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DEPARTMENT
Fasten your seatbelts, Mac fans. You’re about to enter the Microsoft Zone.

Earlier this week I witnessed a demo of Microsoft’s products that left me feeling as enlightened as the day I first set my eyes on a Macintosh.

Here’s a company with a reputation for singularly superior products. But what they showed me pushed the envelope of software productivity:

A complete line of products for the Mac that all work together.

The significance of which hit me like a ton of bricks when I saw them in action.

For instance, I saw a chart in your very favorite spreadsheet and mine, Microsoft Excel, updated from within Microsoft Word 4.0 using just a few keystrokes. And then pasted into PowerPoint for an incredible looking presentation.

And with just as little effort, the ever capable Microsoft Word 4.0 was merged with Microsoft’s database application, File, for a mass mailing.

As if that wasn’t enough, I saw their versatile integrated program Works share files with Microsoft Excel and Word.

What really blew me away is Microsoft Mail. You can send and receive information between members in your workgroup even if they’re on a PC. Nice.

But the real beauty is that you can access Microsoft Mail directly from the File menu when you’re in Microsoft Word 4.0. No other company can offer that kind of integration. Or this kind:

A product line that all works together.

Here’s a company with a reputation for singularly superior products. But what they showed me pushed the envelope of software productivity: A complete line of products that all work together.

Obviously, I’m impressed. So much so, that I’ve asked Microsoft to send copies of their Macintosh product line brochure in time for our next meeting. If you can’t make it, you can always get a free copy by calling (800) 541-1261 Dept. 192.

Fellow Macphiles, man your Macs. Because we’re entering a new age of compatibility—or at least Microsoft is.

And I don’t know about you, but I plan on going along for the ride.
It takes a certain kind of person to be a Macintosh enthusiast.
Accounting for Taste 88
by Ken Landis
Four leading accounting packages are audited for features, support, and performance. Whether your business is large or small, there's accounting software that fits your books.

Mac Tax Force 98
by Scott Beamer
Death and taxes: This article could make at least one of them a lot less painful for you. Find out what you should know about tax software before the IRS does.

Stocks, Bonds, Futures & Mac 108
by Ken Landis
You can't tell the players without a program, but which program? Before you make your investment, check out our analysis of the competition.

When Your Money Matters 120
by Steven Bobker
Andrew Tobias has helped a lot of people keep track of their money. Now he's helping them do it with a Mac. Find out how an MS-DOS standard works even harder for you in its Macintosh incarnation.

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by Phillip Robinson
Has MacDraw II met its match? The newest from Deneba Software sets sail with a boatload of features at a very competitive price.

Fitted Sheets 149
by Clay Andres and the MacUser Labs Staff
Seven of the most versatile and powerful spreadsheets ever devised go cell to cell in a MacUser Labs roundup. If you thought Excel was in a one-horse race, you might want to recalculate.

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To an architect, fine hairlines like ours are pure poetry.

Auto-tracing built this banana from a scanned-in produce ad. In split seconds.

Multi-point bezier curves make drawing a bunch easier. Colors are added in layers.

Auto-resizing helped this V.P. of Sales display the fruits of his labor, graphically.

Smooth continuous color blending inspired this art director to new heights.

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After he slipped away, we added rich Postscript® gray scales to the gorilla’s leftovers.

Four individuals were given an hour with the new Canvas 2.0.*

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How an architect, an MBA, and an art director developed instant talent in precision drawing. And a gorilla developed mild indigestion.

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Like we said: go bananas.

But do it soon. While we’re still throwