name directory  
Manual  
Automatic  
Return undeliverable mail | View passwords  
Read user messages  
Server data compression  
Backup-and-restore utility  
Update name directory  
Manual  
Automatic  
Return undeliverable mail | View passwords  
Read user messages  
Server data compression  
Backup-and-restore utility  
Update name directory  
Manual  
Automatic  
Return undeliverable mail | View passwords  
Read user messages  
Server data compression  
Backup-and-restore utility  
Update name directory  
Manual  
Automatic  
Return undeliverable mail |
| **Other**                          | 90 days  
ccMail, Inc.  
2141 Landings Drive  
Mountain View, CA 94043  
(415) 961-8800 | 90 days  
Dayna Communications  
90 S. Main, Suite 530  
Salt Lake City, UT 84144  
(801) 531-0560 | 6 months  
Sun Microsystems, Inc.  
TOPS Division  
50 Marina Village Parkway  
Alameda, CA 94501  
(415) 769-9969 | 90 days  
Microsoft Corp.  
One Microsoft Way  
Redmond, WA 98052  
(206) 882-8080 | 90 days  
CE Software  
1854 Fuller Road  
P.O. Box 65580  
West Des Moines, IA 50265  
(515) 224-1955 |

*Messages can be saved either as files or in a database — not both.*
InBox and QuickMail provide detailed specifications on the RAM and disk space you'll need, depending on use. Microsoft Mail is the most streamlined of the three, and its setup is the easiest.

The first administrative task to tackle when setting up a mail program is building the user-name lists and assigning passwords. DaynaMAIL gets low marks here because you need to remember precisely how you entered users' names in the AppleShare list — it doesn't recognize any spelling variations. DaynaMAIL also confines you to the DOS eight-character naming convention, which means a long name can't be entered in full. InBox is more generous and also allows you to configure the user-name list by first or last name or put it in a customized order.

The administrator needs to be able to maintain these lists easily, especially if the mail server is on an internet (where two or more networks are linked via a bridge or router). In such cases, propagating directories for various servers so that users know whom they can send messages to can be difficult. The key thing to know

---

**Figure 3: Multiple-Message Performance**

<table>
<thead>
<tr>
<th>Normal load</th>
<th>Heavy server use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Mail</td>
<td>0</td>
</tr>
<tr>
<td>QuickMail</td>
<td>20</td>
</tr>
<tr>
<td>cc:Mail</td>
<td>40</td>
</tr>
<tr>
<td>InBox</td>
<td>60</td>
</tr>
<tr>
<td>DaynaMAIL</td>
<td>80</td>
</tr>
<tr>
<td>Time in seconds</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 3:** Here's the test that separates the mail from the snails. DaynaMAIL's inefficient method of handling multiple messages causes it to bring up the rear. In the second tier, we see InBox dropping back behind cc:Mail under normal conditions. Interestingly, cc:Mail's performance when the server is busy tails just slightly behind InBox's performance under normal load.

Then comes the most telling race. QuickMail does very well in the tests under normal conditions — right behind the true speedster, Microsoft Mail. When the server is being besieged with messages from another client, however, QuickMail chokes. As the testing proceeded, the degradation increased, until QuickMail was turning in almost DaynaMAIL-like times.

Two other important factors aren't shown: Our Jasmine 40 ran out of space halfway through the QuickMail tests, so we had to stop and clear out the drive. Second, QuickMail causes a high degree of disk fragmentation. The message? If you choose QuickMail, equip your server with a big, fast hard-disk drive.
about any mail package is whether separate lists are maintained for each server or a global directory is built and maintained at every server.

DaynaMAIL and cc:MAIL maintain separate lists for each server, which have to be manually updated one at a time when users change. cc:Mail lets you import and export lists from server to server to maintain current directories across internets. PO Manager (from the River Bend Group in McLean, Virginia) automates this for you.

QuickMail maintains separate user lists for each server. Users can see other local servers by accessing those zones and manually adding names from another zone’s directory to their own. QuickMail also has a NameServer utility, which is installed on the mail server and maintains a database of all internet E-mail recipients. You still have to manually export and import lists across servers to build global, enterprise-wide directories, but the NameServer lets you do a certain amount of administrative work by allowing you to keep your personal group lists current.

InBox Plus and Microsoft Mail provide automatic directory propagation across servers whenever a change in any server’s name directory is registered. Building a global list of names at each server has the advantage of keeping list administration to a minimum and screening out the internet’s complexities to users, who see one list of names and don’t have to worry whether the recipients of their mail are located in the next room, the next

## Report Cards

### cc:Mail 1.1

*One of the foremost PC mail systems, cc:Mail is now available in a Mac incarnation. It's a solid, unexciting product. It uses an inefficient database structure that stores multiple-addressee files and enclosures just once, and its server can run on several different platforms. Clients can include Macs and PCs (running DOS or OS/2). Features include bulletin boards, groups, keyboard loading of recipient names, message prioritization, multiple enclosures, return receipts, reply and forwarding, storage folders, and archiving.*

*Pros: Good management.*

*Cons: Buggy. Tricky to install and maintain. Serialized workstations, DOS naming conventions. User must mount AppleShare volume to use DaynaMail.*

*List Price: Five-pack, $295.*

*DaynaMAIL 1.01*

*DaynaMAIL from Dayna Communications is a basic E-mail package that can be installed in either a server- or node-based mode. In server mode, the mail server runs on top of any AppleTalk-compatible file server on a Mac or PC. Node installation can sit on top of TOPS. DaynaMAIL uses an inefficient multiple-copy store-and-forward method for both mail and enclosures. Basic memo and phone-message forms are included, but only a single file can be stored per message. Messages can be sorted by topic, date, or person addressed. Mail compression and decompression contribute to DaynaMAIL’s poor performance; it finished last in our tests.*

*Pros: Good management.*

*Cons: Buggy. Tricky to install and maintain. Serialized workstations, DOS naming conventions. User must mount AppleShare volume to use DaynaMAIL.*

*List Price: Five-pack, $295.*

*DaynaMAIL 1.01 has some good features, but it needs more work.*

### InBox Plus 3.0

*InBox from TOPS is an above-average E-mail package that runs on its own mail server or on top of AppleShare or TOPS. Servers can include Macs, PCs, Sun workstations, VAXes, and other platforms. Both Macs and PCs can be clients. Workstation InBox allows 20 users per server and is bundled free with TOPS. InBox Plus allows 100 users, plus server-to-server communications. Messages are duplicated for each addressee, but enclosed files are stored only once (saving both time and space). Message forms include only Memo and Phone; it supports mailboxes, groups, user-configurable passwords, and storage boxes. Messages can be sorted by subject, sender, status, and date, or selected by character string. InBox finished third in our performance tests.*


*Cons: No multiple-addressee sends. No keyboard loading of recipient names.*

*List Price: 100 users, $995.*

### Microsoft Mail 2.0

*Microsoft Mail offers a mix of functions with Mac and VAX servers, over local-area networks and larger internets. An efficient single-instance storage scheme is used for messages and enclosures to multiple addressees. User directories are automatically propagated. The mail server automatically reclaims disk space when messages are deleted. Features include keyboard name entry for messages, customizable forms, image display and voice-mail support, and interapplication communication with Excel and Word.*

*Microsoft Mail 2.0 is a close second to QuickMail.*

*Mail in most of our performance tests.*


*Cons: No multiple-addressee enclosures. No local folder storage. No searching or sorting of messages.*

*List Price: Mail Server, $395; 1 to 4 users, $125; 20-Pak, $1,495; PC Workstation, $125.*

*Microsoft Corp., One Microsoft Way, Redmond, WA 98052; (206) 882-8080.*
building, or even Hong Kong.

**Server/client maintenance.** Maintainance includes adding users to the system, adding new features as they become available, backing up the mail files, and optimizing the server disk for better performance.

Optimizing the server disk deletes empty spaces between files and between parts of files that can slow down disk read time. This process becomes more and more critical over time for products that replicate messages, such as DaynaMAIL, InBox, and QuickMail. Microsoft Mail and cc:Mail, which use single-instance storage systems, do not show nearly as much disk fragmentation.

DaynaMAIL, InBox, and QuickMail showed considerable server-disk fragmentation after our tests. Fragmentation also occurs when files are deleted. DaynaMAIL and QuickMail, however, reclaim some of this disk space by cleaning up user folders whenever a user logs off. Our tests showed this to be a lengthy process with DaynaMAIL.

InBox Administrator has a utility for reclaiming disk space when the server is not in use — late at night, for instance — since deleting messages from the server deletes only their directories and not the actual files.

Considering the importance of backing up and restoring for data security and performance, it’s surprising that none of the manuals show this to be a lengthy process with DaynaMAIL. InBox Administrator has a utility entails a certain amount of screen out mail from your list. Most of the products we looked at send you a receipt when your mail has been read. But because it’s easy to forget a memo when it’s out of sight, this feature is of only limited use. QuickMail is the only product that has a User Mail Log (there’s an Administrator Mail Log in cc:Mail). QuickMail’s log tracks every piece of mail that a user has sent, whether it’s Pending (for another server), Unread, or Read. You can also retrieve and “unsend” messages. This utility entails a certain amount of overhead, however, because a file is maintained on the server until you delete it in the log.

**Multiple addresses and groups.** To select message recipients in InBox and DaynaMAIL, the user must manually scroll through a name list, which quickly becomes tedious if the list is long. Users should be able to locate a potential addressee by typing the first couple of characters in the name and pressing Return. cc:Mail, QuickMail, and Microsoft Mail all let you address your mail from the keyboard, and you can designate a recipient as CC: (carbon copy) or BCC: (blind carbon copy, unseen by the other recipients). In QuickMail, you keep pressing Return to rotate recipient names through these designations.

Sending messages to multiple recipients can be a chore. One way to avoid having to select each name is to create a group. If you typically send a message to everyone in accounting, for instance, you can create an accountants’ group and then simply address your message with the group name when you want to send it to
If that sounds like an outrageous statement, it sure is.

But then, this is one outrageous set of utilities.

In fact, comparing the Norton Utilities® for the Macintosh® to anybody else's utilities for the Macintosh is, well, kind of embarrassing.

Because when it comes to fixing your disk problems, rescuing your data and daily getting the utmost from your Mac, nobody else even comes close.

**Why you need a Doctor in the house.**

To see what we mean, see what happens when you call up our revolutionary Norton Disk Doctor®.

Which is what you'll do whenever you're having trouble doing things like booting your system, recognizing or reading disks, opening, closing or trashing folders, locating icons or launching applications.

Instead of displaying something like "Sorry, unable to repair" and sending you to the service center, the Disk Doctor determines the exact nature of the problem, reports it and, in most cases, fixes it for you.

All by itself.

In fact, the Disk Doctor automatically diagnoses and repairs the 45 most common—and dangerous—problems your disk can confront you with.

Including a whole bunch of things the other guys can't even detect, let alone repair.

Which is one reason why— unlike other programs—we don't display hair-raising messages warning you of the "Risk of losing data" from using our utilities.

**We save your trash.**

Of course, any time a human being uses a computer—yes, even a Mac—there's a risk of losing data.

Which is why, seven years ago, Peter Norton Computing invented the legendary UnErase®.

Like the rest of the tools in this box, UnErase has been designed expressly for the Mac, to recover more kinds of trashed files, more quickly and with less effort on your part than any other program.

Instead of just one level of data recovery, we give you three.

You can UnErase by File Type.

---

*Total times to recover a reformatted 40MB Quantum™ internal hard drive on a Macintosh® with respective volume information files installed.
Any resemblance to other Macintosh utilities is pure coincidence.

By Text Search. Or use Quick UnErase to scan your fully loaded hard drive in as little as five seconds. (You don't even want to know how long it takes everybody else.)

Whether your drive is fully loaded or nearly empty, *Speed Disk* is—here we go again—the quickest, easiest and safest way to dramatically accelerate disk access.

And unlike other programs, Speed Disk won't lose your data even if your Mac loses power.

Speaking of losing data, when it comes to losing large quantities of it quickly, nothing compares with accidentally reformattting your hard disk.

And when it comes to unformatting your hard disk, nothing compares with our *Format Recover* and *FileSaver*.

Together they not only let you resurrect 100% of your data, they do it in a tiny fraction of the time it takes other programs.

**What a find.**

Of course, you don't have to lose your data to want to get at it as quickly as possible.

That's something you want to do every day, every time you open a file.

So you'll be interested to know that *Fast Find* locates and opens files so quickly, you may never use the Mac's standard Find File desk accessory again.

But you'll use our accessories and control panel devices daily.

If all of this looks too good to be true, see your favorite software dealer for a demonstration.

If you haven't got a favorite software dealer, call us right away at 1-800-365-1010 Ext. 423.

We'll send you more information.
How It Works: Multiple-Message Handling

Two important factors affect E-mail performance: Which Mac does more of the message-handling chores — the sender or the server? How is a message for multiple recipients stored on the server — as multiple files or as multiple pointers (location indicators) to a single entry in a database? Each of the five E-mail systems we examined has a different approach to handling multiple messages.

When the server does the bulk of the message handling — delivering and copying files — the sender is free to carry out other duties. When the sender must take care of message processing, the user is forced to wait — and when multiple-message-handling strategies are inefficient, the wait can be an extremely long one.

The most efficient multiple-message strategy is faster and requires less storage space on the server. It stores one copy of a message and any enclosed file on the server as a single entry in a database. A less efficient approach stores a copy of a message and enclosure in each recipient's server folder. This second multiple-copy strategy offers some increase in reliability, since there's more chance of at least partial recovery if the server goes down. Although databases put all their eggs in one basket, you can count on good databases to be both efficient and reliable.
Only one copy of both the message and the enclosure goes out from the sender and is stored in a database.

The sender opens each recipient's index file, places a pointer in it that identifies the message's location, and closes the file. This index opening and closing happens over the network, adding to the time that a sender waits to regain control of the Mac.

The server then creates copies of the message and enclosure and transmits them to the recipients.

A background process running on the recipient's Macs polls for waiting mail. When notified, the recipients ask the server to identify the correct message and enclosure, using the pointers stored in the recipients' indexes on the server.

Multiple copies of each message and enclosure go out from the sender.

One copy of each is stored in each recipient's folder on the mail-handling portion of the server.

The server makes copies of the message and enclosure for each recipient and puts them into the recipients' folders on the server. This strategy quickly uses up disk space and can tax the server during times of heavy use.
Figure 4: The Heavyweight Champ

Figure 4a: Addressing mail in QuickMail is a simple process of double clicking on and dragging names into the To:, CC:, or BCC: fields. Alternatively, you can simply type the first character or two and then press Return to rotate the name through the copy designations.

Figure 4b: QM Forms lets users define their own forms and enclose graphics within them. It supports up to ten fields per form, and you can use numerous graphics tools to heighten design.

Figure 4c: QuickMail supports a host of mail-management options. Mail can be sorted by normal and reverse sort, priority, subject, sender, and date; a Mail Log shows the status of sent messages; a Public bulletin board lets users post messages to the whole network; and personal folders can be set up to store messages on users’ hard-disk drives.

Figure 4d: Shown here is a typical QuickMail memo, with all the button options displayed for filing, printing, saving, deleting, enclosing a file or the Clipboard contents, requesting a receipt, forwarding a message, or replying.

Those recipients. You can include the names of users from other servers and zones to address messages easily across servers.

For greatest efficiency, setting up group address books from the general names listing should clearly be a user function, as it is in DaynaMAIL, InBox, and QuickMail. In cc:Mail and Microsoft Mail, it’s the job of the the E-mail administrator.

Keeping group lists current can be a problem. Only QuickMail provides a utility for verifying whether or not a group list is current. Microsoft Mail, which maintains a global directory, can’t delete names from group lists as they’re deleted from the global directory (although mail is not sent to deleted users).

Multiple enclosures. E-mail users often want to enclose more than one file with a message — copies of correspondence, for instance. InBox is limited only by available RAM in the number of documents you can enclose; QuickMail and cc:Mail permit 16 and 20 enclosures, respectively; and both DaynaMAIL and Microsoft Mail currently limit users to one enclosure only, a limit many find unacceptable.

A new product, StuffIt Deluxe from Aladdin Systems, allows you to circumvent this problem, and Microsoft Mail will soon allow you to automatically stuff documents into an archive so that multiple messages can be sent at once. StuffIt Deluxe is also compatible with QuickMail.

Storage. InBox, QuickMail, and cc:Mail let you set up a filing system on your hard-disk drive for storing mail. DaynaMAIL and Microsoft Mail do not, although you can save messages as text files in folders on the Finder.

Using filing systems is the best way to save text files, because you can access your storage folders and messages from within your E-mail program. Storing files on your local hard-disk drive helps clean out your mailbox on the server, which in turn speeds up the loading of incoming
mail and reduces the server’s storage load.

**Advanced Features**

**Forms.** All the E-mail packages have a basic message form; InBox and DaynaMAIL also have forms for phone messages, and users of QuickMail and Microsoft Mail can design any form they want. Microsoft Mail and cc:Mail also let you display certain graphics — Microsoft Mail has a special form for this, and cc:Mail lets your Mac display Mac and PC graphics as enclosed files.

QuickMail and Microsoft Mail have optional forms that you can install in your E-mail system. You can also create customized forms. Microsoft Mail uses a HyperCard-based forms generator, and the administrator installs custom forms on the server. In contrast, QuickMail’s QM Forms utility lets users install custom forms at their own workstations.

Being able to create customized forms is not just a user perk — when used in conjunction with databases and spreadsheets, this feature has great promise for both data collection and distribution. Indeed, QuickMail provides an add-on Data Collection bridge, and Microsoft Mail is developing a News Center HyperCard form for downloading and distributing online news, which can be earmarked for users by category.

QuickMail and Microsoft Mail are not limited to just the written word — both have a sound form that, when used with Farallon’s MacRecorder or Farallon’s new MediaTracks, lets you send recorded voice messages over E-mail. Microsoft Mail automatically installs Farallon’s sound driver in the recipient’s station if it’s not already installed. Microsoft Mail’s voice-message system also uses an automatic data-compression algorithm — a key feature, because sound files tend to be large. QuickMail will add this feature in subsequent releases.

**Fax and E-mail.** E-mail allows you to send messages directly from a
Now all Macintosh SE and Macintosh Plus owners have the opportunity to take a fundamentally good idea — and make it even better.

Introducing the Outbound™ Laptop System, no small idea when it comes to expanding the power of your Macintosh SE or Macintosh Plus. Sharing your most essential business information between your Macintosh desktop and your Outbound Laptop is only a point and click away.

When docked*, your Macintosh and Outbound function as a single unit. Drag any icon from your Macintosh SE or Plus over to your Outbound Laptop System. Or take files back the other way without using a single utility. Together they can do some amazing things to make your Macintosh experience — twice as rewarding.

Like getting the job done in half the time by doubling operating speed; or making your work all the more visible with the addition of the Outbound’s backlit LCD — which works with your Macintosh display. With the increase in system memory and storage capacity, you get to expand your desktop that much further.

---

The Macintosh™ SE and Macintosh Plus from Apple™ do just about anything that a good business computer can do. Both are capable of running thousands of powerful software applications, including some applications that no other personal computer can handle.

But what’s really unique about the Macintosh SE and Plus is the world’s most friendly user interface. End of story.

So Macintosh owners have the ability to do more things quickly and easily — which translates into greater productivity at work — or anywhere else for that matter.

---

**GOOD**

---

**BETTER**

---

*Docking not shown in the image.*
But to properly size up the Outbound's real potential requires a slightly more detached point of view. On its own, the Outbound Laptop gives you the freedom to express yourself while on the road — becoming a standalone Laptop and running all of your favorite Macintosh applications. And because of Outbound's innovative silicon disk — your software will perform at a recognizably quicker pace, which is especially important if you happen to be on the fast track.

Weighing in at just over 9 pounds (battery included), the Outbound Laptop combines a sleek, compact design with all of your favorite Macintosh features — yet it's small enough to use in the crowded coach section of an airplane.

So if you work under slightly confined conditions — on a train or even in rush hour traffic — the Outbound Laptop is the best way to get the job done.

**BEST**

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Write:
Outbound Systems, Inc.
(Formerly Wellaby Systems, Inc.)
4840 Pearl East Circle
Boulder, CO 80301

* The Outbound laptop requires that an authorized Outbound retailer relocate the IBM from your existing Macintosh SE or Macintosh Plus. Your Macintosh SE and Plus are fully operational as long as the Outbound laptop is docked.

The Outbound name and logo are registered trademarks of Outbound Systems, Inc. Apple and Macintosh are registered trademarks of Apple Computer, Inc. © 1990 Outbound Systems. All rights reserved.

Please circle 135 on reader service card.
Mail Call

Mac through any fax modem hooked up to a network; cc:Mail, Microsoft Mail, and QuickMail all support this function.

Interapplication communication. QuickMail and Microsoft Mail have begun the process of integrating mail with other products. QuickMail lets you put a Mail menu onto any application’s menu bar, so that you can quickly enclose your current active conversations. (This feature is similar to cc:Mail. If you are using either of these communication requires that one other hand, has taken the road of integration at the API (application-programming interface) level and has integrated Mail with Word and Excel. If you are using either of these programs when you open your mail, you can fetch the enclosed file and read it immediately from within Mail.

Real-time conferencing. QuickMail is currently the only mainstream Mac mail package that allows you to have a real-time conference with other network users, even across zones and local servers. In Conference mode, one user talks (types) to another user without going through the server, and users can save a log of their conversations. (This feature is similar to Flash from Beagle Bros, which lets users chat back and forth, as well as transfer files, without using the server as an intermediary.)

Reaching Out

Extensibility. An E-mail system quickly becomes obsolete if it cannot be expanded. Not only do you need to be able to add more users easily, but you also need to be able to split your mail service among different servers, across zones, and even to remote locations.

Server-to-server communication. An internet consists of several linked LANs, which can be extended by routers and bridges. Server-to-server communication requires that one server knows when and where to deliver mail to other servers, both locally (in the same building) and remotely (over phone or dedicated lines).

In order to have server-to-server...
communication in DaynaMAIL and cc:Mail, you need a PC to do the linkup. DaynaMAIL also requires you to purchase MHS (Message Handling System) from Action Technologies, of Emeryville, California, for server-to-server communication. cc:Mail currently makes you buy both its DOS version to do setup and administration and its cc:Mail gateway for server-to-server linkup.

InBox Plus, Microsoft Mail, and QuickMail are able to establish multiple servers, although you have to purchase additional server software because each server is serialized on the network.

The QuickMail administrative software provides the most-elaborate options for tweaking local or remote server-to-server connections, including the ability to adjust the length of the intervals between server-to-server file forwarding, the transmission rates for modem dial-up, or the log-on times for making connections to commercial services. Subsets of these features are available in other packages as well.

**Multiplatform clients and servers.** All the E-mail packages (except DaynaMAIL) currently provide support for Mac as well as PC clients on the same network. On the other hand, because DaynaMAIL and cc:Mail run on top of any AppleTalk-compatible file server, any platform that can be hooked up to a LocalTalk network and is compatible with products such as DaynaNET, AppleShare, TOPS, or NetWare can be used as a server. Microsoft Mail now has VAX servers available from both Alisa and Pacer.

**Remote access.** Only QuickMail has a specific program for sending and receiving messages from a remote location. It’s possible, however, to send and receive messages from a remote server with any E-mail program by using a standard telecommunications program for terminal emulation and at least a 2,400-bps modem. This communication method

---

**Table 2: Emulators and Gateways**

<table>
<thead>
<tr>
<th>Terminal emulators (client to server)</th>
<th>cc:Mail 1.1</th>
<th>DaynaMAIL 1.01</th>
<th>InBox Plus 3.0</th>
<th>Microsoft Mail 2.0</th>
<th>QuickMail 2.2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>Generic</td>
</tr>
<tr>
<td>MCI Mail</td>
<td>All-in-1</td>
<td>MCI Mail</td>
<td>MHS</td>
<td>AppleLink</td>
<td>INET</td>
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<td>EasyLink</td>
<td>MHS</td>
<td>PROFS</td>
<td>MCI Mail</td>
<td>MCI Mail</td>
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<td>PROFS</td>
<td>FAXgate</td>
<td>SMTP</td>
<td>SMTP</td>
<td>SNADS</td>
<td>The Source</td>
</tr>
<tr>
<td>Quiccom</td>
<td>MCI Mail</td>
<td>X.400</td>
<td>VMSmail</td>
<td>UNIX SMTP</td>
<td>Telecom Bridge</td>
</tr>
<tr>
<td>SMTP/UCP</td>
<td></td>
<td></td>
<td></td>
<td>VMS Mail</td>
<td>Telemail</td>
</tr>
<tr>
<td>SNADS/OS/OS</td>
<td></td>
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<td>Telemail</td>
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<td>X-400</td>
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**Table 2: E-mail vendors are developing a host of emulators and gateways for E-mail systems. CE Software has written terminal emulators for on-line services that allow clients to log on as typical users from within QuickMail. Accounts are maintained at the QuickMail server, and dial-up occurs at predesignated times.**

For the most part, the gateways allow true server-to-server communication between dissimilar E-mail systems. Gateways can be configured for specific dial-up intervals and times. Full listings of gateway prices and companies are available from the E-mail vendors and are being updated regularly.
can be time-consuming, though.

QuickMail's Quick Remote telecommunications package lets you dial directly into your E-mail system and pick up and deliver your mail, but it's slow and doesn't provide you with many of the capabilities you get with your in-house DA.

Gateways. LAN-based E-mail can connect to commercial mail systems, such as MCI and CompuServe, and corporate mail systems, such as PROFS (which, incidentally, includes the infamous Unsend feature that contributed to Colonel Oliver North's embarrassment). There are two ways to make such connections: using a terminal emulator that allows client access to the remote server, or using a gateway that allows your local LAN mail server to speak directly to the remote mail server (see Table 2).

Emulators are easier to write than true gateways — writing to them is like configuring a telecom package's log-on sequence. Gateways, which require time-consuming programming at the API level, are available from several developers.

The two approaches are very different. Every terminal emulation requires that a separate account be maintained at the mail server. If many users have their own MCI accounts, for instance, and they all try to send mail at the same time, multiple connections are made with MCI simultaneously and the local server can quickly be brought to its knees.

A gateway, on the other hand, allows numerous clients to access a server through a single channel. QuickMail leads the pack in the number of emulators it provides, but gateways for all the E-mail packages are available, with more appearing all the time.

Future Directions

Now that E-mail on the Mac has achieved reasonable performance and reliability, vendors are beginning to tackle other issues such as multiprocess communication, links to other mail systems, and the implementation of X.400 standards. We can expect E-mail to expand soon from messaging into such areas as automatic document transport, archival systems, and automated invoicing and data collection.

E-mail will soon be more than just simple text messaging, offering a rich array of electronic objects such as voice, images, and text in complex multimedia documents. With faster networks, the transport of such complex objects will become commonplace. But these advancements are still in the future. To find out what the best E-mail choice is today, see "The Bottom Line," where you'll find MacUser NetworkShop's picks and pans.

Michael Miley is an associate editor for MacUser Labs who had a spiritual life prior to researching electronic mail.

The Bottom Line

Soon after we began testing the five most prominent E-mail systems, it became clear that this was a two-horse race. A month of simulated office chatter confirmed our suspicions: When picking an E-mail system, look first at CE Software's QuickMail 2.2.2 and Microsoft Mail 2.0.

QuickMail is a fast, powerful, and full-featured E-mail package with loads of features for both user and administrator. CE Software seems to have anticipated every E-mail need — or whim. QuickMail isn't perfect, however. It would earn at least another half mouse if it fixed its inefficient multiple-message strategy. It's not unusual for a user to get a "server busy" message while QuickMail is grinding away, replicating messages and enclosures on the server. Larger networks can get into problems if they don't allocate a large enough hard-disk drive, and weekly backup and restore (for hard-disk defragmentation) is a must.

Close behind QuickMail — very, very close — is Microsoft Mail 2.0. Mail is lean and mean — although maybe a bit too lean. Its client/server relationship is fast and efficient, and if the package were more full-featured, it would clearly be the winner. If you can put up with a limited set of features for the time being, you may ultimately win out as Microsoft adds to Mail's power. Mail 2.0 is spartan today, but it may be the near-future choice for companies gearing up for large E-mail systems — especially those that benefit from Mail's integration with Microsoft Word and Excel.

For TOPS buyers, the basic Inbox package is a can't-be-beat bargain: It's free. Users who like the program can upgrade to Sun Microsystems' Inbox Plus 3.0 for a marginal cost, and they'll find it to be a good, solid product with more user goodies than Microsoft Mail. Inbox's client/server design could use some rethinking, however.

We can't recommend cc:Mail 1.1 and DaynaMail 1.01 in their current incarnations. Although cc:Mail has earned a solid reputation in the PC world, its lack of a Mac-based administrator package makes it not ready for prime Mac time. We'd also like to see more competitive pricing: There are too many hidden costs for Mac-centric LANs. PC networks that are already running cc:Mail, however, and want to add Macs to their network will find cc:Mail for Macintosh to be a reliable partner.

Finally, DaynaMail's designers need to go back to the drawing board. DaynaMail is touchy to set up, slow to use, and still shaking out the bugs. We advise users who are attracted to DaynaMail's distributed, serverless option to investigate a low-cost alternative such as Flash. For a lot less money ($100 for unlimited users) and hassle you can have point-to-point file transfer and simple messaging.
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Optical Character Recognition

Character Witnesses

AccuText and OmniPage — the big names in automatic OCR — take the stand to see who's the best judge of character.

A lot of the information that people want is already in print somewhere — in a book, magazine, newspaper, or report. The problem is getting the information off the page and into your Mac, ready to be edited, analyzed, tweaked, and processed. What you need is a way to convert spots of ink on a page into bits of electricity in a chip. What you need is optical character recognition, or OCR.

OCR enables computers to "read" documents by optically scanning a page and then finding and identifying the characters on that page. The result is an editable word-processor or spreadsheet file.

Early OCR programs for the Macintosh were
designed with rigid rules that allowed them to recognize only a very few fonts, type styles, and sizes. Then came “trainable” OCR, which you could teach to recognize almost any font by showing it what typical characters looked like (see the “Trainable OCR” sidebar). These programs use pattern matching, isolating a possible character and overlaying it with a known character pattern until a match is made—a process similar to comparing fingerprints.

Automatic, or “omnifont,” OCR was the next step. These programs don’t need to be trained to recognize particular fonts or styles (hence omnifont). Instead, they work with more-general rules and can recognize characters in a variety of type sizes and styles by means of a cluster of algorithms.
Trainable OCR

If you’re going to scan a lot of text with only a few fonts, a trainable OCR program can be your best choice.

After some practice, trainable OCR programs can recognize almost any font. You show the program what a font’s typical characters look like by working through a sample page — this is an a, this is an f, this is another a, this is a comma. Training can take anywhere from 15 minutes to a couple of hours.

Trainable programs demand less system hardware than automatic programs do — they can work on any Mac with 1 megabyte of RAM — and if you’re willing to set aside some training time, you can achieve speedier scanning and better accuracy than with automatic OCR programs.

TextPert 3.01 isn’t the easiest program to train, but it does support a wide range of languages and alphabets, and it has some of the most flexible file-input and -output options of any trainable OCR package.

Version 3.5, scheduled for release after press time, offers better speed and greater...
refer to a dictionary and then speculate on a character's identity by its context within a word. As a result, OmniPage seldom substitutes the wrong character in a word; instead it inserts the unknown-character symbol wherever it isn't sure. It's then a simple process to search for unknown characters and fix them, using a word processor's spelling checker.

AccuText begins its analysis by examining an entire page, much as OmniPage does. As it moves through the page, it...
learns the text shapes and adjusts its recognition, based on new information. It learns from clearly printed sections of the page what characters look like and then applies that knowledge to areas that are not printed as clearly. AccuText recognizes the easy marks early on and postpones the tough guesses until it knows more about the page.

AccuText uses a multilevel expert system for page segmentation, character recognition, and format analysis. The character-recognition expert has several parts. One works on well-formed characters' geometric properties. Another uses learned information about the page to separate touching characters—realizing, for instance, that the letter pair is too wide to be a single m. AccuText also has an expert system to deal with character attributes such as italics, underlining, superscript, and subscript.

A large part of AccuText's intelligence comes from its lexicons—dictionaries of properly spelled words and probable character sequences available in seven languages. The English lexicon contains 50,000 words (more if you add your own user lexicon) and syntax rules, such as likely word endings, and letter/number combinations, such as /90s and 1st. These syntax rules help AccuText guess the probable identity of questionable characters.

AccuText's lexicon checking gives it a stronger tendency than OmniPage to substitute incorrect characters. It also makes AccuText run more slowly, because it's trying harder to make sense of difficult characters. On a magazine page, this results in AccuText's recognizing headlines or headings over columns—styles of text that don't offer many examples for learning and comparing on a single page.

Because AccuText is designed to deal with long documents, it sees and learns from a larger text sample than does OmniPage. This means, however, that it can be prone to committing errors in short documents.

OmniPage also offers context-based recognition through an optional product called OmniSpell. Still in beta at press time, OmniPage with OmniSpell is designed to look at all the recognized words in a document and compare them with a dictionary stored on-disk. It can then change a questionable character's identity within a word to match a dictionary entry as well as report how many words will change in this way. You can then make all the changes at once or pick
Most computer printers are sentenced by their own sheer bulk to lifelong confinement on a desktop. But now GCC Technologies has created a printer for the Macintosh with considerably more freedom than that. It's called WriteMove, the "biggest" printer ever to come in an incredibly small package.

WriteMove weighs a scant three lbs. It measures just 2" x 6 1/2" x 10 3/4". (Any smaller and you couldn't get the paper in.) But it's the only ink jet printer of any size that gives you unlimited freedom to reduce and enlarge both type and documents. Because it's the only one with outline fonts — imaging software that provides functionality usually associated with laser printers.

As a result, you can use WriteMove to compose documents with word processing software like Microsoft Word, or Excel. And then silently print them out on cut sheet or fanfold paper at 192-dpi resolution.

High Quality Output, To Go.

As a result, you can use WriteMove to compose documents with word processing software like Microsoft Word, or Excel. And then silently print them out on cut sheet or fanfold paper at 192-dpi resolution. So, you get much higher print quality than the ImageWriter II, for not much more money. All of this has obvious consequences for the highly mobile. Since WriteMove works off rechargeable batteries, you will have direct access to letter-quality output on airplanes, in hotel rooms or even at that popular weekend workstation called home.

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Character Witnesses

through them interactively.
OmniSpell can also build a user dictionary of proper names and technical terms for a document — either interactively or by importing a text file — and it can export its user dictionary for use with other spelling checkers.

The Best Scanners

A poor-quality scanner can sabotage the efforts of even the best OCR program. For instance, if there’s inadequate contrast between text and background, character forms can break up. If there’s too much contrast, adjacent characters will join together. And low resolution can make it difficult for the program to recognize small characters or characters containing fine lines.

In order to test the quality of the 21 most popular scanners, MacUser Labs scanned a document composed of normal contrast text, very light and very dark text, and a faxed document. Each test was performed on white, brown, goldenrod, blue, and yellow paper.

The scanners were set at 300-dpi resolution (typical laser-printer quality), line art, and 100-percent scaling. We initially selected default contrast and brightness levels (except when auto-thresholding was available), but some scanners displayed such poor image quality at default settings that we had to adjust the brightness level.

We used OmniPage 2.1 to read the scanned images, and we used a spelling checker to count the number of misspelled words in the final file.

The error count didn’t vary widely among the scanners. We did have to tweak the brightness settings on some scanners to achieve these results, however — of the top three scanners, only the Varityper 1200, with its excellent auto-thresholding feature, required no adjustments to the brightness control.

If you’re going to do a large amount of scanning for OCR, you’ll probably need a multisheet-feed scanner — such as the Microtek MSII or the Xerox Dacapory JR220 — or a flatbed scanner with an optional multisheet feeder, such as the Xerox Dacapory 830.

— John Price

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<th>The Best Scanners</th>
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<td>UMax UG80</td>
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Better Average Worse

Comparing scanner output quality showed an average of 82 word errors on a complex page.
a page, it doesn't report the results in the same format. For instance, OmniPage reports side-by-side columns in the original document as sequential columns in the final output.

AccuText holds on to more of a document's format than OmniPage does. It can even create style sheets for Microsoft Word. When faced with keeping the file as easily editable as possible or forcing it to look like the original, however, AccuText opts for editability. For instance, AccuText can reproduce a table's format with tab stops between columns, but it cannot include any additional spaces that even out on-screen character spacings and positions.

**Features**

AccuText's settings and menus are more focused and economical than are OmniPage's. You can specify column settings, page settings, and recognition settings, such as numbers only, letters only, or alphanumeric. You can also decide whether or not to use context verification. You can save scanner settings, such as those for brightness and resolution, in a file on-disk.

One of AccuText's best features is its Preview window, which lets you customize settings for different areas of a document, as well as choose how much of the page to scan. Unfortunately, these settings can't be saved as a template. Final text output can be saved as Microsoft Word, MacWrite, text, or Excel files, and scanned images can be saved as TIFF, MacPaint, or PICT files.

You have to deal with twice as many menus in OmniPage. The Defaults menu offers choices for 11 European languages, 17 scanner models, contrast, size, scanner resolution and tone, and scan area, as well as text defaults. You can also choose whether to display statistics on accuracy at the end of the file. One nice feature that OmniPage offers is the capacity to "invert" the data (print white on a black background).

OmniPage's Preview window allows you to zoom in or out to view text or graphics, which is useful for checking your scanner settings but doesn't allow you to limit the scanning area.

When OmniPage has read each page, it places the results in its Transitional Edit window, which offers search-and-replace commands and an error-checking option for finding and manually fixing recognition errors. Finished files can be saved as text, MacWrite, Microsoft Word, WordPerfect, or Excel files. Images can be saved as PICT, MacPaint, or TIFF images.

In addition to Omnispell (mentioned earlier) for context verification, OmniPage also has several optional add-on programs: Omnipaint for low-quality dot-matrix prints; Omnipoint to compare documents; and Omnitrace, which converts bit maps to PostScript graphics.

Omnitrace can show you how two versions of the same document differ, and it can generate summary reports of the differences, which is useful in testing the accuracy of your OCR files. Omnimap inserts itself into OmniPage as another menu option. It converts bit-mapped and TIFF files into EPSF files that can use Bezier curves and vectors.

**Performance**

Automatic OCR is a difficult process, and it demands some powerful hardware: You'll need at least an SE with 4 megabytes of RAM and a hard-disk drive. Both AccuText and OmniPage are designed to drive a scanner directly and to recognize the files produced as well as to translate TIFF files created or captured elsewhere.

A surprising difference between the programs is how they handle multipage documents. With AccuText, you must respond to a prompt after every sheet, whereas OmniPage handles the pages...
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- Utilizes the Macintosh interface to its fullest.
- Make use of the glowing objects to find your way through dark hallways.

Who dares be Next?

Without interruption. Yet AccuText is supposedly designed for multipage work. Because it learns as it goes, AccuText should accelerate while working on a long, homogeneous document. When MacUser Labs charted both programs for rate per page, however, there was no clear trend: Neither OmniPage nor AccuText gets noticeably faster over the length of a document.

Comparing Performance

To justify its cost, an OCR program should be faster and more accurate than a typist. Measuring a program’s speed and accuracy depends on the complexity of the document you’re asking it to read, including such aspects as the paper it’s printed on and the layout, type size, and skew angle.

In our tests, OmniPage was usually faster than AccuText and won most of the accuracy comparisons. It was more skew-resistant, keeping its accuracy even when a page was angled by as much as 5 degrees — AccuText’s accuracy dropped precipitously with such a skew. There were a few cases in which AccuText matched OmniPage’s time, however, and poor-quality pages, such as dark photocopies and fax copies, particularly, hurt OmniPage’s accuracy far more than AccuText’s (see Figure 1).

In general, the tests showed that both programs fare better with photocopies of pages than with originals — possibly because the photocopy smooths lines, connects neighboring dots, and reduces glare from the page surface.

Both programs had difficulty recognizing equations, and neither could produce an acceptable result when scanning a technical document with equations. OmniPage was twice as fast as AccuText.
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American Heart Association

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Figure 9: OmniPage displays the page image and a small character window as it works. When text blocks on the page are recognized, they’re filled in with a pattern. The small window lets you see the scan’s quality in detail.

Figure 10: After scanning a page, OmniPage initially saves the text in a Transitional Edit window that includes search-and-replace functions. This lets you see the quality of the OCR work without having to open it in a word-processing or spreadsheet program.

when scanning the technical document, and it had slightly better overall accuracy, but AccuText was better at catching subscripts (see Figure 2).

On a simple magazine page with few graphic or text elements, both programs failed to deliver an accurate rendition, and AccuText took more than ten minutes to do a poor job. OmniPage was more accurate, but AccuText kept the text blocks in order better. Changing the scanner settings for brightness and contrast didn’t improve either program’s accuracy. A competent typist could sit at the keyboard and key in a page faster and more accurately than this. Both programs worked better with a photocopy of the page, with OmniPage reaching reasonable accuracy in a little more than half the time AccuText took.

On the complex magazine page — with three columns wrapped around circular and angled graphics — both programs took the same amount of time. Although OmniPage delivered a lower error count, it had more trouble distinguishing graphics that were placed close to the text (see Figure 3).

On legal documents, both programs did a good job, although they had some trouble keeping the line numbers on the left separated from the rest of the text. AccuText was actually slightly faster than OmniPage — consistent with Xerox’s claims that longer documents produce better results — but it deleted a dozen words (see Figure 4).

On a 20-page document, OmniPage was faster, averaging 57 characters per second; AccuText averaged only 32. But OmniPage had some 10 seconds per page of overhead, whereas AccuText gave up only 5 seconds per page.

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AccuText is an automatic, omnifont OCR program built on a squad of expert systems that combine shape and context analysis, working from a lexicon of correct word spellings, common word endings, and probable letter and number sequences. Its forte is reading poorly copied, multipage documents.

Pros: Can read poor-quality prints and photocopies. Has Preview window for manually selecting and arranging blocks of text to recognize. Preserves more of a page's format than OmniPage.

Cons: Slower and less accurate on most pages than OmniPage. No built-in editor for viewing recognized text before saving to a file.

Requires: SE with 68020 accelerator card, or SE/30 or later with 4 megabytes of RAM (5 megabytes under MultiFinder) and a 20-megabyte hard-disk drive. System 6.0 or later, Finder 6.1 or later, and MultiFinder 6.0.

List Price: $799.
Xerox Imaging Systems, Inc., 535 Oakmead Parkway, Sunnyvale, CA 94086; (800) 248-6550.

OmniPage is an automatic, omnifont OCR program. It can read a wide range of documents, but it works best on complex magazine pages. Its strict adherence to shape analysis — without AccuText's dependence on lexicons — avoids most substitution errors. You can extend its use with the optional programs OmniSpell, OmniDraft, OmniProof, and OmniTrace.

Pros: Fast and accurate on most pages. Supports more scanners, languages, and output file formats than AccuText. Is able to read pages placed in or on a scanner at an angle. Optional programs provide context analysis, document comparison, dot-matrix-print recognition, and conversion of bit-mapped graphics to object graphics.

Cons: Not good on poor-quality prints and copies; little manual control of text-block shape, position, or recognition order; preserves little of a document's format; requires a page to be scanned twice to save text and graphics.

Requires: SE with 68020 accelerator card, or SE/30 or later with 4 megabytes of RAM (5 megabytes under MultiFinder), System 4.2 or later.

List Price: $795.
Caere Corp., 100 Cooper Court, Los Gatos, CA 95030; (800) 535-7226.

Our testing showed that OmniPage is generally faster and more accurate than AccuText. It handles multipage documents better, and it supports more scanners and languages.

AccuText is a better choice if you scan a lot of poor-quality pages or you want to capture specific parts of a page. It also preserves more of the page format than OmniText does.

Both programs achieve greater speed and accuracy when scanning a photocopy instead of an original, but you'll still need a good spelling checker to clean up the results.

Phillip Robinson is a computer writer and former research-and-development engineer. His goal for the 1990s is to be a mad scientist.
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So call 1-800-835-6100, Dept. 11A to find out how to get your hands on the new Tektronix Phaser PX. Then you can kill two birds with one color printer.

The New Tektronix Phaser PX

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Please circle 43 on reader service card.
A THANK YOU FROM MacUser

We're giving away thousands of dollars worth of Macintosh-related products, thanks to you, our subscribers. Our "Great Mac Portable Giveaway" was a huge success at the April San Francisco Mac Expo. Here is a listing of the products donated and the winners, respectively.

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Winner Name</th>
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<tr>
<td>Sam Summitec Val Ness Bechtel</td>
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<td>Pixel Paint Professional</td>
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<td>Supermac Technology Evelyn Newman US Geological Survey</td>
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<td>Dynodex With Binder Portfolio Systems Will Newman Desktop Solutions</td>
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<td>HP Deskwriter Printer/Carry Case Hewlett/Packard Larry Nighswander National Geographic Society</td>
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<td>World Class Fonts! The Originals Dub-Click Software Steve Kind</td>
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<td>Flash Beagle Brothers Inc. Stephen Ord The Whiteman Inc.</td>
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<td>Wet Paint Island &amp; Life Dub-Click Software Robert Orenstein Buckminster Fuller</td>
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<td>Calendar Creator Power Up! Software Lars Strate Barr Newlan and Sinclaire</td>
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<td>Freedom of Press 2.1 Custom Applications Lizzie Zucker Saltz Lane Medical Library</td>
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ON
THE
LINE
with MacUser

If you can't wait for your issues of MacUser and MacWEEK to wend their way through the mail, you can call up product reviews and download software from Zmac, our new on-line service.

Mr. Harley is an MIS director for a Fortune 500 company. He uses Post-it notes to mark MacUser reviews of products he wants to purchase. He wishes the magazine had an index.

Ms. Wilde is a network manager who saves money for her company by using shareware. But the time it takes to scan networks and download files costs the company money too.

Mr. Marlon is on his way to becoming a power user, but he still makes a lot of calls to busy tech-support reps. When he accesses an on-line service to ask a question, he usually gets more attitude than answers.

Like more than half of all MacUser readers, these people have turned to an electronic service to solve their problems. Now they can get answers to their questions about this magazine from Zmac, a MacUser/MacWEEK supplement on CompuServe. Zmac (the Z stands for Ziff Communications, our parent company) comprises four services: the Buyer's Guide, listing all MiniFinders reviews; the Download Library of shareware and freeware; the Tech
Editors And Customers Love It!
The technology behind our RM42 is the first that editors unanimously rallied around.
Editors, concerned about reliability, torture tested the cartridges (one even survived an accidental flight of stairs). Our RM42 delivers infinite storage on 42Mb cartridges, and it does it faster than most hard drives (20ms).
Editors also love our M series drives.
"If I could choose from all three manufacturers... I'd prefer the Mirror" — MacUser

Customers are using our RM42 removable drives everywhere and for everything:
- Publishers in New York are organizing projects by cartridge
- Designers in Sioux Falls are archiving entire clip art libraries
- Many of our customers are backing up data for the very first time with our RM42!

"Your [RM42] appears to be better built... and most importantly, it was quiet. Even better was your service. You have a product and personnel to be proud of." — Judge E.R. Wedoff, Chicago, IL

We Repair The Competition's Drives
... and we've seen them all (Apple, Jasmine, SuperMac, GCC, PCPC, Ehmam, and others). We've learned a lot about how (and how not) to build a hard drive. Most companies don't employ ESD static protection, pre-testing of sub assemblies, or utilize gold plated contacts. We do. So rest easy, your precious data is in good hands.

Factory Direct Saves You Hundreds
It's because of our direct strategy that we can deliver all this product and service at a great price. We eliminate the confusion and expense of middlemen. It's just you and us — the folks who build them.

Downtime... Practically Eliminated
You're not buying bookends. These are mechanical devices that spin at 3600 RPM for their entire life. That's why we created MirrorLoan, an overnight program that speeds a loaner to you. It's just one of the essential services you shouldn't be without.

We Hand Test Each M Series Drive

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<tr>
<td>580MP*</td>
<td>2497</td>
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*MP designates premium drive

While most companies sample test, we test every drive so the drive you receive is hand tested. It arrives pre-formatted, and loaded with 10Mb of software. Inside are the best and fastest components available (Quantum, Imprimis, Seagate), an international power supply, SCSI switching, fan, and cables.

Our #1 Removable: The RM42
Here's what you get for $697: Proven Syquest technology, full steel chassis, international power supply, convenience outlet, SCSI selection, RFI/EMI filtering, ultra-quiet fan, gold plated contacts, and all necessary cables. And it's backed with the longest supported warranty in the industry. It's everything you'd expect from a $1,500 removable for $697.

Remember, order today, it's on your desk tomorrow.
"It Took Time To Build A $1,700 Display System For $897
We sourced tubes from the same folks as Apple. We chose the same phosphor. We
tuned the system to 78hz vertical refresh rate to eliminate annoying flicker. And we
built in enhancements like pop-up menus, sizable cursor and menu bar, screen saver,
screen copy and more! With all this for $897, what'll you do with the $800 difference?
(hint: check out our RM42)

From Plus To Portable;
We've Got You Covered
We have a PixelView I and II system for every
Macintosh being made: Mac Plus, SE, SE30, Mac II, Ilx, Ilcx, IICl, IIfx, and portable. Each
PixelView system comes with everything you need: monitor, card, cables, manual,
and software!

Comparing Features

<table>
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<tr>
<th>Feature</th>
<th>PixelView I</th>
<th>PixelView II</th>
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<td>19&quot; Monitor</td>
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<td>yes</td>
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<tr>
<td>Anti-glare</td>
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<td>yes</td>
</tr>
<tr>
<td>Both screens active</td>
<td>yes</td>
<td>yes</td>
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<td>WYSIWYG</td>
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<td>yes</td>
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<tr>
<td>78hz vertical refresh</td>
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<td>yes</td>
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<tr>
<td>Tear-off/Pop-up menus</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Cursor sizing</td>
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<td>yes</td>
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<tr>
<td>Menu sizing</td>
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<td>Screen saver</td>
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<td>Screen copy*</td>
<td>yes</td>
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<tr>
<td>Full year warranty</td>
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<td>Dealer Markup</td>
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<tr>
<td>Street Price</td>
<td>$1,695</td>
<td>$897</td>
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I Used To Think That Large Screens Were A Luxury. Now I Can't Live Without One.
Until now, large screen displays cost more than the computer (and yet even at those
high prices, I found them to be the top productivity tool on my Macintosh). PixelView delivers that same productivity,
but at prices anyone can afford.

Take One For A Test Spin
(but don't say I didn't warn you)
Take my modem. Take my (gulp) hard drive,
but leave me my monitor. I feel that strongly
and believe you will too. Don't go another
week squinting and scrolling — here's my
personal guarantee to you — try either
Pixelview for 30 days. If it isn't exactly what
you expected, I want it back. Period.

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1 800 654-5294

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TECHNICAL SUPPORT HOTLINE: (612) 633-2105 Hours: Mon-Fri 8am-6pm CST
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All other brand and product names are trademarks or registered trade names of their respective holders. No surcharge for Visa, MasterCard, Discover, and Telecheck.
On the Line with MacUser

Support database for answers to common software questions, and the MacUser Forum, which allows readers to chat with MacUser editors. In addition, Zmac gives users access to the Computer Library, an index of all Ziff Communications publications, including MacUser and MacWEEK.

Zmac Run
Zmac is a natural, logical extension of MacUser. In each issue, we have more to say than we have space to print. For every product we review, there are two others we can mention only briefly. For every lab-report chart we print, four are left out. These limits don’t affect an on-line service — CompuServe is like one huge hard

Figure 1: The Hierarchical Levels of Zmac

About Zmac
Find out what’s happening on Zmac—the best threads, the hottest shareware, new tips and hints.

MacUser Software Download
Each month we’ll feature original utilities that you can download at no additional charge.

MacWEEK Special Edition
A headline news feed on upcoming stories in MacWEEK.

Subscriptions
Subscribe to the paper editions of MacUser and/or MacWEEK.

Roster
A who’s-who list of personalities on the service.

How to Use This Service
This lets on-line help area gives tips and hints on how to better use CompuServe.

MacUser Forum

MacWEEK Forum
Ask questions. Write a letter to the editor. Trade rumors with Mac the Knife.

Tech Support Forum
An electronic version of the Help Folder that provides a common ground for solving technical problems.

Shareware Library
The best shareware, as picked by the editors.

Buyer’s Guide
The most up-to-date purchasing information in an easy-to-use database.

Tech Support Database
All the tips and hints from Power Tools and the Tip Sheet in a fully searchable database.

Computer Library
Need back issues? Here’s the chance to search through the full text of MacUser and MacWEEK.

Electronic Mail
Use CompuServe Mail to stay in touch with other subscribers and to hook up with other E-mail services such as MCI.
zmac, the electronic extension of macuser, is a mac resource you won't want to be without.

power buyers
products move quickly in the mac world, so making informed purchasing decisions is difficult. it's hard to stay afloat in the constant stream of new prices, updates, bug fixes, and fresh ideas. a lot of you gripped when we changed the minifinders from a monthly to a quarterly format. that's why we're now offering the zmac buyer's guide, which is updated weekly, on-line.

the buyer's guide database combines the familiar macuser critiquing techniques with the latest product news from macweek. we're starting with more than 1,000 products, covering the entire range of available software and hardware. each review includes the latest ordering information and prices, as well as announcements about new versions.

download for less
the reason most people go on-line is to download shareware. but you have to wade through thousands of second-rate programs to discover the winners. then when you do find something good, you must beware of viruses. to help alleviate this frustration, we developed zmac's download library, which combines the best-known shareware and freeware, chosen by the editors of macuser.

we test all the shareware on the library with disinfectant to make sure that it's free of any known virus. if you're looking for solutions that aren't going to cost you too much, then you ought to check out the zmac download library.

some of you may have already run across a preliminary version of the download library: the macuser download area on compuserve delivered the source code discussed in kurt matthies and thom hogan's power programming column. every column instructs readers how to access the code. the download area service will be absorbed into zmac's download library, and more macuser articles will include cross-references to zmac in the future.

what's your on-line?
how often have you called a firm's tech-support line, only to end up leaving a message on its voice mail? users' problems with getting their questions answered are the whole reason that user groups have sprung into existence. hints, tips, and q&a account for a substantial portion of macuser each month too. we've collected all that help info into a tech support database, and it's available any time.

still need to talk with the company? zmac has collected the answers to the questions most frequently asked on tech-support lines. although the tech support database is in its infancy now, we expect it to grow as companies seek on-line support for their customers. if you can't find the answer to your question in the database, then you can always turn to the discussion forums.

how to join zmac
if you are a compuserve user, just type do on zmac at any 1 prompt. if you don't belong to compuserve, you can sign up on-line by following these directions.

find your local access number by setting your communications software for 300, 1,200, or 2,400 baud; 8 bits; one stop; no parity. dial (800) 346-3247. when you're connected, press the return key. at the host name prompt, type phone. follow the instructions to locate the access number in your area. hang up and dial that number. after you've been connected, press the return key.

at the host name prompt, enter zmac.

when you get the agreement number prompt, enter z239007.

register your name, and enter your visa, mastercard, or american express account number. by choosing business account invoicing, you can choose to have your company billed directly. for more information on both types of registration, call (800) 848-8199.

your user id and password will be displayed at the end of sign-up. you can now dial compuserve again to access zmac. a new password will arrive in the mail within ten days.

if you need to speak with a person, call compuserve customer service at (800) 848-8199. once you're on-line, you're going to want to explore the various services we offer on zmac. use the map provided in figure 1 to navigate.
Do you have to avoid embark

The great technology lottery. You play it every time you buy computer products. Will your investment today make you look brilliant or foolish when tomorrow comes?

Enter the new MacIRMA family of connectivity products from DCA. This intelligently conceived product line provides an easy, risk-free migration path from standalone coax Mac to Mainframe connectivity to LAN gateway connectivity.

For starters the same MacIRMA WorkStation™ software that works on MacIRMA 3270 coax adapters works on MacIRMALAN™ Server Gateways, too. All you do is remove the coax board and add a LAN connection and a MacIRMALAN Gateway.

Now your Mac LANs can integrate with a mainframe, keeping your options open in terms of 802.2 or SDLC gateways for TokenTalk, EtherTalk
No matter what kind of environment you see in your future, you can feel very comfortable making a commitment to MacIRMA WorkStation today.

It'll give you complete confidence that you'll never have to second guess yourself or LocalTalk. And reliable, lower cost PCs or PS/2's are used as gateways.

Since the same workstation software is used, there's a consistent user interface from standalone to LAN use, which results in reduced installation and training time. Also, MacIRMA API applications developed for coax work in the LAN gateway environment, so you walk away from none of your investment and neither will anyone else. For more information call 1-800-241-MacIRMA ext. 61J.*
real time with *MacUser* editors, columnists, writers, and other readers. Here is where we expect to answer your questions that are not covered in the Buyer’s Guide or Tech Support databases.

The *MacUser* Forum is split into sections just like the magazine — StartUp, Lab Reports, Solutions, and the NetWorkShop. We’ve assembled a dynamic team of sysops to monitor the forums. Steven Bobker, known for Bobker’s Dozen, is the chief sysop, with overall responsibility to keep things moving. The contributing editor of Tip Sheet, Greg Wasson, will monitor the Tech Support area.

**Now you can write a letter to the editor without waiting three months for an answer.**

**Get Back Issues**

Readers have consistently asked for an index of *MacUser* articles. (Some readers have gone so far as to create homemade indexes.) Zmac links up with the Computer Library, another Ziff service, to index every issue of *MacUser* and *MacWEEK*, plus a host of other computer-related publications. You can search multiple fields on the full text of all Ziff publications. With that power comes an extra price, though. On top of the normal CompuServe fee of $12.80 per hour, you have to pay $2.50 an hour to get online, plus a per-article charge of $2.50. That can be more expensive than a 900 number on a lonely Saturday night. In the coming months, *MacUser* articles will tell you how to cut down on your rates and get the most out of the Computer Library so you don’t max out your plastic.

**Window Dressing for a DOS-like Interface**

Why did we choose CIS (CompuServe) as our on-line ally? It wasn’t because of the interface. The command-line prompts characteristic of CIS are enough to scare away even determined Macintosh users. America On-Line and Connect have much cleaner and more Mac-like front ends than does CIS. When we surveyed our readers to find out which on-line service they used most frequently, however, it turned out to be CompuServe.

CompuServe knows that its interface needs help and is working to produce the CIM (CompuServe Information Manager), a graphical front end to CIS. To make Zmac more accessible, particularly for first-time CompuServe users, we’ve licensed a special version of CIM to distribute to Zmac users.

CIM navigates easily through the maze of CIS hierarchical menus. Navigation palettes, pop-up menus, and identifiers let you point and click to go to a new level. Without CIM, you must answer DOS-like prompts to navigate CIS. CIM also makes downloading files from CompuServe easier. It supports Quick-B, the fastest transfer protocol for CIS, for multiple files. CIM lets you view the history of a message thread (on-line discussion) as a treechart, making it easier to read threads.

At press time, CIM was still in beta, with an expected release this summer. When it’s available, we’ll provide you with the Zmac version of CIM at a nominal fee — just enough to cover postage, handling, and our development costs. We also plan to support the other fine interfaces to CompuServe, such as MicroPhone II, Navigator, Smartcom II, White Knight, and other telecom-software packages. We’ll let you know in the pages of *MacUser* when CIM ships. Or you can just log on to Zmac for an instant update. We’ll be doing our best to make Zmac a CIS service that even Macophiles can love.

**Log On Now**

Zmac isn’t going to replace *MacUser*. But it’ll make reading *MacUser* easier. Not only can you locate the information more easily, but you get to talk back and make your views known. ♦

Ben Templin is the on-line manager for *MacUser* and *MacWEEK*. He has been through three jobs since mid-1988, when he worked on the preliminary design for what was to become Zmac.

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*Figure A: Instead of using the ! prompts familiar to thousands of CIS users, CIM (CompuServe Information Manager) presents the structure of a forum in a series of windows. The upper right window lets you choose a section within a forum — in this case, the CIS Navigator section in the Mac Communications Forum. The upper left window maps out a message thread according to author. The bottom window contains the message that is currently being read.*
Tomorrow's Upgrade For Your Mac Is Only $85*

A MacWarehouse Memory Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable, overnight service will have your Kit in your hands tomorrow!

MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spreadsheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. Just open your Mac, slide out the main circuit board and plug in your SIMMs. Our FREE video will give you STEP-BY-STEP installation instructions. Every type of Mac is covered and we think we've made it a breeze.

WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs — (2@$85 each).

The chart explains exactly what you need to achieve the desired level of performance.

To open your Mac Plus or SE, you'll need a specially designed tool — it's available from us as part of a handy tool kit for just $9.

WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMS (Single Inline Memory Modules). Each one megabyte SIMM card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products. Prices can vary a lot, based on quality, speed and demand. At press time our price for 1MB, 100 ns is $85. Please call for the very latest prices and availability. Our sales staff will tell you what you need and help make your choice an easy one.

SPEED

Do you need 70, 80 or 100 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor needs 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

OVERNIGHT DELIVERY

Place your order by 12:00 a.m. (E), weekdays and we'll deliver overnight for just $3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

MacWAREHOUSE

1-800-255-6227

Call toll-free Twenty-four hours a day, seven days a week.

Inquiries 1-201-367-0440
Fax 1-201-905-9279

© Micro Warehouse Inc.

MACWAREHOUSE 30 DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWarehouse Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return the product, postage paid, in its original condition, with the original packaging and documentation.

ONE YEAR WARRANTY. MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

MUG0P
The Font Specialist

Whether you’re a professional graphic designer or a Mac user looking to improve a memo or presentation, you’ll be delighted to choose from the mind-boggling variety of Adobe typefaces. And there’s no need to scour the earth for your selection. MacWAREHOUSE carries the full library of Adobe PostScript® typefaces for the Mac, including the newest additions. Choose from the fonts below or ask for a copy of our catalog. Order your fonts anytime up to 12:00 midnight, and we’ll deliver overnight for just $3.00. Remember, nobody beats MacWAREHOUSE for your font needs — nobody!

<table>
<thead>
<tr>
<th>Font Family</th>
<th>Style</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Type Manager</td>
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</tr>
<tr>
<td>Adobe Type Reunion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Between now and June 30th, MacWarehouse is offering savings on every hard drive we sell. So, if you're thinking of buying a new hard drive, your timing couldn't be better. Check out our sale prices and your savings, compared to our December 1989 prices, in the chart. We offer drives by leading manufacturers like Cutting Edge, CMS, Quantum, Power User, PLI Infinity Turbo and others - all at unheard of low prices.

Let our helpful sales staff take the hassle out of buying a drive. They'll tell you which drive mechanism uses. They'll also tell you about access speed, reliability, software and the manufacturer's warranty. Just return it to us within thirty days and we'll refund your money.

Then there's the MacWarehouse Loaner Drive Program. Buy from MacWarehouse and if you ever have a problem, you won't be without a drive for more than a few hours.

A hard drive from MacWarehouse couldn't be easier to use. We'll tell you which ones come pre-formatted - ready to use right out of the box. You just plug in, turn on your Mac and go!

If you do need any help, the MacWarehouse Technical Support staff is standing by our toll-free lines to assist you.

**MONEY BACK GUARANTEE**
They'll tell you which drives come with the MacWarehouse 30-day money back guarantee. Try one at home. And if, for any reason, you're not 100% satisfied, we'll refund your money.

**LIMITED TIME OFFER**
MacWarehouse sale prices, based on capacity, are shown in the chart. Also shown are the savings from pre-holiday prices. (This is a limited time offer, valid through June 30th.) Overnight delivery is just $3, anywhere in the Continental United States.

So call us now and tomorrow morning you'll be up and running with the best hard drive deal in the business!

**Table:**

<table>
<thead>
<tr>
<th></th>
<th>20+ MB</th>
<th>30+ MB</th>
<th>40+ MB</th>
<th>60+ MB</th>
<th>80+ MB</th>
<th>100+ MB</th>
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<td>Cutting Edge</td>
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<td>$379</td>
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<td>$469</td>
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<td>CMS, MacStack</td>
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<td>$499</td>
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<td>$649</td>
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<tr>
<td>PLI Infinity Turbo</td>
<td>$569</td>
<td>$20</td>
<td>$619</td>
<td><strong>$26</strong></td>
<td></td>
<td>$120</td>
</tr>
</tbody>
</table>

Savings are calculated from MacWarehouse December 1989 published prices. *Quantum drives are for internal installation and require a 3.5 Internal Drive Kit for 80 MB. **PSL is a 50-meg turbo drive. ***40 Mb Removable Cartridge Drives come with 1 cartridge. Additional cartridges available.

1-800-255-6227
Call toll-free Twenty-four hours a day, seven days a week.
Inquiries 1-201-367-0440
Fax 1-201-905-9279

MacWarehouse 30-Day Money Back Guarantee
Many of our drives come with the MacWarehouse 30-Day Money Back Guarantee. If, for any reason, you're not completely satisfied, call us within thirty days of receipt for a return authorization number and full refund of the purchase price.
**ACCESSORIES**

- American Power Conversion 110 SE UPS ....... ................. ....... ... 219.
- 370 c i UPS ...... ..... ... keyboard ....... 11.
- Mac II and extended keyboard ................. 12.
- Mac IIc x/ci Monitor Stand .... ..............

**Virex**

Immunize your Mac against deadly computer viruses! Just give the command and Virex with the Virex INIT is on duty monitoring your Mac to prevent infection from all known Mac viruses. Use Virex's Record/Scan feature to identify previously unknown viruses. Once diagnosed, order Virex to operate and repair files like a skilled surgeon. Rapid upgrades stop new virus strains in their tracks. Registered users receive update notices and have access to publisher's Toll-free Virex Help Hotline. (security) $52.

**I/O Designs**

- Imageware II Carrying Case .................. 49.
- Imageware Ix Carrying Case .................. 85.
- Macinware II Carrying Case ................. 59.
- Macinware Plus Carrying Case .............. 64.
- Macinware SE Carrying Case ............... 75.
- Monitorware Apple RGB Case ............ 79.
- The Ultimate SE Carrying Case .......... 79.
- Kensington Anti-Clare Filter .......... 33.
- Apple Security System .................. 34.
- LaserWriter II Security System ......... 35.

**UnMouse (Microtouch)**

The UnMouse does everything a mouse can — only faster, easier, and in less space. To move the cursor, simply slide your finger over the glass surface. To make a selection, merely press down. The UnMouse also serves as an extended keyboard. Tap the large red button and you have a Power Keypad with 15 keys instantly available to execute macros. In advanced mode, with its one million touch points the UnMouse also performs as a small graphics tablet. Requires a Mac with ADB port. (input/output) $.

**Mac II Stand w/Cable Kit** ............... 64.
- MasterPiece Mac II ......................... 105.
- PowerBacker 300 UPS Line .............. 269.
- PowerBacker 800 UPS Line .............. 749.
- PowerBacker 1200 UPS Line ............. 949.
- System Saver ....................... 65.
- Mobius Products
  - Fanny Mac GT .................. 55.
  - SE Silencer .................. 59.
  - Polaroid .................... 55.
  - Circular Polarizing Filter ......... 35.
- Targus, Ltd.
  - Deluxe Plus/SE-XKB Case (black) .... 69.
  - ImageWriter II Case (black) ....... 45.
  - iLC (iIC) Case .............. 75.

**Macintosh SE/Plus w/Extended Keyboard Carrying Case (Targus)**

Pamper your Mac with a Targus case made of silicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for everything from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, flippies, cables, and pens. (accessories) $58.

**ACCOUNTING & PERSONAL FINANCES**

- Aatrix Checkwriter II ..................... 37.
- Payroll 3.5 ................................ 108.
- Payroll PLUS or TimeMinder ............. 175.
- Quicken 1.5 ................................ 35.
- Layered, Inc. at Once! ................. 285.
- MECA Managing Your Money ............ $12.
- Monogram Business Sense ............. 269.
- Dollars and Sense .................. 81.

**DIGITAL MEDIA**

- Nolo Press For The Record .................. 29.
- WillMaker .................................. 32.
- Reality Technologies
  - WestBuilder ......................... 165.
- ShopKeeper Software
  - Bill II 2.0 ......................... 99.
  - Softview
  - State supplements ................. ea. 66.
- MacMoney 3.5 ............................. 59.

**BLANK MEDIA**

- B.A.S.F. made in U.S.A
  - DS/DD (box of 10) ............... 14.
  - DS/HD (box of 10) .............. 13.
- Sony DS/DD (1.44 Meg) ............. 24.
- Apple Floppy Disk (60 in advanced)
- Polaroid ImageWriter II Case (black) ...........
- Targus, Ltd.
  - MacPlus/SE Carrying Case ....... 75.
  - MacIIcx Carrying Case .......... 75.
  - Macinware SE Carrying Case ....... 75.
  - Macinware Plus Carrying Case .... 64.
  - Macinware Mac II Carrying Case ... 99.
  - Macinware MacPlus Carrying Case .... 85.
- MasterPiece Mac II ......................... 105.
- PowerBacker 360 UPS Line .............. 219.
- PowerBacker 800 UPS Line .............. 315.
- Kensington Anti-Clare Filter .......... 33.
- Surfboard Glasse System ............. 34.
- LaserWriter II Security System ......... 35.

**Inside Information**

Conside your Thesaurus extinct! Inside Information is the next evolutionary step in language organization for the electronic age. This essential desk accessory contains over 65,000 words logically organized in a hierarchical dictionary containing seven general word classes broken down into respective sub classes, categories and subcategories. Access information by scrolling through, clicking and expanding on topics organized in four logical formats. Perfect for research writing or browsing on topical "Buzz" words for presentations. (desk accessories) $69.

**Inside Information**

A comprehensive new reference tool.

**GUARANTEE**

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.
If you found the first two versions of the popular Power User's Tool Kit useful, you'll be delighted to know that the very latest version, 3.0, is now available.

The new edition includes BOOMERANG 2.0, an ingenious utility, which makes it much easier to use the SF Dialog (the dialog box that appears when you choose Open or Save from the file menu).

You'll also find the latest version of DISINFECTANT (anti-viral freeware) and REMEMBER?, a handy reminder of the day's events when you start up your Mac.

The POWER USER'S TOOL KIT 3.0 is FREE from MacWAREHOUSE when you order from us. If you want the disk, you pay only $1.50 for shipping and handling. The programs are shareware, so you can try them free of charge. If you wish to continue using them, some authors ask that you pay a fee ($10-$35). Many of the programs are absolutely FREE. All of the details are explained on the disk, which is yours to keep.

WIN A TRIP TO LONDON!

There's still time to enter our latest contest and win an all-expenses-paid trip to the MacUser U.K. Show in London, November 7-10, 1990. Your name is automatically entered in the drawing when you order from MacWAREHOUSE, or just fill out and mail the entry coupon below.

FREE CATALOG! You'll also receive the very latest edition of the MacWAREHOUSE catalog. Hundreds of new products, product reviews and updates — plus answers to your questions about compatibility, copy protection and features.

Freedom of Press 2.1a (Custom Applications, Inc.)

Print PostScript language files using more than 50 different printers and film recorders. In combination with your favorite desktop publishing, graphics drawing, painting and word processing software, Freedom of Press allows you to print PostScript language files, including support for 24-bit continuous tone color images. Complete with 25 scalable and rotatable outline fonts and drivers for all supported printers. Requires Macintosh SE/30, II, Iic, Iix or Iiec. (utility) $299.

StuffIt Deluxe (Aladdin Systems, Inc.)

StuffIt Deluxe is the newest generation of the industry-standard compression, encryption, and archiving application. An easy-to-use interface and one-step QuickStuff/QuickUnStuff features allow beginners to benefit immediately. With over 75 new features, it employs many new state-of-the-art compression (including file-specific optimizers) and new security methods. Multiple archives can be opened and manipulated in a Finder-like fashion (with sorting, copying, renaming, or deleting). Viewbrand viewers, a complete HyperTalk-like scripting language, and IBM-PC support (with decom and unzip) are included. (utility) $63.

I'm Kerry, call me at:

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Midnight Express service available weekdays.
FastForms 2.0
Because you don't get a second chance to make a first impression. This powerful forms management system quickly creates, customizes, and prints professional quality custom business forms. Import and export data into user defined fields to perform automatic calculations. (business) $89.

White Knight 1.1
Successor to the legendary Red Ryder. New features list is more than 20 pages long! The 270+ pg, manual has plenty of tips to help beginners communicate like the pros. Comes bundled with Okyto, a revolutionary Mac-to-Mac file transfer program. Free subscription to GEnie network provided. (communications) $.

QuadLYNX Trackball
Uses Honeywell aerospace technology to give precise fingertip control over cursor movement. This device offers much greater precision in cursor placement. Just spin the trackball and the cursor flies across the screen to where you want it. Great for desktop publishing, CAD/CAM, graphics and arcade games. (input) $59.

Letratext
Combines the sophistication of PrintMaster with 10 Desktop Publishing firsts, and an easier-than-ever Interface. Newcomers to Desktop Publishing can produce powerful documents everytime. Includes word processor, 112,000 word spell checker, 240,000 word thesaurus, advanced page layout, drawing and painting tools. (desktop publishing) $112.

FastLabel 2.0
Stick it to the chore of simple label printing in three easy steps! Import addresses, barcodes and graphics then use FastLabel's preformatted templates (or create your own) to produce everything from disk, V.C.R. and cassette labels to name badges, signs and more. (business) $99.

FastEnvelope
This handy DA lets you import lists and graphics to print eye-catching envelopes, then adds postal bar codes saving you time and money on bulk mailings. (business) $50.

JAM Software
Smart Alarms & Appt. Diary .................. 49.
Smart Alarms (1-10 users) .................. 59.
Smart Alarms (11-25 users) .................. 149.
Smart Alarms (26-50 users) .................. 299.
Microlytics
Inside Information .................. 89.
Preferred Publishers DATABASE .................. 68.
Vantage 1.5 .................. 52.
Solutions
SmartShop & The Clipper .................. 45.
Vision Software
Form Layout .................. 35.

DESKTOP PUBLISHING
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PageMaker 4.0 or PrePrint .................. 499.
Data Translation
PhotoMac .................. 609.

Letratext
ColorStudio .................. 579.
FontStudio .................. 275.
Olduvair
Read-It 2.0 (OCR) .................. 278.
Read-It Personal 2.0 .................. 159.
Read-It TS (ThunderScan) .................. 79.
Quark
QuarkStyle .................. 469.
Xpress .................. 469.
Silicon Beach
Personal Press .................. 199.
Spinnaker/Springboard PLUS .................. 115.
TimeWorks
Publish-It Easy .................. 112.

DISK DRIVES/BOARDS
CMS
MacStack 20 Meg .................. 459.
MacStack 30 Meg .................. 499.
MacStack 45 Meg .................. 599.
MacStack 56 Meg .................. 649.
Fair Tide Technology
MacStack 44 Meg Removable .................. 839.
Cutting Edge
SyQuest Removable 45 Meg .................. 899.
Under the Mac 20 Meg .................. 339.
Under the Mac 30+ Meg .................. 378.
Under the Mac 45+ Meg .................. 435.
Under the Mac 60+ Meg .................. 489.
Under the Mac 80+ Meg .................. 689.
Dayna Communications
Dayna File Dual 360K & 1.44M .................. 749.
Fujitsu
Book Disk Drive .................. 159.
Kennon Technology
Drive 2.4 .................. 329.
Rapport .................. 199.
Peripheral Land, Inc.
Infinity Dual Turbo .................. 1875.

Infinity Turbo 40 Meg .................. 988.
Turbo Floppy 1.4 .................. 359.
Power User
20 Meg Drive .................. 319.
30 Meg Drive .................. 359.
40 Meg Drive .................. 399.
60 Meg Drive .................. 459.
80 Meg Drive .................. 589.
40 Meg Removable Drive .................. 659.
Quantum
Quantum 40 MB Raw Drive .................. 465.
Quantum 80 MB Raw Drive .................. 735.
RasterOps
RasterOps Colorboard 264 .................. 760.

EDUCATIONAL/PERSONAL
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BrightStar
ABC Blocks .................. 30.
Salesperson
Speed Reader II .................. 26.

Artworx
Bridge 6.0 .................. 24.
Daily Double Horse Racing .................. 19.
Broderbund
Ancient Art of War at Sea .................. 27.
Shufflepuck Cafe .................. 24.

The "ULTIMATE" SE Carrying Case
(1/0 Design, Inc.)
The "ULTIMATE" SE Carrying Case is designed with the same high quality standards as other MacLuggage products. This case offers internal padded compartments for AMY Macintosh keyboard, mouse, external hard disk and cable. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy DuPont Cordura nylon and 1/2 inch high density foam padding and you'll see why this is the "Ultimate" carrying case for your Mac. (accessories) $79.
**DiskFit 1.5 (SuperMac)**
A handy utility for backing up your hard disk on a series of floppies. It saves time because it backs up only those files which have changed since the last backup. DiskFit can verify each floppy after copying files onto it, so you know your files are safe. DiskFit also discards old versions of files so your backup disk doesn't keep growing. Version 1.5 supports a variety of cartridge tape drives, including the Apple backup system. (utilities) $58.

**Software Ventures**
- Microphone II v.3.0 215.
- Solutions 239.
- MaxMailer (5-Pack) 117.
- TOPI 39
- InBox Plus 3.0 649.
- NetPrint or Repeater 119.
- TOPI 3.0 Network Bundle 189.
- TOPI 3.0 DOS Network Bundle 189.
- Traveling Software 489.
- Lập Link 81.
- Lập Link I1 Connectivity Pack 119.
- Lập Link I1 Network Pack 189.

**DATABASE SOFTWARE**
- Acius 4th Dimension 2.0 469.
- FileForce 249.
- AEC Management Systems 409.
- Blyth 315.
- Omni 5 375.
- Claris 219.
- FileMaker II 119.
- FileMaker Pro 447.
- Fox Software 292.
- FoxBASE+Mac 292.
- Odesta 429.
- Double Helix III 389.
- GeoQuery 229.
- ProVUE 257.

**DESK ACCESSORIES**
- Casady & Greene QuickDEX 31.

**CAD/CAE**
- Claris ClarisCAD 579.
- Graphisoft Mini Cad 3.0 Call.
- Innovative Data Design MacDraft 175.
- Strata StrataVision 3D 375.

**COMUNICATIONS & NETWORKING**
- CE Software In/Out (1 to 5 Users) 128.
- QuickMail 2.2 (1-10 Users) 319.

**Power Chute**
Upon power failure Power Chute alerts all network users and initiates a graceful shutdown of the AppleShare Network. Communicates with a signalling American Power Conversion UPS (such as the 110SE or 370c). (utility) $315.

**Power Protection**
- 370c UPS Power protection for the Mac II. With the 370c Uninterruptible Power Supply, you'll have enough backup power to operate your Mac II system for 15 minutes. That includes a typical Mac II with a color monitor and an internal hard disk drive. (accessory) $1315.

**UPS (such as the 110SE or 370c). (utility)**
- 370clUPS (American Power Conversion)
- 370clUPS (American Power Conversion)

**I/O Interface**
- Protects against surges, spikes and power line noise.

**Network Management**
- Upon power failure Power Chute alerts all network users and initiates a graceful shutdown of the AppleShare Network. Communicates with a signalling American Power Conversion UPS (such as the 110SE or 370c). (utility) $315.

**Productivity Software**
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- Solutions
- MaxMailer (5-Pack)
- TOPI
- InBox Plus 3.0
- NetPrint or Repeater
- TOPI 3.0 Network Bundle
- TOPI 3.0 DOS Network Bundle
- Traveling Software
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- Lập Link I1 Connectivity Pack
- Lập Link I1 Network Pack

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- Blyth
- Omni 5
- Claris
- FileMaker II
- FileMaker Pro
- Fox Software
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- Odesta
- Double Helix III
- GeoQuery
- ProVUE
- Panorama

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Art Deco or ReportMaker
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ea.
85.
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ZING
125.
Multi Ad Services
Multi Ad Creator
865.
Paracomp
SweB 3D 1.1
295.
ResumExpert (A Lasting Impression)
Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress.

Metro ImageBase Electric Art
(Metro ImageBase)
High quality 300 dpi electronic art from one of the world's leading publishers of ready to use art. Enhance brochures, menus, reports, newsletters and presentations. One large image per file. 100 per package. Packages available: Newsletter Maker, Business Graphics, Computers & Technology, ReportMaker, Borders & Boxes and 9 others. (graphics) 585. each

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Graphsoft
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Paracomp
SweB 3D 1.1
295.
ResumExpert (A Lasting Impression)
Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress.

Graphsoft
Blueprint
Innovative Data Design
325.
Leraset
Shapes
MacMind
MacroMind Director
439.
Metro ImageBase (Full Line Available)
Art Deco or ReportMaker
ea.
85.
Newsletter Maker or Business
ea.
85.
MicroMak
ZING
125.
Multi Ad Services
Multi Ad Creator
865.
Paracomp
SweB 3D 1.1
295.
ResumExpert (A Lasting Impression)
Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Whether you're seeking an entry-level position or an executive-level corner office, the ResumExpert Software Series is the next best thing to knowing the boss. Professionally written and fully-formatted Microsoft Word templates let you easily create eye-catching resumes. MacUser 10/89 awarded ResumExpert 4 mice and raved about the "excellent" software that includes expert commands. Use WIZ's optional ResumExpert Software to instantly produce a professional resume that is sure to impress.

GRAPHICS & DESIGN

Metro ImageBase Electronic Art
(Metro ImageBase)
High quality 300 dpi electronic art from one of the world's leading publishers of ready to use art. Enhance brochures, menus, reports, newsletters and presentations. One large image per file - 100 per package. Packages available: Newsletter Maker, Business Graphics, Computers & Technology, ReportMaker, Borders & Boxes and 9 others. (graphics) 585. each

FONTS

Adobe
Adobe Type Manager 1.2
55.
Adobe Type Reunion
39.
Plus Pack
99.
Type A
58.
Type Set 1 or Type Set 2
ea.
58.
Fonts (full line avail.)
Call.
Altsys
Fontastic Plus 2.0
52.
Fontographer 3.05
249.
Fontographer 3.1
39.
Metamorphosis
149.
The Art Importer 2.0
89.
Leraset
LetrasTudio
275.
LetterFonts (various)
ea.
59.
Tactic Software
ArtFonts Vol. 1 or 2
ea.
55.

VITALS

Utility Pac
Give your Mouse a House! Save valuable desktop space. Store your Mouse, Mouse Pad and Diskette conveniently on the side of any monitor. Platinum color. (accessories) $11.

BackMatic
BackMatic automatically backs up your files each time you shut down your Mac. Install this handy INIT in your system folder, and BackMatic will issue a periodic Save Command to the running application. You can set the interval between saves from one to 99 minutes. (utility) $29.

WIZ (CalComp)
Mighty Mouse? Not just an ordinary mouse. WIZ offers a short-cut through tedious keystrokes - menu dragging steps. Use WIZ's JIS plus color-coded templates (purchased separately) to instantly access software commands. WIZ's convenient menu system allows you to save time it takes to master DTP, graphics, and office automation software. For 100 dpi accuracy in CAD and graphics, WIZ's JIS color-coded templates use WIZ's cross hair pointer and intelligent pens for screen-to-paper scaling. (input) $159.

Carbon Copy Mac (Microcom)
Run the office from your easy chair! This remote control software package that allows one Mac to remotely operate another Mac's peripherals, screen, keyboard and mouse. Works through LocalTalk LANS or modems. Transfer files without using EMAIL, access messages remotely, or "borrow" expensive peripherals such as CD ROM drives and fax modems. Unparalleled for tooling for training demonstrations. Offers three levels of password security. Get a second node FREE through manufacturer's Special Introductory Offer. (communications) $119.

MacUser 10/89
SuperMac
PixelPaint 2.9 ................... 225.
PixelPaint Professional ....... 395.
Tactile Software
Art Clips vol. 1 or Vol. 2 ....... Call.
Zedcor
DeskPaint & DeskDraw .......... 115.

Omni5 (Bryls)
Utilizes the graphical interface, enhanced memory, storage, and other capabilities for both the Macintosh and IBM PS/2 hardware. Produce data files that can be shared between the Macintosh and IBM PC. Multi-user capabilities give simultaneous access to both platforms. C/S and SQL connectivity allow access to data from the VAX or IBM mainframe. HyperCard is fully supported. Also included: Omni5 Express which allows users to outline requirements and build their first applications. (database) $375.

NEW! The DataDesk Switchboard
(DataDesk International) The Switchboard is the first user-configurable keyboard. The unique, modular design allows the user to arrange the Alpha, Cursor, and Numeric keypads into many different positions that best suit their individual computing needs and comfort. Additional input devices, such as a trackball, vertical function keys, digitizer tablet, and programmable macro keys can either replace existing keypads or be added to the keyboard. The flexibility allows the Switchboard to evolve with the needs of the user and the user's time and space due to the integration of all the Switchboard's modules into a single unit. Additionally, the Switchboard is the first keyboard that is engineered to work on both IBM and Apple computers. Input/output) $175.

Silicon Beach
SuperCard 1.5 ..................... 189.
Softstream International
Hypermill
Symmetry
HyperDA 1.2 ...................... 45.
TimeWorks
HyperWorks Organizer ........... 57.

INPUT/OUTPUT

Altra
Felix ............................ 127.
Calcomp
WIZBoard ......................... 33.
WIZ Pen ........................... 57.
WIZ Templates .................... 50.

DeskWorks (Zedcor)
Lucky number seven! DeskWorks combines seven office automation programs: word processing, spreadsheet with charting, database, communications, paint, draw and time management. In a set of DA's that work together and with your favorite applications (business) $229.

DeskPaint & DeskDraw 3.0. Open these DA's, then paint, draw out & paste illustrations into other applications without wasting time. DeskPaint's advanced features can edit, delete, grayscale or color images. DeskDraw includes, arrows, rulers, multiple fonts, and more. MacPaint, PICT and TIFF compatible. (graphics) $115.

DeskWorks International
SuperCard 1.5 ..................... 189.
Softstream International
Hypermill
Symmetry
HyperDA 1.2 ...................... 45.
TimeWorks
HyperWorks Organizer ........... 57.

NEC
Interact CDR-35 .................. 419.
Qume
Crystal Print Publisher ......... 2900.
Seiko America
Seiko Printer (dot-matrix) ...... 235.
Sharp
The Wizard ....................... 229.
ThunderWare
LightningScan 400 ............... 385.
ThunderScan Plus ............... 199.

ProModem 2400MII
It's what's inside that counts. ProModem 2400 MII is in the perfect internal 2400 bps modem for your Mac II. Its NuBus compatible card operates at 2400, 1200, or 300 bps. Use its Post mapper utility to access AppleLink-style software. Includes a free copy of MacKNOWLEDGE. (modern) $205.

CH Products
Mach IV Plus Mouse/Joystick .... 49.
Mirage Adapter .................. 35.
Roller Mouse ADB ............... 75.
DataDesk Intl.
DataDesk Switchboard ......... 175.
Mac 101 Keyboards .............. 129.
International versions .......... Call.

Kensington
Euro Mouse ..................... 109.
Kraft
ADB Joystick Premium II (SE/II) 49.
QuickDraw ....................... 39.
Trackball ....................... 73.

WealthBuilder (Reality Technologies)
Turn your Mac into your own financial planner. Taking into account your financial profile, the goals that you want to accomplish and the risk that you are willing to assume, WealthBuilder searches for the best investments available to fulfill your objectives. The program also allows you to change any information or assumption and immediately view its impact on your overall financial picture. WealthBuilder is your personal tool to a brighter financial future. (finance) $165.

Languages

Digitalink, Inc.
Smalltalk/V MAC ................. 125.
Microsoft.
QuickBasic ....................... 35.
QuickBasic
Microsoft
Micro Touch ....................... 189.
Mobius
Cordial Mouse .................... 95.
Mouse Systems
A-Mouse (SE/II) ................. 75.
Practical Solutions
The Cordless Mouse .............. 95.
Mouse Master ..................... 57.
Summographics
Bit Pad Plus ...................... 319.

Zedcor
ZBasic 5.0 ....................... 89.

HyperDiafer (DataDesk International)
Now you can connect your Macintosh to any existing business or home telephone for automatic dialing with Apple's HyperCard. HyperDialer is designed specifically for HyperCard's touch-tone dialing capabilities and works with any business telephones without requiring a modem or dedicated phone line for automatic dialing. Automatically dials HyperCard. SideKick, Focal Point, C.A.T., SuperCard and QuickDex phone numbers. It connects to the speaker port - not a precious serial port. (hardware) $35.
MEMORY UPGRADES/ACCELERATORS

1 MEG SIMMS
Low Profile, 100ns High Quality
Single In-Line Memory Modules
for MacPlus, SE, II, IIC
2 yr. Warranty ................ Low price $85.
For MacPortable .......................... 435.
For SE - 80ns .......................... 139.
For LaserWriter II NTX - 80ns .... 139.

Dove (full line available)
MaraThon 030 Accelerators .... 449.
MacSnap 25 .................. 189.
MacSnap 45 .................. 399.
MacSnap 8S .................. 816.
MacSnap 524E ........... 185.
MacSnap 546S ........... 350.
MacSnap 548S ........... 499.

MODEMS/FAX

Abaton
InterFax12/48 .................. 265.
InterFax 246 .................. 419.
Best Data Products
SmartOne 2400/1200 ........ 145.
Dove
DoveFax desktop ........... 279.
DoveFax Networkable desktop .... 375.
DoveFax Nubus ........... 449.
Networkable Nubus .... 749.
Hayes
Smartmodem 2400 ........ 349.
Smartmodem 9600 (V series) .... 759.
Promodems
2400MFAX .................. 209.
PreModem 2400 SE Int. .... 209.
PreModem 2400M ........ 199.
PreModem 2400M I ........ 205.
Travel Modem ........ 205.

Supra
Supra Modem 2400 ........ 129.

MUSIC AND SOUND

Altech
MIDI Interface ........... 59.
ARS Nova
Practica Musica 2.2 .......... 69.
Coda
Finale .................. 559.
MacDrums .................. 31.
Perceive .................. 49.

On Location (ON Technology)
There's no more need to be a super sleuth in order to find and view elusive files—ON Technology's On Location is its elementary! Find a file by typing words it contains or any part of it. Then instantly view the file in its full form and word-processing commands. Move, copy, rename or delete files and folders with ease ON Technology offers a manufacturer guaranteed full customer satisfaction or your money back up to one year from purchase date. (utility) $75.

Electronic Arts
Deluxe Music Construction 2.5 ........ 85.
Deluxe Recorder ........ 99.
Farallon Computing
MacRecorder (records sound) ........ 159.
Screen Recorder ........ 125.
NoteWriter ........... 325.
Passport MIDI Interface .... 99.

MacGolf Classic (XOR Corp.)
You won't be in the rough when you play MacGolf! This is the premium edition of MacGolf, featuring vivid full screen color graphics with unparalleled screen image detail. Contains the original 2 MacGolf courses and 4 additional MacCourses, for a total of 108 holes to play. New features include 6 enlargement options for close up viewing, 9 practice greens, a driving range, installability on hard disks and much more. Works with Plus, SE, II and IIC. (entertainment) $52.

SECURITY & VIRUS PROTECTION

ASD Software, Inc.
FileGuard Extend (office 5-pak) .... 309.

Fifth Generation
Disk Lock ................ 106.
HAC Microcom
Virex 2.3 ........ 52.
Kent Marsh
MacSafe II ................ 107.
NightWatch .................. 86.
QuickLock ................ 56.

SmartOne 2400 Modem
(Best Data Systems)

For beginners and experienced modem users. If you need a 2400 baud modem, the SmartOne 2400 modem provides an economical alternative. For less than the cost of two 1200 baud units, you get a Hayes compatible modem with auto answer/originale, 300, 1200 and 2400 baud operation, pass-through phone jack, speaker with programable volume, and a manufacturer's two year warranty. All user options are stored in non-volatile memory, includes software and cable. (modem) $145.

Primera Software
Different Drummer ........ 59.
Repertoire
Music Publisher ........ 399.
Resonate
Listen 2.0 ........ 62.
Tactile Software
Sound Clips Vol. 1 or 2 .... ea. 49.

Mainstay
AntiVirus
Symantec Corporation
S.A.M. .................. 68.

SPELLING/DICTIONARY

Deneba Software
Big Thesaurus ........ 64.
Spelling Coach Pro 3.1 ...... 125.
Electronic Arts
Thunder II ........ 49.
Lexpertise
MacProof 3.2.1 ........ .. 115.

Casino Master (Centron)
Let it Ride! You can bet on having hours of fun with Casino Master's five exciting casino games. Includes Blackjack Ace, Craps Master, Roulette Master, Pokermaster and Blackjack Master. Exact table simulation, mouse controlled betting, selectable bankrolls, stored win/lose statistics and complete manual included. Mac II version available in full color! An odds-on favorite with professional gamblers. (entertainment) Individual games $27. ea. / 5 game Casino Master Package $49. / Deluxe Mac II version $55.
The Mac spreadsheet market has a life of its own. Each month, it continues its inexorable expansion as new products are released and older products are re-released, ready to vie for the attention of consumers and the lion’s share of the market.

The differences among individual programs can often be subtle, but those subtleties can affect the quality of your work. A simple way to understand the spreadsheet market is to divide it into three levels: high-end, full-performance products—such as Excel, Full Impact, and Wingz—that include development environments; midrange systems such as Trapeze, RagTime, and Microsoft Works; and straightforward calculation tools such as MacCalc.

The market can be further broken down into functional segments: number crunching (or straight calculation), in which MacCalc is a contender; presentation, where Trapeze, Works, RagTime, Excel, Full Impact, and Wingz are the stars; and development, where Excel, Wingz, and Full Impact shine.

If you are buying your first spreadsheet program, don’t be intimidated by the esoteric features of high-end products. These programs have a great deal of versatility; Excel and Wingz are proficient in all three functionality segments, and Full Impact lacks only sophisticated number-crunching tools. Spreadsheet programs are a classic one-time investment — once you learn how to use one, you’ll be reluctant to change — so consider buying the most flexible program. In many cases, the price difference between a low- or midlevel program and a high-end spreadsheet program is less than $250, so the initial investment in a high-end product will ensure that you have plenty of room for growth.

Whether or not you know exactly which tier of the market and functionality level you want in a spreadsheet program, the diagrams that accompany this article should help you decide on the best spreadsheet program for you.
MacCalc

MacCalc is a low-end spreadsheet program with good data-analysis tools.

Pros: Streamlined user interface. Models can be annotated at each construction step. Fonts, styles, and formatting are variable from cell to cell. Excel, MultiPlan, or Lotus 1-2-3 models can be converted into MacCalc format without losing their formats and models.

Cons: No integral graphics capability. Relies on Microsoft Charts for graphics.

Requires: Mac 512K or later.
List Price: $139.
Bravo Technologies, P.O. Box 10078, Berkeley, CA 94709-0078; (415) 841-8552.

Trapeze 2.1

Trapeze offers the power of a spreadsheet program with the flexibility of a page-layout program.

Pros: Supports a 68880 math coprocessor. Calculates in the background under MultiFinder. Spreadsheets can be up to 1,600 pages long. Can open and link up to 32 spreadsheets. Wide variety of chart types (including scatter, bar line, stacked bar, high/low, column, stacked column, pie, and polar).

Cons: Page-layout orientation is difficult to learn and use. Non-standard interface and approach make it dissimilar to other spreadsheet programs.

Requires: Mac Plus or later.
List Price: $295.
Deltapoint, 200 Heritage Harbor, Suite G, Monterey, CA 93940-2483; (408) 648-4000.

Presentations

High-function charting. High-function charting systems offer not only the basic business charts (line, pie, and bar) but also the option of putting legends onto the charts and of adding titles and other graphic touches that create presentation-quality output. Works falls out of the competition at this branch of the decision tree because of its limited charting function.

Mixed text and graphics. Combining graphic displays and text in columns is the key to creating powerful, professional presentations.

Desktop publishing. Advanced layout features that build on integrated text and graphics complete the presentation equation. Trapeze, RagTime, and Full Impact are easy to use to generate an entire presentation; Excel and Wingz, however, are tools for creating charts and graphs for inclusion in a presentation created in a page-layout program.

Conforms to standard interface. The spreadsheet market has developed a de facto set of interface standards. Trapeze does not conform to these, which gives the product a steep learning curve and limits its usefulness in business settings.

Free text on charts. The ability to put text onto a chart to explain the chart or results is important when creating presentations. For example, free text can be used on a sales line chart to describe any unusual changes.

Integral word processing and dictionary. When you prepare presentations, full-word-processing functionality ensures maximum flexibility. Spell checking is also important — no one wants a chart to contain misspelled words.

Drawing tools. Freehand graphics on a chart can make the difference between mere information and a memorable chart. Wingz has firmly established itself as the spreadsheet program for creating sophisticated graphics rather than straightforward text presentation.

Use this decision tree to decide which spreadsheet offers the best presentation options for you.

- Desktop publishing
- High-function charting;
mixed text and graphics
- Excel
- Wingz
- RagTime
- Trapeze
- Full Impact

Use this decision tree to decide which spreadsheet offers the best presentation options for you.

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- High-function charting;
mixed text and graphics
- Excel
- Wingz
- RagTime
- Trapeze
- Full Impact

164 July 1990 MacUser
RagTime 3

RagTime is a multiuse product with word-processing and page-layout as well as spreadsheet capabilities.

Pros: A wide array of charts. Integral word processor with spelling checkers in 8 languages and hyphenation dictionaries in 14 languages. Linked spreadsheets within the same or other documents update automatically. Eighty functions. External functions can be added for importing data from SQL databases. Has desktop-publishing functions such as the ability to flow text around frames and to adjust color and tint. Integrates with other applications.

Cons: Minimal number-crunching capabilities. Requires: Mac Plus with hard-disk drive; 2 megabytes RAM recommended.

List Price: $599.

RagTime, 460 Walnut St., Suite 501, Redwood City, CA 94063; (415) 780-1800.

Who's More Likely To Have A Heart Attack?

People born today have a much better chance of avoiding heart attack. Since 1977, death rates from heart attack have dropped by 30.9%. Death rates from stroke have dropped by 37.3%

The research and education we support have helped you battle back against America's number one killer. So keep up the good work. Quit smoking. Monitor blood pressure. Watch your diet.

To learn more about reducing your risk, contact the American Heart Association, 7320 Greenville Ave., Box 7, Dallas, TX 75231.

Your Life Is In Your Hands.

American Heart Association

This space provided as a public service.
**Full Impact 1.1**

**FULL IMPACT IS A FULL-FEATUR ED, HIGH-END SPREADSHEET PROGRAM WITH IMPRESSIVE ABILITIES.**

**Version 2.0 was released in April.**

**Pros:** Global search and replace. Virtual memory. Integral linking capability within the program. Row heights adjustable in case fonts change or exceed the spreadsheet's borders. Excellent graphics and text integration as well as overlay and stacking features.

**Cons:** Lacks some statistical functions. Requires: Mac Plus or later.

**List Price:** $295 (version 2.0).

Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319; (800) 437-4329 or (213) 329-9689.

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**Microsoft Excel 2.2**

**A FULL-FEATURED, HIGH-END SPREADSHEET PACKAGE.**

**Pros:** Global search and replace. Rows-into-columns transposition. Integral linking within the program. Ability to customize menus and create dialog and alert boxes. Strong statistical functions and matrix-math capabilities.

**Cons:** Graphics capabilities weaker than those of other packages. Recalculation is done in the background, with the application giving higher priority to user input. This suspends recalculation, which resumes when editing pauses.

**Requires:** Mac Plus or later.

**List Price:** $395.

Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399; (206) 882-8080.

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**Development**

**Macro or development language.** A macro language uses mnemonic commands to control and automate spreadsheet functions; a development language is a structured programming language used for the same purposes. Excel uses straight macros for control; Full Impact uses a pseudolanguage called Full Talk; Wingz's HyperScript language controls even the internal mechanics and logic of the program.

**Data-entry tool.** Creating customized data-entry forms and input is important for development. Wingz forces developers to create these tools from scratch, using HyperScript. Excel has built-in functionality that lets you quickly and easily create these data interfaces.

**Integrated database.** Manipulating data is a key part of any application. Excel and Full Impact have powerful data tools that can manage and analyze data stored in spreadsheets.

**Dialog-box creation and screen control.** Excel and Full Impact both offer tools for creating interactive dialog boxes. The screen control, which determines how the developed application flows, is roughly equal in both packages.

**Interactive macro debugging.** Excel offers an interactive macro debugger that makes debugging and quality-testing an application dramatically more efficient. Full Impact and Wingz do not offer this functionality—they wait until the macro crashes and then debug it.

Use this decision tree to decide which spreadsheet offers the best development options for you.

**Macro language**

- Excel
- Full Impact
- Wingz

**Data-entry tool**

- Excel

**Development language**

- Excel
- Full Impact
- Wingz
Microsoft Works 2.0

Microsoft Works is a combination word processor, mail-merge system, spreadsheet program, and communications system. Works' spreadsheet component is a basic system that includes all the functions needed for most business analyses.

Pros: Large spreadsheets. Pie, line, bar, stacked, and combination charts. Charts automatically change with new data.

Cons: Sorting function only adequate. Offers little functionality.

Requires: Mac Plus or later.

List Price: $295.

Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399; (206) 882-8080.
Dreaming of better output from your laser printer? Discover...
Each month, thousands of laser printers are purchased by business people all over the world—people, like you, who realize the importance of sophisticated, high-quality output for success.

But, without advanced tools to enhance the capabilities of these laser printers, attaining the promise of high quality output can be just a dream. Which is why more and more people are turning to Pacific Data Products.

We develop quality, affordable products, including PostScript® language and HP-GL® emulation cartridges, memory boards, font cartridges and networking programs, for HP LaserJet and compatible printers.

These creative solutions can help make your dream of the perfect printer a reality. To learn more, call or write: Pacific Data Products, 9125 Rehco Rd., San Diego, CA 92121, (619) 552-0880. Fax: (619) 552-0889.
Wingz 1.1

Wingz is a sophisticated high-end product with excellent graphics that is Informix Software's first foray into the spreadsheet market.

Pros: Offers remarkable 3-D graphics. HyperScript language lets you change menus, options, and functions by editing the master script file.

Cons: Requires a lot of custom macro programming to perform linking operations. Minimal recalculation technique can take longer than recalculating an entire spreadsheet.

Requirements: Mac Plus or later.

List Price: $399.

Informix Software, 16011 College Blvd., Lenexa, KS 66129; (800) 331-1763.

Number Crunching

Data management. Data management is the ability to manipulate rows in a spreadsheet, using straightforward techniques such as sorts, selects, and Boolean or logical expressions, as well as summary statistics such as minimum and maximum values and data counts. Excel and Wingz both offer an integrated database.

Functions. Built-in spreadsheet functions are formulas into which users can input variables. Functions return the results of calculations in cells, so you don't have to program common business formulas such as discounted cash flows, amortization, and regressions. Excel and Wingz are functionally identical for purposes such as these.

Background recalculation under MultiFinder. A critical requirement for any number-crunching spreadsheet program is the ability to perform true background calculations. Minimal recalculation, the method used to recompute only those cells that are affected by a value change, is also important, but in data-intensive applications, even a high-speed minimal recalculation can slow down the user interface. Excel offers true background recalculation, whereas Wingz relies on minimal recalculation.

Use this decision tree to decide which spreadsheet offers the best number-crunching options for you.

High-speed; large models

MacCalc Excel Wingz

Data management

MacCalc Excel Wingz

Functions -
• Statistics
• Mathematics
• Finance
131 functions

Background recalculation under MultiFinder

Excel Wingz

140 functions

Links references to worksheets not in RAM

Excel Wingz

Excel
We developed Pacific MacPage because affordable PostScript® printers are just a dream.

Imagine buying an Apple LaserWriter IINT. Or IINTX. The price tag can cause nightmares.

So, consider Pacific MacPage. It brings the quality output of a PostScript printer within reach. Just plug one of our cartridges into a HP LaserJet II, IIP, IID* or III printer with 2 megabytes of additional memory.

The results are beautiful. MacPage supports Adobe Type 1 fonts and is compatible with Adobe Type Manager. Plus, it has 35 LaserWriter IINT equivalent font families. You'll get quality output with every character. And you'll get it fast.

Benchmarks show MacPage on the IIP prints an average of 10% faster than the LaserWriter IINT with most applications.

And it's only $599 (for the MacPage P.E. used with IIP, IID and III. $795 for the Series II). MacPage can help make your dream of the affordable printer a reality. To learn more, call or write: Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, (619) 552-0880. Fax: (619) 552-0889.
You know what it's like. If you're in graphic arts, you know there's a lot of grunt-work. Like rubbing-down type. And tracing and filling letters to comp-up headlines. Trying to get true colors from a junkyard of dried-out markers. Inking and re-inking rules and borders because of clogged pens. T-squaring elements to be sure they’re aligned and square. Counting characters. Spinning proportion wheels. Tracing off the Lucy. Wouldn’t it be nice to spend more time exercising your brain instead of your wrist? Exploring concepts? Refining layouts? Trying "What if" design options? Or experimenting with color combinations? That’s exactly what you can do using today’s advanced layout, design, and illustration programs, the Macintosh II™ family of computers and a CalComp DrawingCard™ display system.

CalComp large screen displays help you get the most from your Macintosh. For one thing, they never let you lose sight of the big picture. DrawingCard is the first 21” system to give you two full pages of color side-by-side at actual size. That’s critical when you’re designing double-truck ads, brochure spreads or creating a large horizontal illustration.

DrawingCard’s flat screen eliminates distortion and with its excellent resolution and contrast you can see the effect of small changes in the colors on the screen. Or evaluate the visual effect of half-point variations in type size and leading. You can even see the precise amount of letter overlap when you set your headlines “tight and touching.”

And with DrawingCard displays, what you see on the screen is what you get on your printer because screen resolution is true 72 dpi.

All screen images were scanned, imported, displayed and photographed on CalComp DrawingCard displays.
© 1990 CalComp Inc. DrawingCard and WIZ are trademarks of CalComp Inc. Macintosh is a trademark of Apple Computer, Inc.
How to build a better burger.

Producing this spread for the B. V. O. B. Buck's Yard Own Burger restaurant on a Macintosh equipped with DrawingCard is faster and easier than with conventional manual methods. You can use it for rough thumbnails, full-color, but mechanical line work done with half-tones or final color printed. With DrawingCard's crisp, clear image you can control your work precisely because you can see your work precisely. DrawingCard also lets you command a full palette of gray-scale tones and color. So whatever you need, there's a CalComp DrawingCard System for you.

There are three DrawingCard systems to choose from. Our 8-bit GrayVision display system with 256 shades of gray is ideal for desktop publishing and design projects using line art and black-and-white halftones.

Our 8-bit ChromaVision system with 256 colors is the perfect match for the great majority of desktop publishing, design and illustration projects where 4-color reproduction is needed.

And our 24-bit ChromaVision Plus system (shown above) with 16.7 million colors is the ultimate display where color accuracy is especially critical such as color retouching.

DrawingCard display systems are just one way CalComp, a worldwide graphics leader, supports the arts on Macintosh. There's also WIZ, a new mouse system that combines the features of a traditional mouse with the power of a graphics pad. Plus a complete line of high-performance printers.

So stop using those antique hand tools today. After all, the graphic arts should be full of inspiration, not perspiration. For more information about DrawingCard displays, call: 1-800-CalComp. In Canada, call: (416) 635-9010.

Power Tools.

We draw on your imagination.
LaserMAX Announces Personal Typesetting™

LaserMAX made headlines when we announced our new Personal Typesetter. The LaserMAX 1000 Personal Typesetter gives you 1000 dpi and 135 typefaces in a package that fits on your desk. Our proprietary TurboRes™ technology lets us control the size of the pixels on the printed page, eliminating the coarse steps between pixels (also known as jaggies.) With TurboRes you create originals that rival phototypesetting—so you won’t need to go to Lino anymore. Halftones and graphics also benefit from this technology.

With the LaserMAX 1000 Personal Typesetter you get high quality without high cost.

Goodbye NTX, Hello NTQ

If you already own an Apple LaserWriter, you’re in luck. With a LaserMAX MX6 controller you can boost your resolution from 300 dpi all the way up to 800 x 800 TurboRes for Near Typeset Quality.

The MAXimum

If you’re the type who never settles for less than the MAX, you’ll want the LaserMAX 1000 Personal Typesetter. With 1000 x 1000 TurboRes, you’ll need a printer’s loupe to prove that the output isn’t traditional typesetting. But unlike phototypesetting, the LaserMAX 1000 is:

- Low-cost (only pennies per page),
- Low-maintenance (no toxic chemicals),
- Very affordable ($7995).

Free Sample Output

To learn more about the magic of the LaserMAX Personal Typesetter, call us now at (612) 944-9696. We’ll send you a page of actual output so you can see just how good it really is. Then you can decide for yourself which you’d rather have: the technology that lets you make tomorrow’s headlines, or yesterday’s classifieds?

First In Personal Typesetting™

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Prepress: Cures for Poor Registration

A short quiz: Where do the terms trapping, choking, knockout, butt fit, stripping, and spreading come from?
A. The front page of a sleazy tabloid.
B. The nightly report from a vice-squad cop.
C. The holiday itinerary for a mountain man.
Answer: None of the above. These are actually traditional terms for some of the best-kept secrets in the four-color-prepress film industry. They refer to techniques that compensate for the mechanical inaccuracies of printing presses. These techniques dramatically affect the final appearance of printed color.

With the current technology, you can use a Macintosh and an image-setter to sidestep traditional prepress work and print pages directly to film. As the final product is still produced mechanically, however, you must continue to take steps to offset press-time imperfections. Although these compensation techniques are no longer trade secrets, they are still misunderstood.

Pass the Plate
Multiple-color printing uses several plates, each of which deposits a different colored ink onto the paper. If the plates aren’t in proper alignment— if they’re misregistered—as the paper passes through the press, the colors won’t print in the correct locations. For example, a color may print slightly to one side of its intended position, causing the image edge to look fuzzy or show small margins of white where adjoining colored areas don’t mate perfectly (see Figure 1).

Some color shifting is normal in press runs, but this shift can be anywhere from less than a hairline to more than a couple of points, depending on the quality of the pressmanship and press.

On a printing plate, a solid colored shape on, say, the cyan plate, typically has a hole reserved for it in all other printing plates so that the other inks don’t overlay it. This hole is called a knockout, and because each hole is exactly the same size and shape as the overlying object, perfect butt-fit registration is necessary to avoid unsightly gaps at print time.

Trapping
Professional printers compensate for color misregistration by using two basic techniques that affect the boundaries of objects: spreading, or enlarging an object’s edges, and choking, or shrinking the size of the hole that accommodates an object. The application of either of these techniques is commonly called trapping.

If you’re a household mechanic, you know that the best way to create a perfect seal between mating components is to use a gasket or washer, which fills in the irregularities between adjoining parts. In the world of

By Steve McKinstry
desktop publishing, programs with PostScript technology (such as FreeHand and Illustrator) let you use the stroke, or outline, of an object as the electronic equivalent of a gasket to seal gaps between an object and its background. This is possible because PostScript lets you fill an object with one color and stroke it with another. More importantly, PostScript also lets you overprint the stroke and the fill separately, which gives you microscopic control over both the size of the elements printed by each plate and the corresponding holes left in the other plates. Overprinting a stroke compensates for misregistration by filling in potential white gaps with a thin border of the appropriate color. The techniques described below can also work with both Illustrator and FreeHand.

**Inexpensive Spreads**

A spread, which is a gasket applied to the border of an object, is simple to achieve and works well for non-text objects. In FreeHand or Illustrator, you can simply specify the spread size by adjusting the weight, or width, of an object's stroke (see Figure 1). The weight of the stroke is distributed half inside and half outside the object, so to create a .5-point spread, you would specify a 1-point stroke with the same color as that of the interior fill. (Normally, spreads are set at a range of .25 to .5 of a point.) If the object is placed on a colored background, set the stroke to overprint and the fill to not overprint. If the plate or paper does shift, the stroke will provide a .5-point margin of error, overprinting any white space that might otherwise appear between the shape and its background.

**Arty Chokes**

Trapping around type is best done with a choke, which is slightly more difficult to do but which better preserves letter shapes. Choking is like applying a gasket to the hole for the shape rather than to the shape itself. It effectively shrinks the hole and fills in potential gaps without affecting the type’s form (see Figure 2).

If you were to use the spread technique instead, the stroke would be applied to the type and would undesirably increase the weight of serifs and other fine typographical details. It's better to shrink the hole and print the unstroked type over it.

To create a choke, don’t give the original text block any stroke at all, and set its fill color to overprint. Make a copy of the text, give it a white fill, and apply a 1-point no-overprint stroke that’s the same color as that of the background. When you stack this modified copy between the colored background and the original text, it produces a .5-point choke around every letter. (Incidentally, this choke process works equally well for any non-text object.)

**Text over Multiple Colors**

Often you need to trap text over multiple background colors—for example, when the name of a country overlays several different-colored areas of a map. Because text is involved, you should use the choking technique, but each background color needs a gasket of its own hue (see Figure 3).

In FreeHand and Illustrator, you need to add masking to your trapping technique to ensure that each choke color affects only its corresponding background. Masking is essentially a fancy way to crop a graphic using any drawn outline as a frame. (Consult the appropriate user manual if you’re not familiar with this feature.)

Create each choke from a copy of the original text block, and give it a 1-point, no-overprint stroke that matches the particular background color it floats over. Now you must trim each choke, via masking, so that it overlays only its corresponding background color. To mask each choke with the appropriate background shape in FreeHand, select a choke-text block and cut it (Command-X). Then select the corresponding background shape, and choose Paste Inside from the Edit menu. If you're using Illustrator, define the colored background shape as a mask, and group it with its correspondingly colored choke-text block. Finally, in either program, be sure that you bring the original text block to the front. Figure 3 shows the elements of this technique as well as their stacking order. You can check these traps on a light table by using...
It's no accident that the high performance of Canvas™
evokes images of a jet fighter
in full flight.
Fact is, its technical drawing power renders Canvas
remarkably adept at evoking almost any kind of image you
could want.
Over time, this has served to render Canvas's competitors
rather speechless. And its
reviewers, just the opposite.
A quick tour of its amazing arsenal of weapons helps
explain why all the commotion.
Advanced Bezier and spline
curves with total editing control. 64,000 dpi accuracy. 16
million-plus colors. Custom rulers, dashed lines, and
arrowhead styles. 1/1,000th inch hairlines. Auto object
distribution and dimensioning of lines & arcs. Auto tracing of
scanned art.
Press-ready 4-color (CMYK)
separations, with precision
clear angle adjustments and
independent color overrides.
Flexible EPSF export formats.
Importing of MacDraw® I or II
files. Smooth text handling and

a 100,000 word onboard spell checker.
The list just goes on. And on.
Yet despite all this technical prowess, Canvas has earned
consistent applause for its
intuitive design & ease of use.
And, perhaps best of all, for
its list price of under $300.
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lot more thrill and a lot less
limitation, look into Canvas.
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way to fly.
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Canvas reads MacDraw files.
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loss invitation to greatness.
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(check or full credit card info)
to Denenea Software, 3305 N.W.
74th Ave., Miami, FL 33122.
Offer expires 6/30/90.
For additional information or the name of your nearest
dealer call 1-800-6-CANVAS
or (305) 594-6965.
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Inc. MacDraw® is a registered trademar
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All illustrations were
created in Canvas
and separated by the
Canvas Separator.
separations printed on paper by a laser printer.

QuarkXPress correctly applies all the traps in imported FreeHand or Illustrator images that were saved in EPSF. PageMaker 3.02CE and PageMaker 4.0 will do likewise when their pages are separated through Adobe Separator or Aldus PrePrint.

**Trapping with Frames**

With a color photograph, the area most affected by misregistration is the border. You can cover up errors by applying a *keyline* — essentially a black gasket that surrounds the photo.

Ideally, you want the edges of the photograph to fall along the center of the keyline’s width. On sophisticated prepress systems such as the Scitex, this can be an automatic function. When you use the Macintosh, it’s usually a work-around solution.

In QuarkXPress version 2.12, you can frame pictures only with keylines that run either inside the picture border or outside it, depending on your Preferences settings. Centering the edges of a photo on the middle of the framing line requires two frames — one inside and one outside the picture’s border. You assign frames with the Frame menu and dialog box.

If you want to get a 1-point keyline trap, you need a .5-point inner and outer frame. First you use the Preferences dialog box to set the measurement units to points, and set the Framing option to Inside. Next, you create a picture block and assign it a .5-point frame thickness. Then use Get Picture to place an image into the frame and position it as needed.

Duplicate the frame by selecting it with the hand/I-beam tool and using Step and Repeat. Specify .5-point for both the Horizontal and Vertical Offset values. Next, without changing tools, press the backspace key to delete the contents of the duplicate frame. Choose Modify from the Item menu to bring up the numerical data for the copy. Make this frame transparent and subtract 1 point from its Width and Height values, which shrinks and centers the new block perfectly inside the original.

In PageMaker, you can create a keyline frame/trap with the rectangle tool, but you must do careful fitting by eye at the 400-percent view. Fortunately, you need only one rectangle per picture. As you maneuver the rectangle over the picture, you know you’ve achieved overlap when half the thickness of the dark line switches to a negative as it intersects the edge of the photograph.

**Other Trapping**

There’s another way to create a keyline trap. With this method, you place a color photograph saved as EPSF into Illustrator or FreeHand and then carefully draw a no-fill and black-stroked rectangle around it, making sure that the lines of the rectangle straddle the edges of the picture.

With either FreeHand or Illustrator, you can also add type over the photograph and apply a spread to the text by giving it a thin stroke that is set to overprint and a fill that does not overprint. The photograph with added type and keyline can then be saved as EPSF and be placed in a page-layout program for separation.

---

**Figure 3: Chokes over Multiple Colors**

<table>
<thead>
<tr>
<th>Blue background</th>
<th>Blue choke</th>
<th>+</th>
<th>Multicolor choke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masked blue choke</td>
<td>=</td>
<td>=</td>
<td>Orange background</td>
</tr>
<tr>
<td>Orange choke</td>
<td>+</td>
<td>-</td>
<td>Orange choke</td>
</tr>
<tr>
<td>Original type set to overprint</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chokes over multiple colors require a separate choke object for each background color. Each choke is masked by its corresponding background in order to trim off the excess outline. The masked chokes are then combined into a single unit over which the original type is printed. (For clarity, the choke borders are shown in lighter colors here.)
NOW THAT THERE'S A TOTALLY NEW DESKTOP PUBLISHING PROGRAM WITH AN INTUITIVE USER INTERFACE, THAT ALLOWS FOR THE PRODUCTION OF DOCUMENTS UP TO 999 PAGES IN LENGTH, WITH TEXT EDITING CAPABILITIES THAT MAY ACTUALLY RIVAL YOUR WORD PROCESSOR, AS WELL AS TYPOGRAPHIC AND LAYOUT CONTROL TO SATISFY EVEN THE MOST DEMANDING DESIGNER, WHERE DOES THAT PUT PAGEMAKER?
Now there's a Macintosh® program that so greatly expands your publishing horizons, it can't be called just an upgrade for Aldus PageMaker®. It's an upgrade for all of desktop publishing. Because now you have total control—start to finish—over the entire process: writing, editing, design, and production. For any type of document, any length.

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**Keep up to date** with the new Links management facility. Now you can automatically update a publication with the most recent versions of text and graphic files.

**Build files up to 999 pages, and beyond.** For long publications, combine files using PageMaker 4.0's Book command to create a common table of contents and index, and to chain-print the files.

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The PageMaker toolbox and pasteboard, along with 30 pre-designed layout templates, are some of the reasons why learning and using PageMaker is still so quick and easy.

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Add the impact of color with imported TIFF images and EPS illustrations. Choose from PANTONE®, RGB, HLS and CMYK color models. Then create color separations using an OPI-compatible separator such as Aldus PrePrint™ (purchased separately).

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It clears up the jagged text on your Macintosh® screen. And, more importantly, out of your Apple ImageWriter® or Hewlett-Packard DeskWriter.™

So whether you're using large type like our headline, or smaller sizes like this, Adobe Type Manager keeps your words looking great every time.

Speaking of time, it doesn't take much to install Adobe Type Manager. Simply drag it into your system folder and you'll never have to think about it again. But you should think about this: Adobe Type Manager is retail-priced at just $99. Which means you don't need a high-cost printing system to produce high-quality text.

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And do it before you start another headline.

This ad was created in QuarkXpress™ 2.1 with Adobe Type Manager (excluding the first three lines of the headline). Headline text, body copy text and this copy are actual ImageWriter output at 72, 12 and 9 point sizes, respectively.
Even before the advent of desktop color technology, the need to proof, or preview color images before going to press was always an essential part of the production process. A good color proof provides a reasonable facsimile of what your publication’s colors will look like once the pages have rolled off the printing press. It helps you make aesthetic design decisions and serves as an early-warning system for catching problems. Proofs are particularly important for four-color work, because printing is usually the largest expense. If you have to make changes after a job is on the press, the cost can be staggering.

There are several options for generating a color proof; the choice depends on your specific needs. The quickest and cheapest way to proof a color image is to look at it on a color monitor. Unless you work with a carefully calibrated system, however, the monitor’s colors won’t accurately match what appears on paper. This may be adequate if all you need to know is whether a color is yellow or green, but it’s completely useless if you need to be able to see and fine-tune subtle shades of color.

Beyond screen display, there are two basic categories of proofs (see Figure 1). Pre-separation proofs, also called digital proofs, are fairly easy to generate by printing the computer image directly to a color printer or film recorder. Depending on the image and the output device, these proofs can be fairly accurate. However, they aren’t as reliable as film proofs, which require that you output four-color film separations on a high-resolution imagesetter.

### Digital Proofs

Recent advances in color technology have greatly expanded the options for printing full color directly from the Mac (see “Color on the Page,” May ’90 Buyer’s Guide, page 56). Thermal-wax printers such as the QMS ColorScript 100 and Tektronix Phaser CPS can produce a very decent proof at 300 dpi. Although these devices are extremely useful for previewing color tints and type in page layouts and for proofing computer-generated artwork, you shouldn’t use thermal-wax proofs to make critical color decisions. They also can’t accurately render continuous-tone photographs. Thermal-wax proofs are relatively inexpensive, costing $1 to $5 per page at a service bureau. If your output volume makes it more practical to buy a thermal-wax printer, the QMS and Tektronix models — both of which handle PostScript and provide good color quality — will set you back around $10,000.

If PostScript compatibility isn’t an issue, you can proof color on a broad range of QuickDraw devices. Inkjet printers such as Hewlett-Packard’s PaintJet ($1,395) and the Tektronix ColorQuick ($2,345) are considerably less expensive than thermal-wax printers, so you can probably afford an in-house unit for instant proofing gratification. Inkjet printers also print at a much lower resolution than thermal-wax printers.

### Film Proofs (require film separations)

Currently available
- Color key (overlay)
- Match print (laminated)
- Cromalin (laminated)

Currently the only reliable methods for proofing color before going to press.

**Figure 1: Proofing Options**

<table>
<thead>
<tr>
<th>Digital proofs (output directly from computer)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Currently available</strong></td>
</tr>
<tr>
<td>- Thermal-wax printers</td>
</tr>
<tr>
<td>- Inkjet printers</td>
</tr>
<tr>
<td>- Film recorders</td>
</tr>
<tr>
<td>- Video printers</td>
</tr>
<tr>
<td><strong>Future availability</strong></td>
</tr>
<tr>
<td>- Sublimal-dye printers</td>
</tr>
<tr>
<td>- High-end inkjet printers</td>
</tr>
<tr>
<td>- Color laser printers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Film proofs (require film separations)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Currently available</strong></td>
</tr>
<tr>
<td>- Color key (overlay)</td>
</tr>
<tr>
<td>- Match print (laminated)</td>
</tr>
<tr>
<td>- Cromalin (laminated)</td>
</tr>
</tbody>
</table>

Best used for comp and layout. Extremely inaccurate for continuous-tone images.

May someday be reliable enough to produce accurate previews of final color without the expense of creating film separations.

By Keith Baumann
Introducing the new scanner that can read everything on this page.

The new Datacopy GS plus scanner is the fastest desktop scanner in its class. It lets you step instantly into high volume, high-quality scanning. Text. Images. It's the desktop publishers ideal scanning tool.

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(about 180 dpi), however, making them useful only for basic proofing of QuickDraw graphics. They are practically useless if you need to check text or images with subtle color gradations. Another inkjet printer, the Howtek Pixelmaster, offers 240-dpi resolution plus the ability to output PostScript through a software driver, but it’s still barely adequate as a color-proofing device.

Although the color printers that currently interface with the Mac are inadequate by prepress standards, the future holds some promising technologies for preseparation proofing. Superlative output from the Iris 3024 and other high-end inkjet printers has been available to the prepress industry for years at sky-high prices ($75,000 or so); the imminent addition of a Mac interface may bring these printers to your local service bureau. Sublimal-dye printers are an especially exciting technology. These machines vaporize CMYK inks, which blend with each other as they soak into the page; the resulting image resembles a continuous-tone photograph. The Mitsubishi S340-10 has already reached the market, and at $15,995, it may be within reach of some desktop publishers. The highly touted Kodak XL7700 ($25,000) and ultra-high-end Du Pont 4Cast printer ($75,000) provide sublimal-dye output that’s almost indistinguishable from a photograph. Color laser printing may also be a reliable means of generating color proofs. Canon offers stunning color on its Color Laser Copier, and it too will soon sprout a Macintosh connection.

**Film Proofs**

The most accurate way for you to preview what you’ll see on the printed page is to generate a four-color proof directly from the separated films that a PostScript image-setter creates. Because the proof is created from the same film that your printer will use to make the press plates, it will give you the truest rendition of the printed piece. Film proofs have been used for many years. Although they are generally the most expensive type of proof — $30 to $50 per page for a set of four films — film proofs are worth the price, and there is no real substitute.

There are several kinds of film proofs available, each with its own advantages and disadvantages. We can divide these into two basic categories: overlay and laminated.

Although these devices are extremely useful, you shouldn’t use thermal-wax proofs to make critical color decisions, and they can’t render continuous-tone photographs accurately.

The overlay method, often referred to as a color key, uses four sheets of acetate that are laid on top of each other to create the full color image. The advantage is that the individual layers can be split apart so that you can view each color plate separately. This allows you to analyze in detail the specifics of a color separation, such as the amount of black generation or maximum ink densities. The disadvantage of overlay proofs is that they are not reliable for overall color accuracy. The thickness of the acetate and the space between layers tend to

**Figure 2: Chroma Chameleons**

- **Monitor (uncalibrated)**
- **Monitor (calibrated)**
- **Thermal-wax printer**
- **Inkjet printer (180 dpi)**
- **Sublimal-dye printer**
- **Color laser printer**

When you’re proofing color images, color accuracy depends on the proofing method. Laminated match prints are your best bet, although newer digital techniques such as dye sublimation and color laser printing show great promise.
Presenting the world's first true publishing program. The first to give you the tools, power, and precision to publish documents that far exceed the look, quality, color, and professionalism associated with desktop publishing. Presenting the new QuarkXPress 3.0. Just how good is it? Well, you're looking at it.

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   QuarkXPress 3.0 makes controlling the details of your design easier than ever before. Using our interactive palettes, you can modify the graphics, text, and other elements of your design in seconds. In fact, we've redesigned every menu and dialog box for greater ease of use. And our pasteboard lets you produce bleeds by simply extending items off the page.

2. Move your words and pictures as a group.
   Now you can select multiple items and group them. Then move, modify, or align them. Drag your group from page to page, document to document, or into a Quark library for use in other publications.

3. Check out the new object library.
   Ever wish you could file away familiar logos, pictures, text, mastheads, even whole pages for future use? With QuarkXPress you can create your own libraries of up to 2,000 items that can be used with any document.

4. Turn heads—and rotate graphics—a full 360°.
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New QuarkXPress 3.0? All Out For You.

5. The art of fine typography just got finer.
   True publishing means professional-quality typographic controls. So, we added such features as vertical alignment of text, automatic drop caps, and adjustable widow/orphan controls. We also expanded the text runaround controls to allow you to flow text around or within a picture shape. That’s on top of our .001 point leading, .0005 em space kerning, and .001 point font sizing.

6. Trap some wild colors.
   Already the leader in color publishing, QuarkXPress now adds sophisticated trapping controls, so what you see is exactly what you print. Add to that our support of 32-bit color QuickDraw®, the PANTONE MATCHING SYSTEM® Colors, CMYK, HSB, and RGB color models, plus our ability to create and print color separations of spot colors and process colors and our ability to separate imported color EPS graphics, and you’ve got one wild color publishing machine.

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8. Create custom text wraps, in any shape.
   Now you can wrap text around polygons, boxes, and irregular images with far greater control and precision than ever before. For a tighter, more professional look. Or, fill any shape with text.

9. Anchor graphics to text.
   Remember when adding text meant repositioning every line and graphic on the page? Well, no more. QuarkXPress lets you anchor headings, rules, and graphics to text. So you can quickly add or delete text within your existing design.

10. Keep the good news coming!
    If we haven’t given you enough reasons to try the new QuarkXPress 3.0, we have hundreds more. Like the ability to save your pages as EPS files, a flexible zoom tool, a complete spelling dictionary, and full compatibility with professional separation standards. Not to mention the full line of QuarkXtensions. All of which adds up to a good deal more control over publishing than you’ve ever had before. For a suggested U.S. retail price of just $795.

To experience true publishing, call your dealer today. They’ll be glad to lay it all out for you.

QuarkXPress 3.0

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The continuous tone images were separated using SpectraSeps OX™ from Pre-Press Technologies, Inc.

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produce a misleading image. The laminated proof, also called a match print, provides superior color accuracy, but you can’t separate the various plates because the four color layers are permanently fused together and mounted onto a paper backing by a high-pressure roller. If you prefer, you can laminate the proof directly onto the same stock that will be used for printing. If you are using custom-mixed spot colors, you may want to use a special kind of laminated proof called a Cromalin. A Cromalin is more expensive than a standard match print, but it uses powdered inks to produce accurate renditions of custom colors. Laminated proofs are strongly recommended for any work where color accuracy is critical. In fact, many commercial printers require them for use incompensating for press variables at print time.

Even if you use a color printer to produce a color proof from the Mac, you should strongly consider proofing the film with a color key or match print as well. The extra money that you spend here could save you hundreds or even thousands of dollars down the line. Although new technologies may soon bring us a more reliable means of producing color proofs directly from the computer, there are still no substitutes for the old proofing standards. 

What Is 'Reachable' Color?

Careful color proofing is essential if you want to predict the results of printing with inks on paper, but no matter how meticulous you are, there’s no way to guarantee a perfect outcome. Factors such as paper texture, ink characteristics, and the idiosyncrasies of the printing press can drastically alter the final outcome. More importantly, not all colors can be reproduced by process-color inks. In fact, only a small part of the visible spectrum is actually “reachable” on a printed page.

The available range of colors is known as a gamut, and it varies greatly with each step of the production process. Color monitors have a very different gamut from that of CMYK (cyan, magenta, yellow, black) inks, which often results in a discrepancy between what you see on-screen and what you see in print. A color proof generated from film separations has a still different gamut, although the proof is usually much closer to the printed page than to the color monitor. Moving from the RGB (red, green, blue) color model of the monitor to the CMYK color model of the printing process is extremely tricky and is one of the major stumbling blocks in successful desktop color-proofing work.

It’s important to remember that the computer allows access to many colors that can’t be printed. This is especially true for programs that use the RGB color model, such as Studio/5 and PixelPaint. You can keep this from being a problem by working with CMYK color specs wherever possible. By learning which colors are actually reachable, you will greatly improve your chances of printing what you create. Remember that the available color gamut will vary, depending on the specific output device and printing quality. For instance, the high quality of the magazine-printing process can reproduce many more colors than are available in the newspaper-printing process.

Although this color-matching problem has always existed, solutions have only recently begun to appear on the Mac. Tektronix offers TekColor, a color Picker that replaces the standard Apple Color Picker with hue leaves indicating the colors that a particular monitor and output device have in common (see “The TekColor Solution,” May 90, Buyer’s Guide, page 18). Adobe’s Photoshop displays an exclamation point when you attempt to choose a nonprintable color, and most color applications now offer the option of working in CMYK mode.

The best way to avoid the pitfalls of nonreachable color is by experimentation. Try creating color palettes in your favorite graphics and page-layout programs. Remember to label each color swatch with its specifications so that you can remember exactly what you used. Have the files output as color separations, and generate match prints from the film. The tests will be more accurate if you use the same output device and line-screen frequency you will use to print your final documents. Compare the proof with the monitor display, and determine which are the reachable colors.
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One copy of Timbuktu/Remote and a modem are required at each location. A 9600 bps full duplex V.32 modem is recommended. Timbuktu is a trademark of Farallon Computing. All trademarks are property of their respective holders. © 1989, Farallon Computing, Inc. 2000 Powell St., Suite 600, Emeryville, CA 94608. FAX: (415) 596-9020.
**Currents**

**HP Speaks AppleTalk**

Hewlett-Packard has long been the leading vendor of desktop printers for DOS environments. Its LaserJets are among the most successful printers ever built. But for Mac users, who expect PostScript-capable printers accessible over LocalTalk networks, HP’s popular offerings have not made the grade. The $1,195 DeskWriter, a 300-dpi monochrome inkjet printer, was the first HP product to break into the Mac market in a big way. HP recently expanded its offerings in the Mac printer market, however, releasing new versions of its DeskWriter and LaserJet lines that specifically address the needs of Mac users.

The QuickDraw-based DeskWriter is now shipping with built-in LocalTalk support. Users who bought the original DeskWriter, which was equipped only with an RS-232 serial port, can retrofit their printer with a LocalTalk interface for $149.

All of HP’s current LaserJet models will be offered in Mac versions that include a LocalTalk interface, Adobe PostScript cartridge, and expanded printer RAM. The Mac-ready version of the LaserJet III, HP’s standard 8-page-per-minute printer, has a list price of $4,355 and includes a 2-megabyte RAM expansion. The LaserJet III uses a new variable-dot imaging technique that HP claims improves the appearance of grayscale images. (MacUser Labs will report on the LaserJet III in a future issue.)

The 8-page-per-minute LaserJet IID, HP’s workhorse printer, has dual paper trays and, when configured with 4 megabytes of RAM, can print PostScript on both sides of a sheet of paper. It costs $5,360 with LocalTalk, PostScript, and a 2-megabyte RAM expansion; the 4-megabyte version lists for $6,060.

For those who are more concerned about price than performance, HP offers the LaserJet IIF, which prints 4 pages per minute. The Macintosh version with LocalTalk, PostScript, and 2 megabytes of RAM lists for $3,455.

All three LaserJet Mac models should ship this quarter. HP has also released the PaintWriter XL, a 180-dpi color inkjet printer designed specifically for the Mac. The PaintWriter XL has a LocalTalk interface and a QuickDraw printer driver and lists for $2,995. For more information on these printers, contact Hewlett-Packard, 19310 Pruneridge Ave., Cupertino, CA 95014; (800) 752-0900.

— Stephan Somogyi

**Is It E-Mail or Is It Fax?**

Faxing has become the de facto standard for sending printed matter when time is of the essence; not even Federal Express’ overnight service can compete. Using a Mac equipped with a fax modem and Adobe Type Manager, you can send faxes that come close to laser-printed quality. Although it can take some time to produce a fax on a Mac, you never have to deal with the crooked-paper-jammed-in-the-fax-machine syndrome.

Mac fax modems have been around for a while, but they have all been single-user devices. The only way several users could share one on a network was with a Shiva NetSerial interface. Solutions’ FAXGATE Plus is the first product to offer an alternative.

The FAXGATE Plus package has two parts: gateway software, which runs on the same Mac as a Microsoft Mail or QuickMail server, and a MailMaker “printer” driver, which is copied to users’ System Folders. To fax a formatted document from an application such as Word or PageMaker, you select the MailMaker icon in the Chooser (much as you would select an ImageWriter) and then select the print option. MailMaker sends the image data to the server via E-mail: FAXGATE then transfers it from the mail-server software to BackFAX, Solutions’ fax-modem software, which must also be running on the server Mac.

The time-consuming process of converting the Mac’s QuickDraw image to Group 3 fax format is relegated to the server, leaving your Mac free to do other work. Converting on the server rather than on the user’s Mac also cuts down on the amount of data sent over the network from the user’s Mac to the server (although it may degrade mail performance on a busy mail server).

FAXGATE Plus costs $395 and comes with one copy of the gateway software and five copies of MailMaker; additional MailMaker five-packs are $195 each. You also need a copy of Solutions’ BackFAX software for each E-mail server; if your fax modem doesn’t come bundled with BackFAX, you can buy it separately for $245. In comparison, Shiva’s NetSerial interface costs $399, but it isn’t easy to make a fax modem and the NetSerial work together. For the average user who already has a mail server, FAXGATE is a better solution. Solutions, 30 Commerce St., Williston, VT 05495 (802) 865-9220.

— Stephan Somogyi
Kinetics is your ticket to these exotic ports.

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Apple/DEC Alliance: Together at Last

What do you get when you cross DECnet with AppleTalk? A two-year wait and some dynamite software—DECLanWORKS for Macintosh.

You might have given up wondering when Apple and DEC were going to produce some tangible results from the highly touted alliance they declared back in January '88. They vowed to make Macs and VAXes, AppleTalk and DECnet, work together seamlessly, like loving members of one big happy family. But since this engagement was announced, both companies have kept mum about the wedding date.

Well, the wait is over, and it seems as if it was worth it. At a May ceremony in New York City, DEC chief Ken Olsen and Apple's John Sculley tied the knot and lifted the veil from DECLanWORKS for Macintosh. The list of features is so legion that it's difficult to do it justice. This first report is a little heavy on network jargon, but if you ever dreamed of connecting Macs to VAXes, hold on to your hats and read on. Remember that all of this is going to be provided in one very inexpensive package.

AppleTalk on the VAX

There are currently two AppleTalk for VMS products—version 2.0.6 if you have a Phase 1 internet, and version 2.1 if you're running Phase 2. It creates a "virtual" AppleTalk network in software on the VAX. This approach is kludgey and slow, which limits what the Mac and the VAX can do together. In contrast, the upcoming version 3.0 will be fully integrated into the VMS kernel (core system software) and will turn a VAX into a true AppleTalk node. The most immediate benefit of the new approach will be a significant boost in performance.

On top of this integrated AppleTalk base, LanWORKS will include an AppleTalk router, a fully AFP-compliant file server, and a PostScript print server (spooler), and it will provide DECnet "tunneling" of AppleTalk data. AppleTalk file and print servers for the VAX are currently available from Pacer and Alisa, but the router and DECnet tunneling capabilities have never been offered before. Note that all these services will implement AppleTalk Phase 2 protocols only, not Phase 1. If you've been biding your time, resisting the upgrade from Phase 1 to Phase 2, you're going to have to bite the bullet if you want to run LanWORKS.

The VAXshare file server will implement the latest and greatest AFP 2.0 protocols. Mac and VAX terminal users...
The award-winning software package that transfers and translates files between Macintosh and DOS or OS/2 programs now does the same for Sun worshippers. And for the NeXT world.

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MacLinkPlus/Wang OIS and MacLinkPlus/Wang VS provide the same bi-directional connectivity between Macintosh and Wang.
will be able to share files easily. Files stored on VAX share volumes will appear to Mac users as if they are on an AppleShare server; to VAX users, they’ll appear as regular VMS files. DEC already offers a product called PCSA (Personal Computer Systems Architecture) that integrates DOS-based PCs and VMS-based VAXes. It enables VAX and PC users to share files via an SMB file server. If users run both PCSA and LanWORKS, then Macs, PCs, and VAX-terminal users will all be able to share the same files.

The VAXshare print server will allow any Mac or VAX-terminal user to access any PostScript printer on either DECnet or AppleTalk networks. The AppleTalk for VMS router will allow a VAX system manager to connect multiple EtherTalk networks to a single VAX computer and will route data among them. Direct LocalTalk connection to the VAX will still not be supported. And DECnet tunneling will let Macs on one AppleTalk network communicate — through a series of VAXes connected on a DECnet network — with Macs, AppleShare file servers, and printers on other AppleTalk networks (see Figure 1).

More Connections

If AppleTalk isn’t your thing, LanWORKS will provide three other sets of connection tools: one set for terminal emulation, another for turning your Mac into a DECnet node, and a third for TCP/IP connections. On the terminal-emulation side, LanWORKS will include the Macintosh Communications Toolbox with some new connection tools, and a new multisession version of MacTerminal with scroll-back capability. Using this software, a Mac will be able to open multiple VT-102 or VT-320 terminal sessions on the VAX.

Along with the serial and modem connections already announced by Apple for the Communications Toolbox as part of System 7, LanWORKS will provide LAT and CTerm connections. LAT is a DEC terminal-access protocol that efficiently packages keystrokes from multiple terminals or multiple terminal sessions on a single terminal. This reduces the strain that processing terminal users’ keystrokes places on a VAX CPU. LAT requires Ethernet, however. CTerm connections will also be supported. CTerm, which is another DEC terminal-communications protocol, will allow Macs on LocalTalk to open terminal sessions with a VAX.

DECnet for Macintosh implements the DECnet protocol stack on the Macintosh, turning it into a full DECnet “end node.” Two DECnet-based applications are also included: an NCP (network control program) for configuring the Mac as a DECnet node, and NetCopy, a file-transfer utility that enables VAX-based DECnet nodes to initiate file transfers from the Mac’s hard disk.

But suppose you have a VMS application — perhaps videotext or a custom application — that was written with the assumption that it would be used on a DECnet node on Ethernet, but your Mac is on a LocalTalk network. You can’t use AppleTalk to communicate with the application because it understands only DECnet. And, unless you have a Kinetics FastPath 4, which provides DECnet routing for LocalTalk-based Macs, there is no way for you to communicate with the DECnet-based application. Other EtherTalk-to-LocalTalk routers don’t offer DECnet routing (see “EtherTalk-to-LocalTalk Routers,” June ’90, Buyer’s Guide, page 42), and other software that allows Macs to act as DECnet nodes requires the Macs to be on Ethernet. LanWORKS solves this problem by providing an AppleTalk/DECnet Transport Gateway (see Figure 2). The gateway sits between the two networks and repackages data packets so that each side sends and receives packets in its own native format.

Finally, if you use TCP/IP protocols rather than DECnet or AppleTalk, don’t worry — they’ll also be supported. MacTCP will also be part of the LanWORKS package. This will facilitate Mac connections to VAXes running ULTRIX (DEC’s UNIX implementation) as well as to VMS-based VAXes.

Painless Windows

If ASCII text bores you, MacX — Apple’s implementation of X Window protocols — will also be included in LanWORKS. MacX will let Macs run VAX-based X Window applications. (X Window, developed by MIT, is widely used by UNIX systems to provide a basis for a graphical user interface.) DEC has adopted X Window and added certain enhancements, such as a special set of fonts, to create DECwindows. DECwindows is DEC’s standard windowing interface for both its VMS and its ULTRIX.
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VAX systems. The version of MacX included in LanWORKS will provide support for DECwindows. Users will be able to cut and paste ASCII text (typeface and point-size information will be lost) and some graphics between DECwindows and native Macintosh applications. DECwindows connections will be possible over AppleTalk, DECnet, and TCP/IP.

Mailboxes and Databases

Not happy yet? You want to exchange mail between Mac and VAX users? You've got it. LanWORKS will include a Mac application for accessing VMS Mail servers. And when DEC ships its new ALL-IN-1 Mail server (ALL-IN-1 Mail is a forthcoming X-400-based mail system), LanWORKS will accommodate Mac users by providing an application for it as well. As with other services, Macs will be able to access VAX-based mail services by using AppleTalk, DECnet, or Communication Toolbox connections.

Wondering about connections to VAX-based Rdb/VMS, Oracle, Ingres, Informix, or Sybase databases? There's good news for you too. You've heard of CL/I, the database-connectivity language that provides Mac applications with a consistent method of accessing VAX-bound data. It's been renamed DAL (Data-Access Language), and the server (for VMS) will be built into LanWORKS.

For a Mac application to connect to a VAX database via DAL, the VAX must have the DAL server plus a database-adapter module for the specific database product being accessed. LanWORKS will include only one DAL database-adapter module for Rdb/VMS (Digital's SQL database product). Database-adapter modules for the other database products I've mentioned will be provided either by Apple, through APDA, or the database vendors.

Unfortunately, although LanWORKS will provide new CL/I (oops, sorry, I mean DAL) client software — that's the piece you must have in your System Folder to make DAL connections to a VAX database — it will support only AppleTalk and serial connections on initial release. No DECnet, LAT, CTerm, or TCP/IP connections yet. Guess you have to leave something for version 2.

DEC's SQL/Services for the Macintosh provides remote access and a programming interface for applications to communicate with Rdb databases. It will be offered as part of a separate DEC product. SQL/Services provides a variety of workstation and terminal types — not just Macs — with a consistent way to access DEC's Rdb databases.

What About File Translation?

I thought you'd never ask. DEC has developed (and is promoting as a standard) the CDA (Compound-Document Architecture), a comprehensive set of rules describing the use of compound
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documents — documents that contain styled text, bit maps, and object graphics — in a computing environment. These rules include the creation, display, on-screen modification, and disk storage of compound documents. DDIF (Digital Document Interchange Format) describes the file format used for storing CDA files on-disk. An increasing number of VAX-based applications allow users to save their work as DDIF files.

LanWORKS includes a DDIF converter tool kit that runs on the VAX and provides converters to translate between DDIF and MacWrite, MacPaint, and PICT documents. Only PICT 1 format is supported, so there are no color or grayscale capabilities. But that’s not the worst of it. Unfortunately, a Mac-based translation tool didn’t make the first cut of LanWORKS. If you really want to, you can do it from a Mac — sort of. You have to run a terminal session and invoke the converter tool kit on the VAX from the terminal’s command-line prompt. Oh well, even seamless integration sometimes has a little run in the nylon. Uh, Apple? DEC? I think this area still needs some work. Shall we call this a third-party opportunity?

But You Can’t Have It Quite Yet

You want it? Well, you can’t have it quite yet. How about the third quarter of 1990? Hey, you’ve waited two and a half years, give or take a bit. What’s another couple of months? And wait till you hear the price!

Five hundred dollars. Yes, that’s hundred. For a mere $500, you can acquire all this stuff, complete with documentation, and install it on your VAX. But you can’t use it.

If you want a user license, it costs extra. Are you scared? Don’t worry. It’s only $300 per Mac. Still cheap. Outrageously cheap. If you add up the cost of equivalent third-party products — and some of the features offered by LanWORKS haven’t been implemented by anyone else yet — you’re talking thousands or tens of thousands of dollars.

One more thing. Apple Computer is going to heavily promote DEC LanWORKS for Macintosh (as it should), but DEC is going to sell it and support it. Support contracts will cost extra, of course, as DEC support contracts are wont to do. You can contact DEC at 146 Main St., Maynard, MA 01754; (800) 344-4825 or (508) 493-7161.

DEC LanWORKS for Macintosh is an incredibly impressive, inexpensive package that makes a qualitative leap in Mac-to-VAX integration. Never mind that it has a dorky name. If you have Mac computers and VAXes and want them to communicate, you’ll want LanWORKS. It’s as simple as that. We’ll have a report soon on how it’ll change the market for third-party vendors such as Alisa and Pacer.

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Sharing without AppleShare

Want AppleShare compatibility but can’t afford to dedicate a Mac as a server? Try these alternatives.

Next to printing, sharing files is the most common reason for using a Mac network. AppleShare, Apple’s own server product, requires a dedicated Mac. It provides a central place to put files, including data (such as databases) that is shared by multiple users. AppleShare is based on the AFP (AppleTalk Filing Protocol), one of the protocols in the AppleTalk Networking System. AFP has two parts, a client part and a server part.

On the server side, AFP provides access privileges. When you mount a local hard-disk volume on your desktop, you can get at any of your files in any folder. But when you mount (or log on to) an AppleShare server volume, you can be granted access to the files in some folders and denied access to others.

The AFP server also features byte-range locking. When more than one user needs to get access to the same file at the same time — the best example is a multiuser database file — data corruption can occur unless some rules are set. Byte-range locking locks out all but one user at a time from writing over specific bytes of data in a file (a particular record in a database, for example). Other users can access the file, and even the same record, but for reading purposes only.

Many other vendors have implemented AFP on non-Mac platforms. For example, Novell now supports AFP with its PC-based NetWare product. Pacer and Alisa Systems have implemented AFP-compliant servers that run on DEC VAXes, and IPT’s uShare implements AFP servers on several UNIX platforms.

Because all these servers follow the AFP rules, users can access them through the AppleShare client software. When you install AppleShare on your Mac with the System Installer, the installer puts an AppleShare INIT into your System Folder. The next time you boot up, an AppleShare icon appears in your Chooser. Clicking on the AppleShare icon shows you a list of all the AFP servers available to you — whether they are “true” AppleShare servers, NetWare, or CareBearShare (not a real product, but you never know).

AppleShare requires that you dedicate a Mac to the task of being a server (at least until System 7 comes out). For many people, even the cost of a Mac Plus ($1,799 list), when combined with the cost of AppleShare File Server software ($799), is too high a price to pay for file sharing. Many users would rather be able to share files directly from one workstation to another without dedicating a server. This nondedicated server approach is called point to point.

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By Stephan Somogyi
Talk Just Got Cheaper

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Please circle 367 on reader service card.
low-cost point-to-point alternative to AppleShare (see “Two for the Node,” May ’89, page 161). It lets users “publish” their local Mac volumes to allow other users on the net to access them. Rather than having a central server, anyone on the net can get at anyone else’s local hard disk drive. Although TOPS 3.0 supports byte-range locking (previous versions had some problems), it doesn’t implement AFP access privileges, and volumes published by TOPS cannot be accessed via the AppleShare icon in the Chooser; you have to use a separate TOPS DA.

Point-to-point (nondedicated) AFP servers seem an ideal alternative: They provide a single, standard user interface (AppleShare client) for volumes local to other users’ Macs on the network. With nondedicated AFP file servers, you can share files between any number of Macs on a network by moving files directly from one Mac to another without a server. Point-to-point AFP servers can coexist with dedicated servers; in fact, when both are used, the dedicated servers’ loads can be reduced.

Apple has announced that Macintosh FileShare, a full nondedicated AFP server, will be an integral part of System 7 (see “AppleShare without Servers?” April ’90, page 276). In the interim, several nondedicated AFP servers with different features sets are available for use with System 6. Here’s a look at these alternatives.

**DataClub**

International Business Software markets DataClub, which provides file sharing, using a unique metaphor. You see only a single DataClub volume on the network, but there doesn’t need to be a central server. Files that appear on your desktop as part of a single DataClub volume are actually distributed around the network on different users’ local hard disks. If you want to make files available to other users on the network, you must copy the files to the DataClub volume. Instead of being physically copied to a central server, the files remain on the local hard disk in a reserved area maintained by DataClub that grows and shrinks as necessary.

This single-volume metaphor helps keep the number of volumes on the desktop down to a minimum. (With other nondedicated servers, if all the users in a work group mount each others’ volumes, the desktops on their Macs can become hopelessly cluttered.)

What if you want to work on a file that physically resides on someone else’s hard disk, however, and you don’t want the sluggish performance that’s typically associated with doing this type of work over a LocalTalk network? When DataClub is active, the Finder’s Get Info dialog box gains an extra item that displays the physical location of a file on the DataClub volume. If you have the right privileges, you can move a file from one physical volume to another without changing the folder in which it appears on the DataClub volume.

For example, if you’re going to be out of the office and you want to turn off your computer while you’re gone, you can physically move a file to the shared area on a coworker’s hard disk. No one using the file will notice the change in its physical location. If a user goes off-line without moving a shared file to another machine, DataClub tells the Finder to gray out the icons of the files on that Mac. The location, name, and type of the files in a...
folder remain, but the files themselves cannot be accessed.

DataClub implements full AFP access privileges and byte-range locking and doesn't require a dedicated Mac, and it goes one step further: It makes distributed data appear centralized — a clever innovation, and one that MacUser NetworkShop is looking forward to testing. DataClub’s pricing was not available at press time; the projected ship date is late summer.

**allShare**

McKenzie Brown designed allShare to provide only the functionality necessary for use with multiuser applications. Accordingly, allShare focuses on implementing byte-range locking rather than folder-level access privileges.

Implementing byte-range locking on a user’s local hard disk is particularly tricky. If a shared database resides on a dedicated server, the database is not “local” to any one user. Since all users must log onto the server to access it, it is relatively easy to restrict any user. But if a shared database resides on a user’s local volume, that user can gain unrestricted access to any file. allShare overcomes this problem by extending byte-range locking to local users, even though they are not logged on to the database via an AppleShare client.

allShare doesn’t need much in the way of configuration. Users can prioritize how much impact allShare has on their local Mac’s performance as well as disable the ability of remote users to delete files on local volumes. There are no user lists or groups to administer — a single password allows access to the local Mac’s storage. allShare doesn’t support access privileges to folders on a volume; it lets each user publish either an entire local volume, a specific folder, or a local volume with one folder protected.

For work groups that just need to move files around and use multiuser applications, allShare fits the bill. While it is simplistic in its security, the low price — $249 per zone with a maximum of 254 user/servers per zone — makes allShare very attractive.

**EasyShare**

EasyShare, from ShirtPocket Software, is a simple file-sharing solution for those who need nothing more than access to other users’ volumes to copy files or move them back and forth. Like TOPS, EasyShare’s DA lets you set up a list of publishable volumes and folders; these can be set to be auto-published at startup time. EasyShare doesn’t support the full range of standard AppleShare folder-level access privileges. The only access restriction it offers is that it allows you to set published volumes and folders to be read-only.

**Many Macs aren’t going to have enough RAM to make System 7 a viable option.**

EasyShare doesn’t currently support byte-range locking, but that feature is planned for a release that should be available by the time you read this. At $149.95 per ten nodes, EasyShare offers considerable flexibility in the selection of folders and volumes you can publish.

**PSN**

IPT’s Personal Server Network was the first nondedicated AFP server to be released on the Mac market. It implements the full functionality of an AppleShare server, including byte-range locking, and even goes so far as to implement folder-level access privileges for folders on local users’ machines. This functionality comes at a price. For byte-range locking to work, you have to put PSN into loopback mode and log on to your own Macintosh with the PSN administrator software. In loopback mode, access privileges are enforced for local users as well; you do not automatically have access to folders created by others on your own hard disk.

Furthermore, you must set PSN’s administrator application as the startup application. Otherwise, shared volumes won’t auto-publish and loopback won’t work — an annoying constraint. Enforcing access privileges on local Macs is not a nice feature, but PSN is not a security package. All you have to do to circumvent access privileges on a local machine is not use loopback mode or boot from a floppy. At $149 per node, PSN is also the most expensive of the products currently available.

**Share and Share Alike**

When System 7 becomes available later this year, it will include Macintosh FileShare, a full point-to-point implementation of AFP. Any user with 2 megabytes of RAM and System 7 software will be able to publish a local folder as an AppleShare volume. Macintosh FileShare will offer all the capabilities of allShare, EasyShare, or PSN — and it will come free with every Mac.

Many Macs won’t have the RAM to make System 7 a viable option, however. Users of such Macintoshs, who are most likely on a limited budget, would be wise to consider all the available options, including TOPS, before deciding on a file-sharing solution. Each of them has its strengths and weaknesses, and DataClub offers a unique feature that System 7 will not offer: We haven’t had a chance to test it yet, but DataClub’s distributed-volume approach to file sharing is innovative and intriguing. You can expect a full report on it in a future issue.

<table>
<thead>
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<th>Directory</th>
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</tr>
<tr>
<td>2176 Torquay Mews</td>
</tr>
<tr>
<td>Mississauga, Ontario L5N 2M6</td>
</tr>
<tr>
<td>Canada</td>
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<tr>
<td>(416) 569-3568</td>
</tr>
<tr>
<td>$249 per zone</td>
</tr>
</tbody>
</table>

| DataClub |
| International Business Software |
| 1270 Oakmead Parkway, Suite 314 |
| Sunnyvale, CA 94088 |
| (408) 720-0170 |
| Price unavailable at press time |

| EasyShare |
| ShirtPocket Software |
| P.O. Box 40666 |
| Mesa, AZ 85274-0666 |
| (602) 966-7667 |
| $149.95 per ten nodes |

| PSN |
| Information Presentation Technologies |
| P.O. Box 8609 |
| Calabasas, CA 91327 |
| (818) 347-771 |
| $149 per node |
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Macs on the Internet: Talking TCP/IP

TCP/IP networks are nearly ubiquitous in corporate America and on university campuses. These products allow Macs to join the crowd.

In the Middle Ages, when traders from different countries wanted to communicate, they used a simple commonly known language called lingua franca. It wasn’t as rich and detailed as their native languages, but it was certainly sufficient to get the point across.

When it comes to computers, the lingua franca is the communications protocol TCP/IP (transmission control protocol/Internet protocol). TCP and IP are two of the five protocols standardized by the DOD (U.S. Department of Defense). They are also used extensively in corporate and university environments. TCP handles reliable delivery: It makes sure that data arrives at its destination intact and that the packets are received in the proper order. IP handles addressing: It is responsible for routing data packets from a source computer on one network through the Internet to a destination computer that is often on another network.

The other three DOD protocols are Telnet, which provides terminal emulation; FTP (File Transfer Protocol); and SMTP (Simple Mail Transfer Protocol). These are application-level protocols that run “on top of” TCP/IP. That is, they use TCP/IP protocols to move data from one computer to another. The entire group of five protocols is often called TCP/IP, however.

TCP/IP doesn’t let you do everything, but if all the protocols are implemented, it does allow users on computers from different vendors—even running different operating systems—to log on to each other’s systems and exchange files and mail (see Figure 1). TCP/IP enables users to set up heterogeneous networks—that is, networks that have several different kinds of computers.

For Macs to participate as equals on TCP/IP networks, they must run software specifically designed to implement the TCP/IP protocols. Several vendors have released products that implement FTP, Telnet, or both (SMTP products are lagging behind).

Hello, World

TCP/IP was originally developed to allow computers that were running different operating systems to communicate. Variations of the Berkeley version of UNIX have TCP/IP built in, as do some variations of AT&T’s UNIX. In addition, TCP/IP is supported on increasing numbers of other systems, including proprietary minicomputers (such as DEC VAXes), PCs running MS-DOS, and even IBM mainframe computers. (When IBM supports a protocol it didn’t design, you know it has to be popular.) Consequently, a Macintosh running TCP/IP can communicate with a wide variety of systems.
by employing a single program. Some products enable Macs to communicate with certain systems—for example, the TOPS network-operating system lets Macs talk to MS-DOS PCs, various 3270 terminal-emulation products for IBM mainframes, and several Mac-DEC products for VAX minicomputers—but TCP/IP can provide a consistent interface to all of them. This way, you don't have to learn a new program each time you communicate with a different system.

Be forewarned that current TCP/IP applications are simplistic. They provide only basic terminal emulation and straight file transfer. The terminal emulation doesn't take advantage of the Mac's intelligence or user interface. The file transfer doesn't convert data to Macintosh file formats. Because the software has to handle many different types of systems, it can't be as efficient as system-specific software.

The Facts of TCP/IP Life

For this article, we looked at three commercial products that provide TCP/IP support, including the basic TCP and IP protocols in the form of Novell's TCPort or Apple's MacTCP: Net/One MacUWS version 1.0, from Ungermann-Bass; LAN WorkPlace for Macintosh version 1.1, from Novell; and TCP/Connect version 1.5, from InterCon Systems. We communicated between a Mac IIX client and a NeXT-workstation host over an Ethernet network.

In addition, several public-domain or shareware TCP/IP programs are available. These include TOPS Terminal, which was originally developed to be a commercial TOPS product but is now available free; NCISA Telnet, from the National Center for Supercomputing Applications at the University of Illinois at Champaign-Urbana; and Stanford MacIP, which is available only to university users. Some of these products are not easy to find, although NCISA Telnet seems to have made the rounds and to be fairly easy to find. If you know someone who can make you disk copies, you're in luck. Otherwise, you have to download them from an already existing TCP/IP network—a challenge if you don't have any TCP/IP software—and you will probably have to compile them yourself. Other vendors, such as White Pine and Pacer, have incorporated Telnet support into their terminal-emulation products, but they do not support FTP.

No matter which product you use, a few factors are universal. First, the systems you want to communicate with are almost certainly on an Ethernet network, so your Mac needs to be on one too. This can be either directly—with an Ethernet card or attached device—or indirectly, from a LocalTalk network through a TCP/IP gateway (see "EtherTalk-to-LocalTalk Routers," June '90, Buyer's Guide, page 42).

Second, the administrator of the remote system must create a user account for you on that system, incorporating the permissions that are required for remote access, and tell you what your account name is. The user name is a matter of security—it not only limits the users who can have access to the remote system, but it also...
SOLUTIONS

limit what files they can access. Your user account will probably also have a password.

Incidentally, some systems support a feature known as "anonymous FTP." This is an account created specifically so "guests" can log in and download files, such as text files or public-domain software and shareware, without having to create a separate account for each potential user. Find out more details about this option from your system administrator.

Addressing the Host

Third, you communicate with another computer over a TCP/IP network by logging onto it as a remote host. To do this, you have to know the IP addresses of both your system and the remote host. An IP address consists of four sets of numbers separated by periods, such as 192.42.172.1. As with a phone number, the component parts of an IP address refer to smaller and smaller sections of the network. For example, MacUser's telephone number — (415) 378-5600 — can be broken down, respectively, into the San Francisco Bay Area, Foster City, and the specific part of Foster City where the office is located. Further, with the correct extension number, you can access an individual's desk directly.

The numbers in an IP address can be similarly broken down. Each TCP/IP node on a given internet must be assigned a unique four-number combination, with the last of the four numbers (the 1 in our IP-address example) usually representing a specific node on the network.

Comparing the Products

We feel that the most important factors in running TCP/IP on the Mac are ease of installation and ease of use. Performance is certainly important in some installations, but it is more likely to depend on the network load than on the TCP/IP software used.

LAN WorkPlace

Novell's LAN WorkPlace for the Mac requires that the TCPPort INIT be installed in the System Folder. You configure TCPPort through the Control Panel and restart the Mac to activate it. But each time we installed the software, the Mac complained that it couldn't find its Ethernet drivers. Reinstalling the drivers whenever we installed the software fixed this problem. Once TCPPort is installed, you run the HostAccess application. Both Telnet and FTP are items on the LAN WorkPlace HostAccess File menu. To begin either a terminal-emulation or file-transfer session, you perform the usual log-in procedures: Enter the address of the host and proceed through the UNIX log-on sequence. Telnet turns the Macintosh into a UNIX terminal from which you can launch remote host applications.

The main benefits of running TCP/IP on the Mac are ease of installation and ease of use.

FTP displays a two-sided window; the left side represents the Mac, and the right side represents the remote UNIX system. Unfortunately, the remote-system directory structure looks more UNIX-like than Mac-like — you can't just click on folder icons to negotiate its hierarchy (see Figure 2a). From this dialog box, you can select Mac or UNIX files and click on Copy to move the files from one system to the other. You can create folders on the Mac, but you can't remove or copy them, although you can copy multiple files simultaneously. Trying to copy a whole folder produces an error message.

TCP/Connect

InterCon's TCP/Connect does not require the Control Panel for setup, but otherwise its configuration is similar to that of the other products. The first time we ran it after it was installed, we entered our IP number as well as that of the NeXT workstation (under Default Host).

To open a Telnet session, you select Open Connection from the File menu, enter your host ID, and are transported to the UNIX log-in prompt. If you run multiple sessions, you can type in a different name for each window in which a terminal session appears.

As with LAN WorkPlace, TCP/Connect presents FTP as a two-sided window, with the Mac represented on one side and the remote system on the other. You copy files by selecting them and clicking on a Copy button. Of the three products, InterCon's FTP interface is the most Mac-like, displaying Mac folder and file icons on both sides of the window (see Figure 2b). It won't let you create a new folder, however. And trying to copy a whole folder not only doesn't work, but it doesn't even produce an error message. You can copy multiple files, but you have to explicitly create each new Mac file when transferring from the remote system.

MacUWS

Like LAN WorkPlace, Ungermann-Bass' Net/One MacUWS has an INIT. It's called AdminTCP and is configured from the Control Panel. After several false starts with the AdminTCP dialog box, we learned that all we really had to do was enter the Mac's IP address in the IP Address field. We had kept trying to use complicated instructions because the manual never mentioned that we didn't need them.

MacUWS uses a Window menu to open Telnet and FTP sessions. One nice feature of this program is that it lets you save the host ID and your user account name and password as Permanent, which simplifies subsequent log-ons.

MacUWS' FTP interface is, in terms of Mac-ness, midway between that of the other two products. You select volumes and folders to copy files, but it doesn't look like a typical Mac interface (see Figure 2c). You can create new folders but cannot delete them, and an error message appeared when we tried to copy them. The command is the same to either create new folders on the Mac or new directories on the remote system, so you have to pay attention to which window the cursor's in. Multiple-file copies are supported, but we got sporadic non-reproducible errors during some of these, which seemed to be related to the number of files copied.

Conclusions

No product stood out from the others as being either particularly good or particularly bad. LAN WorkPlace is the easiest to configure, whereas MacUWS is the hardest; TCP/Connect doesn't use the Control Panel, but it still requires some technoid configuration. TCP/Connect has the most Mac-like interface, which makes it easy to use, but it wouldn't let us create new folders.
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And now here's the part that separates Marco Polo from ordinary search programs.
Instead of merely telling you which files to open, Marco Polo displays a miniature picture of any or all of these documents. And actual size documents are just a double-click away.
So that, much like opening a thick file folder, you can review, copy, or print different but related documents all at once, without any of the original applications.
And that's not all.
Perform multiple searches to view your information from different perspectives. By territory. By sales period. By department. (You name it.) Link search queries to HyperCard-like buttons for point and click retrieval. For example, click on the marketing department in an organization chart to display all the documents produced by that group last week.
Your research assistant even works overtime. Marco Polo will notify you about documents of interest that don't even exist today.
If all this sounds like the way people really work, it's because it occurred to us that computers ought to mirror ways people do things.
Not vice versa.
Now let Marco Polo do the work for you. Contact us for the dealer nearest you or for additional information.
(818) 991-6540.
The major feature that is missing from all these products is the ability to copy a Macintosh folder to the remote system. Both a Macintosh folder and a UNIX directory are hierarchical file structures. It seems surprising that none of the products is able to handle the translation between the two systems in a more transparent fashion.

The feature missing from all the products is the ability to copy a Mac folder to the remote system.

Considering the similarity of these products, unless you require a particular feature, you should probably make your decision on the basis of price. In that respect, LAN WorkPlace for Macintosh ($250) comes out on top. Stay tuned to the Bridges section for further developments. All these vendors are currently working on upgrades with expanded features.

Sharon Fisher is a San Francisco-based freelance writer specializing in computer communications. Dave Hull is the networking expert at the ComputerWare store in Sunnyvale, California.

Directory

TCP/Connect II
InterCon Systems Corp.
950 Herndon Parkway, Suite 390
Herndon, VA 22070
(703) 797-8590
$495

LAN WorkPlace for Macintosh
Novell
1340 Treat Blvd., Suite 500
Walnut Creek, CA 94596
(800) 526-5493 or (415) 947-0998
$250

MacUWS
Ungermann-Bass
3900 Freedom Circle
Santa Clara, CA 95052-8030
(800) 980-3236 or (408) 496-0111
$395

Sharon Fisher is a San Francisco-based freelance writer specializing in computer communications. Dave Hull is the networking expert at the ComputerWare store in Sunnyvale, California.
A good index is essential for books and longer documents. Four high-end word processors offer convenience and power for creating indexes.

Your book is almost finished, it has been accepted by a publisher, and you're ready to add the finishing touches: a table of contents and an index. The table of contents (TOC) is relatively easy, but developing an index can be an arduous task. If you plan ahead and use automatic TOC/index-generation tools, such as those found in the high-end word processors, you can eliminate most of the task's drudgery.

The TOC and Index

The table of contents and index are a reader's main entry points into a book. The TOC offers a general feel for the nature and structure of a document — finding out what broad topics are covered and how they are organized. The index is useful for looking up specific details and is often used before the main text of the book is read.

When you’re deciding how to set up a TOC and index, you must think about the way readers will use your book. Do you want to use just chapter titles, or will you need subtopics in the TOC? In general, the more technical and structured documents are, the more subtopic levels you want. But the more detail you have in the TOC, the more difficult it can be for...
Microsoft Word 4.0

Word is the only word processor that allows more than one level of subindexing, but there's no way to use extra levels to create separate indexes as you can with TOCs. Word also can print text, rather than the page number, after an indexed topic — useful for cross-referencing or for eliminating page numbers (by entering a blank space).

As the screen on the previous page illustrates, Word uses codes formatted as Hidden Text in order to mark TOC and index entries. This process causes some inconvenience and makes on-screen text rather difficult to read.

You must turn off Show Hidden Text in order to see proper line and page breaks (in both the Page and Galley views), and removing the codes often does not remove the Hidden Text formatting.

Nisus 2.03

Nisus, from Paragon Concepts, Nisus is the only major word-processing program that can merge indexes (a useful feature if your document is divided into several files) and place labels before each section of the index. It has tremendous formatting capability.

Nisus' powerful search-and-replace functions provide great flexibility. For example, macros available from Paragon can create an index from a separate list of words or can create several individual indexes if you want a separate index for book titles, proper names, or geographical locations. Macros can even be modified to create multiple TOCs.

FullWrite Professional 1.1

Ashton-Tate's FullWrite Professional is the only program that retains text styles when generating a TOC or index. That's partly because the text in the TOC and the index isn't editable: It's placed in separate chapters of the document. If you want to make a change, double-clicking on an item takes you to the appropriate entry panel, where changes can be made.

FullWrite's Re-reference command lets you link multiple items to one index entry. Thus, if you decide to change how an item is referenced in the index, you need to change it only once.

FullWrite is also the only word-processing program that generates and updates its index in real time. Although this makes FullWrite easier to use, it can also make it excruciatingly slow. In a large document, even a small editing change can mean you have to watch an Updating Index message for several minutes.

WordPerfect 1.03

WordPerfect's unusual Reveal Codes function, which displays TOC/index entries (and other formatting) outside the regular text window, may be confusing to users. In addition, the first word of each entry in the TOC or index is always capitalized — a feature that some users will curse and others will praise.

Although WordPerfect lets you mark items for generating a TOC and has an outlining function, you can't generate a TOC from the outline headings.

Khans, Great, see Chinghiz, Ogodai, Kuyuk, Mongu, Kubilai, Temur
Khans, Western [of Kipchak or Golden Horde], see Batu, Barska, Mongu-temur, Tuda-mongu, Tulabugha, Toktai
Khotan, in Turkestan, 43
kings, mythical origins of, 91
obedient to own laws, 189
Kogatai, Tartar baron, 103-6
Kokachin, Tartar princess, bride for Arghun, 56-8, 112, 124-9
koumiss, Tartar drink, 178, 180

A thorough index demands a variety of formats. This sample includes a cross-reference generated by Word 4.0 at the top of the screen on the previous page.
How to avoid an art attack.

Let's face it. The scrapbook that comes with your Mac can be rather unnerving. Forcing you to limit the number of graphics you can store. Chase around to find the images you can store. And you can't even crop or scale them.

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What if your image doesn't fit the space allotted in your document? Or there's more picture than you really want? No problem. Instead of going back to the application the image was created in, just copy it to the clipboard and use The Clipper to scale and crop it precisely. Either visually, or using numeric coordinates provided by The Clipper.

So don't let your graphics get to you. Get SmartScrap & The Clipper II. Instead, it's just $89.95 at your dealer or direct from Solutions Inc.
### Table 1: Table of Contents and Indexing Features

<table>
<thead>
<tr>
<th>Feature</th>
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<th>Nisus 2.03</th>
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<td>Marks existing text</td>
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We view documents through windows and give little thought to the art of the glazier. But windows are not as transparent as they seem, and a little knowledge of their design and features can aid your mastery of the Mac.

Even after years of pioneering work by Douglas Engelbart at SRI and others at Xerox PARC, the developers of the Mac gave a lot of thought to such window-design issues as how scroll bars should work. The result was a set of standards for window structure, behavior, and appearance that application developers violate only at their peril, as Living Videotext discovered when it put nonstandard windows into its first release of ThinkTank in 1984.

Despite the standardization, you can customize your Mac windows and, by doing so, increase the usefulness of every dialog box, alert, DA, and application you work with.

**A Glass Menagerie**

There are a whole bunch of different kinds of windows through which you can view your Mac documents. There are windows with and without drop shadows, windows with and without scroll bars, alert windows, active windows, and windows that are neither active nor alert. There are invisible windows and tinted windows and windows with panes. Figure 1 illustrates some, but not all, of the attributes that can make up a Mac window.

Window attributes not illustrated in Figure 1 include panes, panels, split bars, and specialized scroll boxes.

By Michael Swaine

You'll find panes and split bars in Microsoft Word. The split bar is a small black area near the top of the vertical scroll bar. Dragging it down the scroll bar does two things: It splits the scroll bar into two fully equipped scroll bars, and it splits the window interior into two independently scrolling panes. The position of the split bar controls where in the document the split occurs. The Apple user interface guidelines permit windows to be split horizontally, vertically, or both at once. Application developers have not been quick to implement these features, nor have they picked up on panels, which are relatively permanent panes, defined for different types of views of the same document.

Some applications customize the scroll box. The Layout utility lets you specify a new default size for windows, along with many other attributes. The Colorize cdev allows you to choose window colors. And this NeXT-influenced design came from WindChooser.
by placing the current page number there, which Apple approves of. Apple also approves of proportional scroll boxes, which change size to show the amount of the file that is visible.

In addition to the components, Apple also standardizes the behavior of windows, such as moving, sizing, scrolling, zooming, opening, and closing. There are some recommended connections among these behaviors: If a window can be moved, Apple recommends that it also be resizable. If it's resizable, it probably should also be scrollable. Zooming is handy but available only to those with certain ROMs: The zoom box toggles between a standard size and position and a user-selected size and position. You select the size and position by manually resizing or moving the window. A little tip: You can drag-resize a window up to seven pixels without changing the user-selected state — to peek under its corner, say.

A little tip: You can drag-resize a window up to seven pixels without changing the user-selected state.

One window — the one on which your actions take effect — is called the active window. Normally you make a window active by clicking on it, but this can be awkward if you have many windows open. Several tools let you get around this problem: The Windows cdev puts a menu of open windows to choose from in the menu bar, the Window List INIT pops up a similar list of open windows below the title bar of the active window, the Send Window to Rear Fkey lets you push the active window out of the way, the Blast It and Holey Fkeys make the content region of windows transparent so you can see what's behind them, and the Window Shade cdev hides most of the active window behind its title bar.

You can modify many of these features. Michael O'Connor's free Layout utility (currently in version 1.9) lets you turn the visual zoom effect on or off, turn the title-bar click (which brings a window's parent window forward when you click on the window's title bar) on or off, or set the maximum number of windows displayable (for more on Layout, see this month's Help Folder).

Other utilities that affect the features or behavior of windows include the CloseWindow Fkey, which closes the active window; infiDrag, which allows you to drag windows off the screen (some applications limit drags); and Scroll2

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(currently in version 2.0), which puts double scroll arrows into the scroll bars. Scroll2's arrows let you move in either direction from either end of the scroll bar and are particularly convenient.

Window Dressing

But you say you really just want to make your desktop look like that of a NeXT machine? That would be frivolous, but there are ways to alter the appearance of windows on your desktop. I often create folders to hold just a few documents, representing stages or components of a project, and I like to keep the windows for these folders small, smaller than the default window size. So I redefined the default, and while I was at it, I redefined the default view and the maximum number of windows I can have open at one time. Layout does all these things, and it lets you set the spacing of icons in windows and alter a few other window characteristics.

You can also color the individual elements of a window, such as the scroll box and the title bar.

There are a few utilities that modify the appearance of windows, including several that affect color. The Colorize cdev lets you customize virtually every element of windows, both for the Finder and for individual applications. WindChooser is a cdev that lets you select among various window styles, substituting for the system WDEF resource one of its own.

Power Windows

Then, for the hardy and the foolhardy, there is direct manipulation of windows resources by means of ResEdit. Here, with the familiar caveat that you should work only on copies of files when you use ResEdit, are the basic facts: The resource type for a window

---

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MacUser July 1990 223
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You can alter the appearance of windows on your desktop in many ways. One of the most useful programs for this is the free utility Layout.

template is WIND, and its data format is defined in Inside Macintosh, as is the window-record data structure, WDEF. The wctb resources you find in some applications control window color. You can’t really do much with any of these resources except substitute other resources of the same type, although you can edit the color specifications in wctb resources. But Colorize is a much better and far more convenient (and safe) tool for that job.
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System 7 Watch: A Communication Annotation

One of the core technologies in version 7 of Apple’s system software is IAC (Interapplication Communication). Its promise is a new generation of programs that communicate and cooperate with one another in a kind of desktop glasnost. Here’s a look at the components of IAC and what they may mean to you.

The Scrap Manager maintains the Clipboard, handling copy/paste operations on PICT and TEXT data. You have it now, and you’ll still need it under System 7. The Edition Manager will provide new “live” copy and paste, but you’ll still need the dead kind for existing applications.

The Edition Manager will support “live” copy and paste, a dynamic copy/paste technique in which alterations in the original are automatically reflected in the copy. The Edition Manager will understand the same formats as the Scrap Manager does. You’ll encounter it in applications that support it, as two new menu items: Publish and Subscribe. You can “publish” a section of your document, controlling who has access to it, and you can “subscribe” to publications, deciding whether you want the updating to be automatic or manual, controlled by you. This capability is likely to become widespread fast, and not just because Apple is promising developers a whole new market based on this tool alone: groupware.

The Event Manager PPC will manage the sending of messages between applications, unlike the other top-level managers, which will send data. This will be the primary method of communication between applications; rather than one application’s driving another, the applications will engage in a dialogue to get the job done cooperatively. For example, a word-processing program might request a particular computation from a spreadsheet program. This cooperation among applications will require cooperation among vendors, which Apple is facilitating with the AppleEvents protocols. It will also require rewriting of applications, so it will take some time.

AppleEvents is the name for a set of messages for interprogram communication. Apple is defining a standard set of messages, such as Open File, to which all programs should be able to respond. Applications supporting AppleEvents should come fairly quickly, since Apple is pushing hard, and the payback to developers will be high, because of Apple’s support and standardization. Application developers have two things to consider when dealing with AppleEvents: The application should respond appropriately to all relevant AppleEvents messages. (This can mean anything from merely acknowledging the message and doing nothing to launching into a lengthy dialogue with the sending application, exchanging permissions, passwords, and data.) Then there’s the possibility of having the application send AppleEvents messages. When the application responds, it is likely to be transparent to you within the application, since it will be invoked from outside. You will control the sending of AppleEvents messages, but the user interface is up to the individual vendor and may involve anything from new menu items (Compute, Encrypt) to a user scripting language. Apple is referring to AppleEvents as “the enabling technology” for user scripting languages, and we may see not one such language but several of them.

The Store-and-Forward routines will allow sending of data to applications that are not currently running. This capability will work across networks and be available to all the higher levels, particularly to live copy and paste. Apple compares it to a telephone-answering machine. Using Store-and-Forward, one application can message another to update a complex computation as soon as it becomes available and to publish the result.
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You're probably pretty tired of being bombarded with article after article reporting on the font wars going on between Apple and Adobe. You know, the old discussion of PostScript versus TrueType (previously code-named Royal). Well, a lot of good all those stories are doing you. Here it is midsummer, and there's still no sign of Apple's System 7, which will be the first System version to contain TrueType. No, all that hoopla over fonts hasn't done you a bit of good, since you're still struggling to get by with what you have.

Fortunately for you, I'm going to set out the basics you need to know regarding font use on a Mac. Here goes:

**The Basics**

Let's get you folks who are still using an ancient, yet acceptable, technology out of the way first. If the only printer your documents ever see is an ImageWriter, life is pretty simple: (1) Pick out the sizes of bit-mapped fonts you want, and make sure they're installed in your System file, using Font/DA Mover 3.8 (or install them with Suitcase II or Master Juggler). (2) For ImageWriter I and II printers, make sure you have also installed font sizes two times larger than what you normally work with 12-point type, for example, install 24-point type; for ImageWriter LQ printers, you should install font sizes three times larger than what you normally use (36 point if your text is 12 point). (3) Avoid italic, outline, and shadow styles when possible, since they are usually derived from the bit maps installed in the System file and don't always translate into effective styles in the printout. (4) Stick with the basic sizes: 10, 12, 18, and 24 point. In fact, use as few sizes as possible, since the installation of bit maps in the System file consumes precious memory.

If you're an ImageWriter owner, you can pretty much ignore Adobe Type Manager (ATM), since it really doesn't offer you much. Type larger than 24 point can benefit from ATM's type handling, but normal 10- and 12-point type doesn't gain anything (indeed, some of us think it loses something). And ATM gobbles up memory to do its thing (a font cache of 256K or more is recommended), so you very definitely don't get something for nothing. If you're looking for better-looking normal type, you're probably better off checking out the alternative fonts that have appeared over the years (Boston, Santa Barbara, and my own Palo Alto come to mind), since they were optimized specifically for ImageWriter printers. Better still, all these ImageWriter fonts are either public-domain or low-cost (I'll send you a disk of my ImageWriter fonts for $10 — see offer #1 at the end of this column).

That's it. If you're worrying only about printing on an ImageWriter, life is that simple. But throw in a higher-quality printer, and things start to get more complicated and you'll have to be much more sophisticated in how you install, manage, and use fonts.

**One Cut Above**

The next step up from an ImageWriter is a 300-dpi non-PostScript printer, such as the Apple LaserWriter IIISC, the GCC Personal Laser Printer, and the Hewlett-Packard Desktop Writer (I've listed these in order of my least...
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POWER TOOLS

If you don't have enough memory to assign a reasonable-sized cache, buy more memory. Believe me, it's worth it.

favorable to most favorable; curiously, their prices go in the opposite direction — the HP is the least costly.

You can follow the instructions that come with these printers regarding fonts, but I strongly suggest that you don't. Apple suggests using bit-mapped fonts with the IISC, just as with the ImageWriter. You'll either end up with oddities of memory wasted with installed fonts, or you'll severely limit your possibilities, which doesn't seem right.

If you're going to spend a couple thousand for a printer, it ought to be able to do oodles of memory wasted with installed fonts. HP provides three basic fonts with its DeskWriter (equivalents to Helvetica, Courier, and Times) and offers an additional library of fonts for several hundred dollars. But HP's font designs, with perhaps the exception of the Times rendition, are decidedly inferior to lower-cost alternatives.

Yep, I'm about to recommend Adobe Type Manager and the companion Type Package #1. If you've got one of these high-resolution printers, you might as well let it do its thing, and I can't think of a better way of rendering fonts at 300 dpi than using ATM. And if you ever rotate text, employing ATM is absolutely better than the bit-map method Apple suggests and uses.

Let me give you some hints on using ATM: (1) Assign as much memory as you can afford to the font cache — 512K is good; 1,024K is excellent. The larger the font cache, the less time your system will spend rebuilding fonts on the fly. If you don't have enough memory to assign a reasonable-sized cache, buy more memory! Believe me, it's worth it. (2) Get a good utility, such as INITPicker or Ask, that allows you to quickly disable ATM on startup, should you so desire (and believe me, there will be times when you'll want to, especially if you've assigned a large font cache). (3) Because of step 2, either install a full set of font sizes in the System file (not simply the 10- and 12-point sizes of standard roman style, as Adobe recommends) or invest in Suitcase II or Master Juggler so you can still have a decent set of fonts available. (4) Consider adding an accelerator to your computer or upgrading to a faster machine. ATM builds fonts on the fly, and there is a noticeable delay on slower machines. The delay depends partly on cache size, partly on the font you've selected, and partly on the font size you've asked for. Generally, the bigger and more complex the font, the longer the delay. The more font styles you have in your document, the more likely it is that your font cache will get filled, resulting in additional delays as you type new text.

If you decide to go whole hog and buy ATM-capable fonts beyond the few that come with ATM, I'd again point you to Suitcase II or Master Juggler. The reason? Unless you want to end up with hundreds of "printer font" files in your System Folder, your only recourse is to use Suitcase or Master Juggler. Every ATM-capable font comes with a separate printer font for each style (plain, bold, italic, bold-italic, and so on), so the printer-font files multiply like weeds as you add fonts. To use Suitcase or Master Juggler to find your printer fonts, you must open at least one screen font (Font/DA Mover file) in the same folder that contains the printer fonts. If you're like me, you'll just go ahead and put all your fonts except Chicago and Geneva into a separate folder and always install them by using Master Juggler (my choice of the two). Chicago and Geneva are default fonts used by the System for numerous chores, such as menu choices, dialog text, file names, and so on — you must have them installed on your machine unless you have a Mac II, which includes them in ROM. But there's no real penalty for keeping Chicago 12 and Geneva 10 installed in your System, since they don't take up much memory.

Something to watch out for during these times of transition: Type 1 versus Type 3 fonts. Only Type 1 fonts work with ATM. All Adobe-packaged fonts are Type 1, but unfortunately, most third-party fonts are still Type 3 fonts, since the program that created them (usually Adobe's wonderful Fontographer) is only capable of generating Type 3. Fortunately, conversion programs are becoming available and this problem is going away. In the meantime, be careful to purchase only Type 1 fonts if you think you're going to use ATM.

What's the difference between Type 1 and Type 3? Well, until late 1989, Adobe reserved Type 1 for its own fonts. There were two principal reasons behind keeping Type 1 secret: Early on, Type 1 fonts were always copy-protected (heaven help you if your laser printer burped and needed to have new copies downloaded) and Type 1 fonts included proprietary "hinting" information that improved the appearance of Adobe's fonts at sizes of less than 12 points. If Apple's announcement that it was going to provide its own font mechanism did anything, it broke down Adobe's you-can't-have-it-because-it's-mine attitude. Now Adobe publishes the Type 1 specifications, and any font company can use them.

Another hint about using ATM: Avoid unnecessary font changes. Stick to one or two basic fonts, in one or two sizes.
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Avoid italics and boldface, if possible (underline is much faster). My newsletter, for example, uses only five font variants, and no one’s complained about its drabness. By sticking to only a few styles and sizes, you’ll keep ATM’s font building (and thus delays) to a minimum, especially if you’ve followed my other suggestions.

PostScript über Alles

If you have a PostScript-equipped printer, congratulations. Now comes the tough part. You have a choice: You can simply use the printer and its fonts as they come, or you can try to squeeze every last ounce of typographic quality out of the machine. Nobody ever told you that you had a choice, did they?

Let’s take the subject of kerning, for example. Type kerning, in the traditional definition, is the ability to adjust spacing between pairs of adjacent letters. In predigital days, kerning involved the creation of special letter pairs. Besides having the letters T and H, a font often also had type slugs for TH and To and TE, for example. Indeed, because of its overhang, the capital T was often kerned with most other letters. If the typesetter forgot to use the proper slug and used regular letters, no kerning could take place, since the type slugs abutted one another — there was no space there that could be removed.

Computerized typesetting changed all that — it can automatically adjust adjacent pairs based on information that the user provides. Most large publications and typesetters have built digital catalogs of letter-pair adjustments. Having 300 or more kerning-pair combinations is commonplace; many typesetters have thousands.

Kerning is different from “tracking,” or interletter spacing, which many word-processing and page-layout programs use to adjust justified text. Since all the characters in most typefaces can be different widths and there’s no way of predicting which characters will be in a line, the only way to properly justify text (align both the right and the left margins) is to vary the spacing between words and between characters. If the line is going to be a little too long, the program deletes an equal bit of space between all the characters in the line. If the line is going to be too short, it adds equal bits of space between the characters.

PostScript can handle kerned text, and many programs now available automatically use its full potential. The problem with manual kerning is that it takes time. First, you need to identify and set standards for kerning pairs. Most Adobe and other professional fonts come with a bare minimum of kerning pairs (generally fewer than 300). You want to create appropriate kerning pairs only once with each font, but be prepared to spend many, many hours accomplishing this. I haven’t tried all the kerning software that’s available, so I can’t really recommend one program. My suggestion is this: Ask the folks at your typesetting service what they use, and buy it.

My suggestion: Ask what kerning software your typesetting service uses, and buy it.

For our recalcitrant ITTI combo, we could do the following with TypeStyler: let the characters overlap and control the way the overlap is handled (that is, the order in which the characters print), use the kerning tools to adjust the spacing of these characters, or play games with the font itself by creating a smaller T (essentially condensing the width of the font). If it were a perfect world, Broderbund would have added vertical and horizontal Expand and Contract functions to the product, but instead, we have to use our head to accomplish the same thing. And of course, we can add color, make the text follow a curved line, and add a host of other effects at the same time.

Personally, as good as TypeStyler is, I wouldn’t use it to solve the ITTI problem. Instead, I’d take care of it in the same way I did in the olden days before computers: just chop some of the stop stroke off the capital T’s. Just how in the heck do you do that? Well, until Altsys’ new program Metamorphosis appeared, you didn’t.

With the combination of Metamorphosis and Fontographer, however, I can now modify existing fonts pretty much to my heart’s content. It’s a simple matter of using Metamorphosis to create outline information from the installed font and then bringing those outlines into Fontographer and changing them. In the case of the capital T, I’d copy the T to another character I don’t use (such as ‹, which happens to be Option-T), edit the outline so the horizontal bars are half the width of those in the regular T, compile and install my new font, and then go back to my document and substitute a ‹ for the T in my problem word.

Indeed, Metamorphosis is a perfect tool for people who create type for logos, corporate identity campaigns, and the like. I remember spending weeks refining the typeface for the title of a magazine I helped redesign. We took a standard Folio font and then started trying little
What good are all those Fonts and Desk Accessories if using them is a hassle? Suitcase II sets you free!

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

Imagine being able to view an unlimited number of fonts in their own typefaces at any moment, picking and choosing among them without breaking stride. Imagine never having to search through a cluttered System File to find what you need.

Imagine never having to deal with font ID conflicts, never having to restart your system to install a Desk Accessory you need. Imagine spending your time creating instead of juggling fonts and DAs.

Imagine Suitcase II on your Macintosh...
All of which brings me to one last point about using PostScript fonts: Pay lots of attention to your headlines and larger type and less attention to body text.

Generally speaking, QuarkXPress, PageMaker, Word, and the like do a good job on text all by themselves. If we're talking about five pages of 10-point text on 11-point leading, most readers are never going to notice small kerning problems that might arise if you use these program's defaults. But if you've got a 30-point boldface headline with a problem, readers will notice.

It's the old 80/20 rule in another form: Spend 80 percent of your fine-tuning time on the 20 percent of the text that is the most noticeable. Spend the remaining 20 percent of your time fixing the most glaring problems in the other 80 percent of your text.

Do You Want to Play?

Finally, here are two offers for those of you who want to play with fonts: (1) For $10, you can have a disk crammed full of bit-mapped fonts optimized for ImageWriter printout — call (800) 952-6300, and ask for Department 77a. (2) A disk containing three distinctively different PostScript fonts and the source files used to create them can be yours for $10. If you've got Fontographer, you'll have a good starting point for creating new fonts. Call (800) 952-6300, and ask for Department 77b.

Thom Hogan is president of Macreations and editor of the monthly newsletter The Macintosh II Report. For a sample copy, send $2 to Macreations, 329 Horizon Way, Pacifica, CA 94044.
Scroll Your Own

Scrolling windows are a key interface element, but don’t look for them in the Toolbox.

A colleague of ours wanted to add scroll bars to his application, so he called and asked what routine enabled the scroll bars in a window. He assumed that scrolling was a function supported by the Toolbox and that once you put the scroll bars in the window, scrolling followed.

Much to his disappointment, it doesn’t work that way. Although the scroll-bar controls are drawn by the Control Manager, and a QuickDraw procedure exists for pixel-scrolling an arbitrary rectangle, it’s the application’s job to place the window contents so that the data seems to move under the stationary window. And this is no small job!

If you’re a first-time reader, you’ve just walked into the third installment of a three-month tour of our Generic App — “the only program you’ll ever need.” Our original intention for this month’s column was to cover Generic in greater detail. We had also planned to start you on the way to doing your own enhancements: adding scroll bars, a window menu, and other things. Instead, we’ve decided to devote the entire column to Mac scrolling mechanics.

When you write a column such as this one, you need to read around and see what’s already been done and keep an eye out for holes in the coverage. We’ve discovered a gaping hole in the Mac programming literature regarding scrolling, and we wonder why it exists. Perhaps it’s because of the close association of scrolling techniques and document display. Because most authors tend to follow the lead of Inside Macintosh and organize their works to correspond to the Toolbox managers (if you read our last column, you know that we’re also guilty of this), an interdisciplinary topic such as scrolling falls through the cracks. The result is that all new developers have to discover the technique for themselves. So, in keeping with the charter of this column, we’d like to cover this topic once and for all. This month we’ll use Generic App to show you how to scroll both text and graphics documents.

Fundamentals of Scrolling

A good place to start is with the document’s content rectangle, which we call the window frame. The frame is where the document is displayed. Generic’s primitive makeFrameRect() calculates this rectangle by first getting the port rectangle (see Figure I) and then subtracting the width and height of the scroll bars from the right and bottom sides. Incidentally, a vertical scroll bar is 16 pixels wide and a horizontal scroll bar is 16 pixels high. Although there’s no system constant that defines these dimensions, this fact is mentioned somewhere.

By Kurt W. G. Matthies and Thom Hogan
in *Inside Macintosh*. So we've defined our own constant, `kScrollBarSize`. It's always a good idea to use defined constants instead of raw numbers: It not only makes the code more readable, but it can also help you years later when you are making changes, a long time after you have forgotten why 16 is subtracted from `frameRect.bottom`.

Another important dimension is the maximum size, in pixels, of the area the document's contents will occupy. We call this the document *extent*. In some cases, the document extent is known or can be calculated, as with a PICT file; in others, such as large text files, the best you can get without processing the entire file is an estimate. Either way, you must know the horizontal and vertical extents of your document in order to set the control maximum and thumb position of the scroll bar (see Figure 3).

Figure 1, which shows an un-scrolled document, illustrates the relationship of these quantities to each other.

Figure 2 shows the relative "movement" of the document contents within the frame after a scroll. An important aspect of scrolling is displaying the area of interest in the window within the frame frame.

In the latter two figures, we've marked the corners of the document extent and window frame. These locations are in the window's local coordinate system, and the relative position of the contents is managed as an offset of the document relative to the window frame's origin, shown in Figures 1 and 2 as `curScroll`.

In a way, scrolling is much like imposing yet another coordinate system on top of the local system. Remember, we have global coordinates — a base coordinate system that is used primarily to locate a window on the screen. Imposed on top of the global system is the window's local coordinate system, with its origin at the upper left corner of the window's content region (not at the upper left corner of the window, where it was misplaced in our April '90 installment [page 245]—we're still blushing!). Instead of adding a third coordinate system for the scrolled document, it's simpler to maintain an offset, or current scroll position, for the window.

Of course, when we say an offset, we are really talking about values in both the horizontal and vertical directions, since you can usually scroll either way. Point is the data structure of choice for each of these variables. For those unfamiliar with QuickDraw, a `Point` is defined as:

```c
typedef struct {
    short v, h;
} Point;
```

The current scroll is the pixel offset of the document due to scrolling. The value of the current scroll is adjusted whenever the user clicks in a scroll bar. Both the horizontal and vertical current scroll values range from 0 to the maximum scroll in each direction. The thumb of the scroll bar depicts the current scroll position relative to the maximum scroll.

The maximum scroll is the total travel distance required to view the entire document. This value is not the document extent, as you might have guessed. But the extent is part of the calculation:

```c
maxScroll.h = docExtent.h - frameWidth;
maxScroll.v = docExtent.v - frameHeight;
```

`frameWidth` and `frameHeight` are simply the width and height of the frame rectangle. And if you've ever wondered how to get the width of a rectangle, the formula is as follows:

```c
width = rect.right - rect.left;
```

We'll leave the formula for calculating the height as an exercise for readers.
The Document and Its Contents

The document is the central data structure for Generic’s windows. We’ve modified the function createNewDoc(), which has been Generic’s document-creation utility for the past two months, for the purpose of demonstrating scrolling in both text and graphic windows. The File menu’s New selection is now a hierarchical menu with items for both text and PICT documents.

We’ve modified createNewDoc() so that it forks on the document type to create a text or PICT document. Each document is tagged with a bit in the extent field of the Doc data structure to identify its type, thus binding the contents to the document and making you think in terms of the contents before you do certain things to a document.

Because your documents now have different types, your rendering function, for example, needs to know what type of document it is drawing. Generic uses a macro, ISPICTDOC, to determine the document type and then acts accordingly in various strategic places in the code—namely, during document creation, deletion, and rendering.

In creating the document, the issue is: What do you put into the window? The graphic document is loaded from a PICT resource, created with a drawing program, and written to the project’s resource file with ResEdit. For today’s example, we chose a picture that we knew would be larger than a window (although if you’re using a full-page display, it might not be). The Toolbox utility GetPicture loads the resource into RAM and returns a handle to the data structure, as in the call

```c
picHdl = GetPicture (kDocPictID);
```

The picture handle is kept in the contentHdl field of the Doc structure during the life of the window. Generic relies on the picture frame—a rectangle that defines the extent of the PICT resource and is part of the PicHandle data structure—for the document extent. Generic obtains the extent in the following expression:

```c
extent = (*picHdl)->picFrame;
```

The text document contains text data in the TextEdit data structure Terec. In the bottom fork of doNewDoc() , a TEXT resource is read into RAM by the use of GetResource, the general-purpose Resource Manager routine. Here, Generic uses some TextEdit routines to create a Terec structure and load the text. Generic then calculates the document’s vertical extent by multiplying the number of text lines by the line height; Generic finds both of these quantities in the Terec data structure.

You manipulate scroll bars with Control Manager routines.

The scrolling values — docExtent, curScroll, maxScroll, and soonto-be-mentioned scrollVal—are also document-related quantities and are kept in the Doc data structure. They are calculated when the data is bound to the document and, except for curScroll, they are never changed for the life of the document.

In a full-blown application, these values would be dynamic and would change as the document extents of the window changed.

Scrolling and the Scroll Value

The scroll value is document-type specific and defines the number of pixels to scroll for each touch of the scroll arrow. For a PICT document, we set this value to 1 for a very fine scroll, but a better value for it — one that balances smooth scrolling with speed—might be 8 or 10.

For a text document, the scroll value is the height of the new line of text that will be brought into view. Text documents don’t scroll in the horizontal direction in Generic; the words wrap at the right edge of the frame, so we’re concerned only with vertical scrolling.

Generic uses an older-style TextEdit record that has only one text style for all text in the data structure. Therefore, all lines have the same height, which makes it easy to calculate the scroll value. You look up the scroll value in the Terec field lineHeight, as in

```c
scrollVal.v = (*docText)->lineHeight;
```

Rendering the Scrolled Document

Generic’s rendering functions reside in the module Display.c. To render the scrolled document, Generic uses a combination of clipping and offsetting on the document’s contents by the curScroll value before drawing them. Clipping is a computer-graphics term that you might not be familiar with, but if you’ve ever used masking tape while painting, you should be familiar with the process. Clipping limits drawing to a particular area, in this case, the window’s frame. Clipping ensures that the document’s contents don’t overwrite the scroll bars. Remember, they lie in the content region of the window.

Pictures are rendered with the QuickDraw procedure DrawPicture. drawDocPICT() offsets the picture frame by the inverse of the document’s current scroll for the proper effect, first setting the window’s clipping region to the window frame.

TextEdit data is rendered by the TextEdit routine TEUpdate. A more thorough discussion of TextEdit is required than we have space for here, but briefly, Generic offsets the destination rectangle of Terec by the document’s current scroll before its call to TEUpdate. In essence, both rendering functions use the same technique — offset and then draw. It’s the implementation details that differ with the document contents.

The Control Manager

You need a user interface to initiate the scroll, and here’s where the System lends a big hand. Scroll bars are controls, and you manipulate them with Control Manager routines. The scroll bars of last month’s Generic were inoperable and rendered inactive; today you’ll activate them by changing their highlight state with HLiteControl.

Activation of the controls occurs during window activation, but Generic has to abide by the mantra principle and draw only during the update event. It therefore invalidates the scroll bars, secure in the knowledge that the subsequent update event will render them.

drawScrollBars(), which is in WindowUtil.c, consolidates all the logic to draw active and inactive scroll bars correctly. Scroll bars have a minimum, maximum, and current value, and this is represented by the position of the elevator box and set with the calls SetCtlMin, SetCtlMax, and SetCtlValue. drawScrollBars() is responsible for managing the task of setting the control’s correct values, which is based on the document’s curScroll and maxScroll, before drawing them.
Determining the Scroll Parameters

Once the scroll bars have been activated, they can accept mouse-down events. After doMouseDown() determines that the mouse click was in the content region of the window (remember the scroll bars are in the content region), doInContent() calls the Toolbox Manager routine FindControl. If the mouse was clicked in a control, this routine returns true and supplies you with the handle to the control and with the part code of the control where the mouse-down happened.

mouseInScroll() is called with the relevant information (see Example 1) and passes control to scrollDoc() in several ways, depending on the part code. Because the mouse can stay down in an arrow part, causing continuous scrolling, TrackControl is the calling agent for scrollDoc() when the part code is an arrow. (Note that the only purpose of scrollWinProc() is to format the call for scrollDoc() in several ways, depending on the part code. Clicking in the page areas calls scrollDoc() directly, and clicking on the thumb also requires TrackControl, with a final call to scrollDoc().

Generic's scrolling is encapsulated within scrollDoc() (see Example 2). It is passed the control handle, a part code, and a scroll-value multiplier. The first lines of code in scrollDoc() find out what scroll bar it is dealing with and set the local variables hScroll and vScroll. These values are the pixel value to be scrolled, according to the control; the document's scrollValue; and the scroll-value multiplier. After this initialization phase, scrollDoc() enters a scrolling loop.

Inside this loop, a few things happen. First, the window's clipping region is set to the window frame, which is the area that will scroll. Because you don't want the scroll bars to scroll up or across the window with the document's contents, you set the window's clipping rectangle to the window frame before the scrolling operation. Inside the switch are some tests that handle boundary conditions and determine the need to scroll before calling the Power Programming Toolbox call-of-the-month-club selection, ScrollRect.

Now look at how hScroll and vScroll are assigned — negative values scroll up, and positive values scroll down. When ScrollRect has finished, it returns a handle to the area that needs refreshing. Normally, drawing is done inside doUpdateEvent(). But, in complete violation of the mañana principle, a mini update handler is invoked, complete with calls to BeginUpdate, drawDocContents(), and EndUpdate. Generic needs to draw inside scrollDoc() because Mac users expect their document to continue scrolling while they hold the mouse button down. The loop completes by assigning the new value to the scroll bar. Note that you need to expand the clipping region to the size of the port rectangle so that the scroll bar's thumb can be redrawn in its new location.

That's scrolling. The details are left for you to discern from the source code (see the "Source-Code Sources" sidebar). We suggest you use a debugger to trace through a scroll operation and see the thread of what happens and where it occurs in our solution to the problem of scrolling. There are many ways to approach activities with as many variables as scrolling has, and your method might be better than ours. If so, we'd like to hear about it. Drop us a line, in care of MacUser.

For example, we could have saved a

Example 1

```c
/*
  mouseInScroll - react to mouse-down in a window's 7.1.90control
  scroll bars. Farse by part code. */

void mouseInScroll (theDoc, theControl, partCode, where)
    DocPtr theDoc;
    ControlHandle theControl;
    short partCode;
    Point where;
{
    Rect frameRect;
    short oldThumb, newThumb, scrollValue;

    setPortClip (theDoc);
    switch (partCode)
    {
    case inPageUp:
    case inPageDown:
        makeFrameRect (theDoc, &frameRect);
        /* scale the scroll by the document's scroll value */
        if (GetCRefCon (theControl) == kScrollTag)
            scrollValue = (frameRect.right - frameRect.left)
                / theDoc->scrollVal.h;
        else
            scrollValue = (frameRect.bottom - frameRect.top)
                / theDoc->scrollVal.v;

        scrollDoc (theDoc, theControl, partCode, scrollValue);
        break;
    case inThumb:
        oldThumb = GetCtlValue (theControl); /* current thumb */
        TrackControl (theControl, where, NULL); /* user feedback */
        newThumb = GetCtlValue (theControl); /* new value */

        scrollByThumb (theDoc, theControl, oldThumb - newThumb);
        break;
    }
*/

mouseInScroll () is called when FindControl returns true, signifying that the mouse-down was in a control.
POWER TOOLS

few lines of code in `scrollDoc()` by moving `ScrollRect` and the new `curScroll` calculations outside the `switch`, arithmetically negating the values of `hScroll` and `vScroll` in one case. This kind of optimization sacrifices clarity for the sake of economy of space. Although the practice of squeezing bytes out of the object code is the modus operandi in commercial sweatshops, traditionally it is the final step in program refinement. (Some software houses actually re-code key passages of

We want Generic to serve as both generic shell and teaching tool, and no teaching tool is effective without experimentation.

the program in assembly language at this stage.)

Generic is your program ("the only program you'll ever need"), and you're encouraged to make refinements. In fact, our intent is always that it serve as both

Source-Code Sources

You can get a copy of the C code for this month's column by logging on to CompuServe and typing GO MACUSER at any ! prompt. If you are not a CompuServe user, you can call (800) 848-8199 or (614) 457-8600 for more information on subscribing. Alternatively, you can order the disk directly from us for $10 by calling (800) 952-6300 and asking for Department 28.

generic shell and teaching tool, and no teaching is effective without exploration and experimentation. Never forget that the development process is cyclical, and you should thoroughly test any changes to working code. Design, implement, and test — please don't forget to test. Testing reveals bugs and therefore takes you back to where you started — to the design phase.

But, while you're burning the midnight oil, pushing the envelope of new technology, we recommend that you temper your efforts with the wisdom of the old adage "If it ain't broke, don't fix it."
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BUGIN (Berkeley Macintosh User Group) Newsletters Choice Product section says... "It's fast, reliable and trouble-free; the best of all Syquest removable drives available". (Winter/Spring 89) DPI has been listed in this category for the last three bi-yearly issues.

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Tip Sheet

Readers Share Their Tips and Tricks

Send tips to Tip Sheet, c/o MacUser 950 Tower Lane, 18th Floor Foster City, CA 94404 MacUser pays at least $25 for every tip used, and the Tip of the Month earns $100.

MacWrite II

MacWrite II handles graphics well, but because it treats a pasted graphic as if it were a single typed character, it doesn't support text on the same line as the graphic.

One way around this problem involves Canvas 2.0 or 2.1. Canvas allows the creation of three kinds of objects: draw objects (MacDraw-like), bit-mapped painting objects, and text objects.

You can easily create a graphic in Canvas with several lines of text and then import it into MacWrite II, using either the Clipboard or the Scrapbook. The text in the Canvas graphic retains its text-styling attributes and, for printing purposes, is processed as text by MacWrite II (and Adobe Type Manager), including fractional character widths (see Figure 1).

This recognition by both MacWrite II and ATM of the text attributes of text in a Canvas document even extends to popping up an alert box if the appropriate font is unavailable (text will print as a bit map if the required font isn't present).

The catch is that you can edit the text object only in Canvas (as part of an inserted graphic — the text isn't accessible from MacWrite II). Thanks to the spelling checker built into the latest version of Canvas, it's possible for you to check the spelling before the object is pasted into your MacWrite document.

This same technique may also work with other combinations of word-processing and graphics applications.

Donald L. Archibald, Jr. Kerrville, TX

Zapf Dingbats

You can get a plain empty box — to indicate the Macintosh's no-character symbol or for such uses as a check box — with a word processor or desktop-publishing program such as Word, QuarkXPress, or PageMaker. The Zapf Dingbat font has shadowed and filled boxes, but not empty ones.

To create an empty box, type a lowercase r. Select the character and then choose Zapf Dingbats from the Font

Figure 1: MacWrite II doesn't support side-by-side graphics and text, but with the help of Canvas or a similar draw program, you can mimic the effect.

Figure 2: Adding a title to the first footnote page at the end of a document involves a little trick with the Auto Numbering function of the Preferences command.

If you place footnotes at the end of a MacWrite II document, you'll discover that the footnote page cannot be fully edited. That means that you can't easily add a title, such as "REFERENCES," to the top of a page. Claris' technical support says that the official solution is to save the document as a text file, reopen it, and edit the final footnote page as needed.

A better solution is to create footnotes in the usual way — in this case, auto-numbered and placed on the last page. Before you print, change your footnote preferences to disable the Auto Numbering option. Now place the insertion bar somewhere before the first footnote marker and insert a dummy footnote.

When you're prompted for the footnote marker, use a space, which will be invisible in the body of the text. For the actual footnote, type the desired title ("REFERENCES," for example). It will be unnumbered on the footnote page and will appear before footnote 1. You can edit this title/footnote to change its size, style, and ruler configuration so it matches other titles in the document (see Figure 2).

If you want to add other footnotes to the paper after you've created the title/footnote, don't enable auto-numbering. Instead, when the prompt for the footnote marker appears, press Return, and the appropriately numbered footnote marker will appear — without disturbing the title/footnote.

Craig Harris Seattle, WA

Compiled by Gregory Wasson
Send Files over AppleTalk —in a Flash!

Flash is the fastest, friendliest file transfer program you can buy for the Macintosh.
Unleash the power of your AppleTalk network with Flash.
Quickly send files and messages to any other Macintosh—or group of Macintoshes—on the network. Flash even has a chat mode that lets you talk in real-time to anyone else.

Flash is Fast
- To send a file, just drop it into a Flash folder and off it goes!
- All file transfers are done in the background, so you never have to wait. Flash works while you do.
- Flash’s transfer rate is almost 1MB per minute. Most files are sent in seconds.

Flash is Powerful
- Flash can send and receive any combination of files and folders at the same time.
- The contents of an entire hard drive can be transferred—while you use both computers!
- Flash can communicate across any AppleTalk network zones that also have Flash installed.

Flash is Friendly
- Flash is perfectly integrated into the Macintosh desktop environment.
- Installation is so easy you’ll be using Flash in minutes—not just reading about it!
- You can use Flash anytime, from inside any application.
- Flash tells you when your files arrive, so there’s no need to keep checking. But, in case you forget, Flash keeps a record of all file transfers.

Software Requirements
- All Macintoshes on the network must be running System 6.0 or newer.

Hardware You Need
- An AppleTalk compatible network.
- Two or more Macintoshes with a minimum of 1MB of memory.

Hardware You Don’t Need
- Hard drives not required—Flash works fine on all floppy-based Macintoshes.
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You can use Flash with any number of Macintoshes in a single AppleTalk network zone. And, you can add as many Macintoshes as you need to each zone at no extra cost. You are not required to purchase more than one Flash program disk unless you use Flash in more than one zone. Flash can communicate with any other network zones also using Flash.

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menu and Outline from the Format menu. Voilà! An empty box ( ). If you want a box with a heavier border, make the character bold as well as outlined.

You can make the box any point size, but if you want it to appear the same size as the text you’re working with, make the box a point size or two smaller. For example, if your text is 11 points, the box should be 9 points; if you have 9-point text, you should make the box 8 points. Otherwise, the box appears to be slightly larger than the surrounding text.

Shari L. Allison
San Mateo, CA

General
When transferring text from one document to another — for example, from a word processor to a page-layout program — be aware that spacebar spaces are related to the size and style of each individual font. If your line things up beautifully and then change the font or export your text to another program, the spaces can change unexpectedly. To ensure exportability of text, use tabs rather than multiple spaces.

This tip is obvious but frequently overlooked by both advanced and novice computer users.

Robert R. Wresch, M.D.
Loma Linda, CA

If you’ve upgraded to PageMaker 3.0 or later and have tried to open one of your old PageMaker 2.0 documents by double-clicking on its icon on the desktop, you’ve probably discovered that the double-clicking shortcut no longer works. But you don’t always need to use a file editor such as MacTools to perform minor surgery on the type and creator of old documents (that is, substituting the type and creator names of the upgraded application).

Simply open the application first, and then try to open your old document with the Open command (usually Command-O), selecting the document in the standard-file dialog box. More often than not, the application can convert the old format and open an untitled copy of the older file. Then save it with a new name. When you return to the Finder, you’ll find a double-clickable copy of the renamed file in the new format. If you want to avoid duplicate files, save the copy under the old name so that it overwrites the original file.

Brian A. Lareau
Ferndale, MI

FreeHand
When you select New from the File menu in Aldus’ FreeHand, your new page appears with a sometimes-annoying set of its own defaults. They include Snap to Grid, many different shades of gray, line weights, and other items that most people usually end up changing.

If you want to avoid this problem, start by creating a template that has whatever line weights, fills, and colors you use regularly. Turn on features you consistently use, and turn off those you don’t (I lock my guides, turn on Snap to Guides, and turn off Snap to Grid).

Once you’ve set everything to your liking, save the document as a template, name it Aldus FreeHand Defaults, and replace the old Aldus FreeHand Defaults in your FreeHand folder. (You might want to rename the old defaults first, in case you want to use them again.)

You can’t change some things, such as the default font and font size, but you can add guides, select your printer type, and set the measuring system to the standard you prefer, just as with a regular template.

Jim Cutter
Seattle, WA

Canvas 2.1
Anyone who uses Canvas to produce schematics knows that creating labels can be time-consuming. Although the following technique doesn’t eliminate all the drudgery, it can speed the process considerably.

When you’re working on a drawing such as a schematic that requires many labels, zoom into the area where you need labels and, using the text tool, type a list containing the labels for the desired on-screen objects with a Return after each label. Then, still using the text tool, select the last item, cut it, position the cursor where you want the label, and paste it in. Repeat this process until all the labels are placed. Select the pointer tool if you need to adjust the position of any labels.

This method is much faster than selecting the text tool, typing the text, selecting the pointer tool, selecting the label, positioning the label, and repeating the process for each label. With a little practice, you should be able to position the cursor and paste the label without needing to adjust the locations.

Howard Adkins
Tucson, AZ

FullWrite Professional
Here’s how you can access a hidden screen in FullWrite 1.0 and 1.1. Move the cursor to the upper right corner of the screen. Hold down both the mouse button and the Command key, and drag across to the Apple menu. When you’ve pulled down the Apple menu, release the Command key and press the Option key. The
AW...WHAT THE HECK!

DesignCAD 2D/3D
Professional CAD System for the Macintosh

When we introduced this product we had to ask ourselves, "What should DesignCAD cost?" To help with our decision we hired accountants. We consulted with industry "movers and shakers". We purchased the finest spreadsheets available. Many people said, "The software should sell for $3,000.00 or more." Others said, "It's good, darn good—sell it for at least $2,000.00." Opinions varied. Finally we said, in the Great American Tradition, "Aw... What the Heck! Let's see the competition beat this $699.00.

DesignCAD has disproved a common misconception about computer software: you don't always have to spend a lot of money to get high-power quality software. DesignCAD for the Mac has features of CAD systems costing thousands of dollars! Yet, DesignCAD is priced at least 50% to 80% BELOW comparable CAD packages... AND DESIGNCAD IS BETTER!

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The list goes on and on!
For a closer look, contact your local Apple Authorized Dealer or call us:

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About FullWrite command changes to read About Dancing Bear. Selecting this command brings up a special screen (provided that the program can find the FullWrite Help file; if not, it asks for your assistance).

Many people received beta copies of FullWrite during the long wait for the official release, so here’s a special tip for anyone who still has a copy of the FullWrite 0.9 beta.

In any document, type the word pig, press the Backspace or Delete key three times, and pull down the Edit menu. The name of the Undo command changes to Pig Latin. If you choose this command and start typing, the words will be displayed in pig-Latin format, with the first letter of each word moved to the last position, with oy appended (see Figure 3).

Bob Morrish
Los Gatos, CA

PageMaker
Placing text in brochures and programs is easier if the pages are visibly numbered. When the pages are folded, however, the page icons at the bottom of the PageMaker window have little or no relation to the finished brochure’s page numbers.

Text blocks that extend off a page are tied to the page, even when the text appears exclusively on the pasteboard. The text that appears on the pasteboard does not appear there when another page is displayed.

Using the text tool, click on the right-page margin and drag diagonally an inch or so onto the pasteboard. Select a large font (48-point Times, for example) from the Type menu, choose center alignment, and type the page number. Select it with the pointer tool, resize the text block so the number falls just outside the page, and copy it to the Clipboard. Paste a copy to the left margin, and change the number to the last page number (see Figure 4). Click on the next page icon, and paste two more numbers.

For a single sheet, four-page brochure or flier, the numbers should be 4-1 on side 1, and then 2-3 on side 2. For a two-sheet, 8-page brochure, the numbers should be 8-1 on side 1, 2-7 on 2, 6-3 on 3, and 4-5 on 4.

When placing text, particularly from a single word-processing document, start on page 1, go to page 2, then 3, and so on — and then go back to the last page on the first side. Changes should be made in the same order. Changes in positioning of text on later pages may be distorted by changes in preceding pages.

This also works for fanfold brochures, but not as logically. You don’t need to number the centerfold, because its number is always one higher than the left fold and is easily remembered. Generally side 1 is numbered 5-(6)-1, and side 2 is numbered 2-(3)-4.

Douglas Wells
Vienna, IL

HyperCard
Let’s say you’ve been using a stack that requires switching from card to card and entering text — but always at the end of a scrolling field. The speed of text entry is hampered because when you open a card, you have to scroll to the end of the field and click after the last word before you can type the text.

Here’s a short background script that causes the cursor to appear automatically at the end of the scrolling field whenever you switch to another card (see Figure 5).

If you want to make sure that the cursor always appears below the last line, even if the last line doesn’t end in a carriage return, make the script read as it appears in Figure 6.

Frederick Meyer
Pepperell, MA

Excel
Editing the Excel Formula Bar with the mouse can be a test of dexterity. It might actually be impossible for a physically impaired user.

The Microsoft manual doesn’t mention that the insertion bar can be manipulated with arrow keys. The trick is to activate the Formula Bar first with Command-U instead of with the mouse. Once activated from the keyboard, the left and right arrows will then move the insertion point one character. With the Command prefix, the left/right arrows move one field per stroke. This field can be a word, a space, a symbol, or a cell reference, for example. With the Shift prefix, the region through which the bar moves is extended and highlighted in the usual way.

Jeffrey A. Glassman
El Toro, CA

HyperCard

![Figure 5](image1.png)

```plaintext
on opencard
  select char (the number of chars in bg fld x) + 1 of bg fld x
  type selection
end opencard
```

![Figure 6](image2.png)

```plaintext
on opencard
  if last char of bg fld x <> \n
return then
  put return after bg fld x
end if
  select char (the number of chars in bg fld x) + 1 of bg fld x
  type selection
end opencard
```
Prescience (pronounced PRE-shence) brings you the complete mathematical solution for the Macintosh: Theorist and Expressionist. Theorist is the symbolic algebra and graphing program that is easy to use and powerful, but only requires one (1) megabyte of memory. You don’t need to learn how to program, memorize syntax rules, or read a large manual since Theorist actually displays and interactively solves real equations on screen—step by step—the way you do on paper. 2-D and 3-D graphs, contour and density plots, solids, as well as animation files, are easily created and saved in PICT, EPS, or PICS formats for high quality output. Your equations can be exported to Expressionist, the leading equation editor, for typeset-quality results in your word processing and page layout documents. Both programs are simple enough for the student, yet powerful enough for the professional educator, scientist, and engineer. You can concentrate your time investigating work, not learning how to! For more place an order, call or write to the address below.

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Help Folder

Answers to Readers’ Questions

Is your Mac sick? Need a diagnosis? Leave it up to the doctor — Bob LeVitus. He’s the author of Dr. Macintosh: Tips, Techniques and Advice on Mastering the Macintosh and the former editor-in-chief of MACazine. Now he’s also the guy who answers your questions in this space every month.

Write to
Help Folder, c/o MacUser
950 Tower Lane, 18th Floor
Foster City, CA 94404

Hurricane Update

In our March issue, we published a letter requesting information about hurricane-tracking programs (Help Folder, page 227). I recommended the commercial product MapMaker. Several readers wrote to suggest other, less expensive solutions. Now that hurricane season is just around the corner, you might want to check them out.

Reader Dwight Stewart says: “MacHurricane ($20; William J. Chenault; 3149 Country Club Road, Shalimar, FL 32579; demo version available on GEne) plots storm location and compiles statistics such as wind strength. It doesn’t project where the storm might be heading. Hurricane Tracker ($29.95 plus $2.50 shipping and handling; Prof. John E. Brockhoeft; P.O. Box 241, Loyola University, New Orleans, LA 70118) is an excellent HyperCard application that plots storm location and projects where a storm will hit land. I used both to track Hurricane Hugo in 1989. Since I live by the ocean in South Carolina, it’s a good thing I did. Both worked very well, but Hurricane Tracker is more polished; it accurately projected where Hugo would land. Whereas the meteorologists were projecting landfall south of Charleston, Hurricane Tracker projected landfall slightly north of Charleston — where the storm actually hit! Not bad for a $30 program.”

Readers Ted Kirchharr and Liz Natale recommend Force Tower Lane, 81111 (author of MACazine) and the former editor-in-chief of MACazine. Now he’s also the guy who answers your questions in this space every month.

Hurricane Tracker ($29.95 plus $2.50 shipping and handling; Jon Barry, 215 Reidel Road, Crosby, TX 77532). Ted says “it includes all storms listed in NOAA records from 1856 to 1986. The location, wind speed, and central pressure are available for the 831 storms in the database. You can also display storms by category and time of year, as well as storms that cross a user-defined box drawn on the map.” Liz adds, “The program also lets users search for hurricanes by intensity, year, or month, or a combination of the three. New storms can be plotted by the user.”

Other Goofs Dept.

In March I said no word processor allows you to view and edit successive pages side by side, and that you’d have to invest in a page-layout program if you desired that feature. I goofed. MacWrite II (Claris Corp., 5201 Patrick Henry Drive, Santa Clara, CA 95052-8168; [408] 987-7000) can not only edit pages side by side but also supports side-by-side editing in a reduced view. Always could. Sorry ’bout that!

Alternative to Apple FDHD?

Q. I have a Mac Plus and would like to add SuperDrive capability to it. Other than PLL’s TurboFloppy 1.44, which doesn’t read Mac 400K or 800K disks, is there a third-party product in existence (or on the horizon) that could act as an alternative to Apple’s exorbitantly priced external FDHD?

Timothy J. Cnkovic
Joliet, IL

A. To begin with, the “exorbitantly priced” Apple external FDHD won’t work with your Plus. What you need are

Figure 1: Layout lets you change the Finder’s display font and size, icon spacing, default colors, and more.

Q. Is there some way to make the Finder display text in a prettier font than the one it comes with?

Audrey Mitchell
Chicago, IL

A. Layout 1.9, a public-domain application written by Mike O’Connor (author of CompuServe Navigator), does what you want and more. It lets you customize your Finder to your heart’s desire. You can change the font and size of text and adjust the column width in all text views.

If you have a color-equipped Mac, you’ll love Layout’s ability to pick new colors for the Color menu. Layout also allows you to modify almost a dozen other Finder attributes (see Figure 1). Layout provides control over many behind-the-scenes Finder functions as well. For example, you can enable an invisible grid so that dragged icons always line up perfectly without use of the Clean Up command. If you like to live on the wild side, you can turn off the warning you ordinarily get when you throw an application or System file into the Trash.

Layout is one of my favorite Mac hacks. It’s the first program I run after I install new system software on any of my hard disks.
Microtek presents the MSF-3002. The one scanner that can do it all: color, gray-scale, drawings and text. All for a price that until now, could barely buy you gray-scale capabilities.

Hard to believe, but it's true. You can scan vivid color images into your computer for desktop publishing, presentation graphics or pre-press work. A full 16.8 million colors at a time.

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After all, at this price, you can hardly afford not to.
POWER TOOLS

a pair of peripherals, Rapport and Drive 2.4 (Kennect Technology, 120-A Albright Way, Los Gatos, CA 95030; [800] 552-1232 or [408] 370-2866). Rapport is a plug-in microprocessor and drive controller that lets your Mac read 3.5-inch, 720K MS-DOS, OS/2, and ProDOS disks (low density), using the existing 800K internal drive. Drive 2.4 is an external drive that, in addition to supporting all existing Apple and IBM 3.5-inch disk formats, supports two very-high-density formats that provide 1.2 megabytes of storage on 800K disks and 2.4 megabytes on high-density disks. Rapport supports the Mac 512KE, Plus, and SE; Drive 2.4 supports the 512KE, Plus, SE/30, IIx, IIcx, and IICl (and probably the new IIfx, although it hadn't been tested at press time).

Such wizardry is possible because the products are the brainchild of Wendel Sanders, a major contributor to the Apple III team and codesigner of the SWIM disk-controller chip that controls the floppy drive in Macs that have FDHDS. (Interesting Macintosh trivia: SWIM stands for Sanders/Wozniak Integrated Machine, not Super Wozniak Integrated Machine, or Steve Wozniak Integrated Machine, as many mistakenly believe.)

Developing Software Ideas

Q. I've just purchased a new SE with a 40-megabyte internal hard disk. I've used Macs for the past three years. I have some ideas for new software, and even though I'm not a programmer, I would like to develop them. Can I do all of this from my SE? Are there books that can help me? What software should I use?

Kurt Schemers
Peoria, AZ

A. You don't say how complicated your project is, but since learning to program in a high-level language such as Pascal or C can take months (or years), the first thing you should do is learn HyperCard. HyperCard has been called an authoring tool, a software engine, a hypermedia toolkit, and an information organizer. It's all of that, but it's also an object-oriented programming environment that uses one of the easiest-to-learn programming languages, HyperTalk.

If HyperCard isn't powerful enough to build your program, try SuperCard — it's like HyperCard on steroids.


Once you get the hang of HyperCard, you may find it's not powerful enough to build your program. Try SuperCard (Silicon Beach Software, 9770 Carroll Center Road #1, San Diego, CA 92126; [619] 695-6956). It's like HyperCard on steroids — it can do everything HyperCard can and a lot more. It uses a language called SuperTalk, which is a superset of HyperTalk, so once you've learned HyperCard, mastering the additional power of SuperCard will be relatively painless. SuperCard provides many functions not available from HyperCard, including hierarchical and pop-up menus, multiple windows, full color support, and support for animation.

If you find that you're still...
Even to the experienced observer, a disc drive is a technological marvel. With discs spinning at 60 revolutions per second, the mechanics involved are astounding. It takes a company with a unique level of skill and experience to produce drives in volume that perform reliably year after year. A company like Seagate.

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unable to create the program of your dreams with SuperCard, you'll have to invest the time to learn a real programming language. If you do, check out the Power Programming column that Kurt Matthies and Thom Hogan write for this magazine. It won't teach you the basics of programming, but it does cover the special problems that programmers face on the Mac.

Printing PostScript Files

Q. In MacUser's February '90 Tip Sheet, the Tip of the Month (page 267) made me realize that I might be able to save time by generating a PostScript file on my Mac and taking it to a Mac connected to a LaserWriter. That way I wouldn't have to worry about the parent application's not being there. Is there a way to generate output on a LaserWriter with just the PostScript file?

Carl Finocchiaro
Denver, CO

A. You can't do it with just the PostScript file. You'll also need an application or DA capable of sending the file to the printer. Adobe's Font Downloader can, in addition to manually downloading fonts, download PostScript files one at a time. CE Software's Widgets application or LaserStatus DA can download files one at a time or in batches.

Font Downloader is included with Adobe fonts, and you can download it from the Adobe Forum on CompuServe. Widgets and LaserStatus DA are bonus programs included with CE Software's excellent Finder-replacement DA, DiskTop.

Telexing with a Mac

Q. Many of my overseas customers still insist on using telex. How can I get my Mac II to send telex messages? Do any telecommunications-software packages send telexes?

Douglas M. Grossman
Cleveland, OH

A. You're in luck. At least three services let you send telex messages from any Mac equipped with a modem: MCI Mail, AT&T Mail, and CompuServe.

Using the Desktop Express software package from Dow Jones Software, which simplifies using MCI Mail, is the easiest way to send telex messages. Save frequently used telex addresses in your Address Book, and you can send messages with a few double clicks.

AT&T Mail and CompuServe are a little less user-friendly. Sending a telex with either of these systems involves addressing your communications with special codes. On CompuServe, for example, you enter the EasyPlex mail subsystem (type Go Easy at any prompt) and address your correspondence: >TLX 12345 howdy, where 12345 is the telex-machine number of the party you're sending to and howdy is the answer-back message. You can obtain complete on-line instructions on using CompuServe's telex feature by typing Find Telex at any prompt.
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A. Publishing Technologies Nederland (17407D E. Rice Circle, Aurora, CO 80015) is putting the finishing touches on a QuarkXPress XTension (add-ons to XPress are called XTensions) named The Puzzler that lets you design crossword puzzles by defining them in a series of windows. It features automatic numbering and full access to QuarkXPress' powerful tools and sounds like just what you need.

The Puzzler's price was not available at press time, but you can bet it won't be cheap - it requires a copy of QuarkXPress ($795). If you're still set on becoming the next Eugene Maleska, The Puzzler should be available by the time you read this.

Excel Won't Load
Q. When the Mac 512KE came out, it was the right price and I snatched it up. It had everything the Mac Plus did except memory and a SCSI port, which I added later with an upgrade to 2.5 megabytes. Everything worked and worked well until I tried loading Excel 2.2. It told me that I need a Mac Plus or later. With as much memory as I have and the 128K ROMs, why can't I run Excel 2.2?

Barton L. Abbott
Amandale, VA

A. Fortunately, your problem isn't hardware; the answer is a simple (and free) system-software upgrade. You didn't specify which version of system software you're using, but considering the symptoms you're experiencing, it's probably not the latest one. According to Microsoft, Excel 2.2 checks your System file for a "system environment flag." Systems prior to 6.0 do not have this feature, so if you're running a version of System software earlier than 6.0, Excel will think you've got a plain old 512K, no matter how much RAM you've installed. If you're not sure which version you're running, select About the Finder from the Apple menu.

The solution is to upgrade to System 6.0 or later, available free from authorized Apple dealers, user groups, and on-line services. Dealers will charge you $120 for the deluxe upgrade—which includes manuals—but will usually provide the files at no charge if you provide your own floppy disks.

Incidentally, you should avoid System versions 6.0 and 6.0.1 — they have some nasty bugs. The first version generally considered to be stable was 6.0.2. The latest version as of this writing is 6.0.5.
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276 July 1990 MacUser
1. Please indicate which of the following computers you currently use in your company or organization: (check all that apply)
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   - b) IBM PC
   - c) Mac SE
   - d) Mac II

2. For how many microcomputers do you buy products?
   - a) 1-4
   - b) 5-10
   - c) 10+

3. Your primary job function is: (check one)
   - a) Administrative/General Management
   - b) MIS/Database Systems, Programming
   - c) Engineering/R&D
   - d) Financial/Accounting
   - e) Marketing/SALES
   - f) Computer Dealer/VAR

4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)
   - a) Accounting
   - b) Spreadsheets/Financial Planners
   - c) Project Managers
   - d) Word Processors
   - e) Database Managers
   - f) Graphics
   - g) CAD/CAM
   - h) Communications
   - i) Graphics
   - j) CAD/CAM
   - k) Communications

5. Are you involved in the purchasing of microcomputer equipment at your company? (Check one)
   - a) Yes
   - b) No

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1. Please indicate which of the following computers you currently use in your company or organization: (check all that apply)
   - a) Macintosh
   - b) IBM PC
   - c) Mac SE
   - d) Other

2. For how many microcomputers do you buy products?
   - a) 1-4
   - b) 5-10
   - c) 10+

3. Your primary job function is: (check one)
   - a) Administrative/General Management
   - b) MIS/Database Systems, Programming
   - c) Engineering/R&D
   - d) Financial/Accounting
   - e) Marketing/SALES
   - f) Computer Dealer/VAR

4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)
   - a) Accounting
   - b) Spreadsheets/Financial Planners
   - c) Project Managers
   - d) Word Processors
   - e) Database Managers
   - f) Graphics
   - g) CAD/CAM
   - h) Communications

5. Are you involved in the purchasing of microcomputer equipment at your company? (Check one)
   - a) Yes
   - b) No

6. If so, what function do you serve in the buying process?
   - a) Evaluations/Specification
   - b) Recommendation
   - c) Buyer/Purchaser

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2. For how many microcomputers do you buy products?
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   - b) MIS/Database Systems, Programming
   - c) Engineering/R&D
   - d) Financial/Accounting
   - e) Marketing/SALES
   - f) Computer Dealer/VAR

4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)
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   - b) Spreadsheets/Financial Planners
   - c) Project Managers
   - d) Word Processors
   - e) Database Managers
   - f) Graphics
   - g) CAD/CAM
   - h) Communications

5. Are you involved in the purchasing of microcomputer equipment at your company? (Check one)
   - a) Yes
   - b) No

6. If so, what function do you serve in the buying process?
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<td>MacUser Marketplace is a special economical section for product and service listings.</td>
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<td>For additional information call 212-503-5115.</td>
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<td>One Park Avenue, New York, NY 10016</td>
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<tr>
<td>(212) 503-5115 or (800) 825-4ADS</td>
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<td>Group Advertising Director</td>
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<tr>
<td>Kathryn J. Cumberlander</td>
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<tr>
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<td>Anne R. Brockinton</td>
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<td>DENNIS M. LEAVEY (212) 503-5111</td>
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<td>CA (ZIPS 93000 &amp; UP)</td>
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<td>C. WESLEY WALTON (212) 503-5136</td>
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<td>AZ, FL, MA, MI, MO, NJ, NC, NV, NY, TX, VT, WA</td>
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<td>KAREN A. CASTORINO (212) 503-5140</td>
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<td>DC, DE, HI, ID, MD, ME, MT, NH, NJ, NY, PA, SC, UT, WI, WV, CA (ZIPS 92999 &amp; DOWN), CANADA, ALL OVERSEAS</td>
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<td>20mb Seagate</td>
<td>$279.00</td>
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<th>Category</th>
<th>SEAGATE 20 MB</th>
<th>QUANTUM 40 MB</th>
<th>QUANTUM 80 MB</th>
<th>QUANTUM 125 MB</th>
<th>QUANTUM 170 MB</th>
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<td>$515</td>
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<td>$515</td>
<td>$585</td>
<td>$629</td>
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Reminiscence: The rewrite of that old joke reminds me of the marketing department at Apple. They seem to be stuck in some tautological mire. Going nowhere fast. In circles.

Fact: Apple is not selling the true benefits of Macintosh computing. It now seems obvious that they don't know what the benefits are and that they don't understand what personal computing is all about. This is ironic, as Apple is largely responsible for popularizing the personal computer and then taking the experiences of their own users to invent a new machine that eliminates nearly all the aggravations of setting up and using a computer. You have to wonder if anyone in the Apple Marketing Department has a clue about this.

History: Let's lay it out for them. The Mac was designed during a time when users were stuck with horrid Apple II machines that required a Print command to get the floppy-disk drive to output a simple directory. Idiocy at its peak. The business world was dominated by CP/M computers, which couldn't even talk to a printer without making their users install patch after patch after patch to get anything to work. Once a system was up and running, nobody dared touch it or change anything, lest never-ending man-years of trial-and-error coding and fooling around be required to get the system to work again.

The Mac designers must have been sick of this crapola. The basic premise of the Mac's creation was that it would perform like an appliance. You simply plugged it in and used it. Unfortunately, the appliance metaphor was ridiculed and misunderstood — at that time, the company's marketing prowess was at an all-time low, as an ineffective sort of cult marketing took over the company. The true meaning of the appliance concept eluded the copywriters and promoters: The Mac was a plug-in-and-run machine unlike anything else we've seen, even to this day.

Over the years, the Mac mavens and insiders responsible for the machine left the company. The new Mac cheerleaders were leftover myopic ding-a-lings who loved the Mac but had no concept whatsoever of what made it different from the rest of the desktop computers out there. All they knew was that it was better, somehow. Many of them now actually feel threatened by products such as Windows on the PC. Of course, none of them have ever used Windows. But they know it's a threat because Microsoft and all the writers and observers and newsletter editors say that Windows will bring the graphical user interface (with the disgusting acronym GUI — gooeey?) to the PC and that therefore the PC world will have caught up to the Mac.

The corporate Apple muckamucks seem to have brought into this dung. They are looking for a defensive position, having spent the last five years squandering the real sales pitch applicable to the Mac and only to the Mac — ease of installation.

Yes, ease of installation. All you Mac users should go out and buy a PC and see how you do. What you'll discover is that nothing on a PC works. At least nothing remotely complicated. Programs don't install. All kinds of weird files have to be created for a program to run. Most software conflicts with other software. Good luck getting a CD-ROM drive to work. Good luck getting a color image to appear properly on-screen. Good luck having enough memory to even run that fat program you acquired. Do you want to hook up a scanner, bunky? Good luck. No wonder corporate America has embraced the PC clones. It was the only way that the MIS department could ensure its own job security. They figured that none of the bozos in the rest of the office would ever get a PC system working. And who needs

By John C. Dvorak

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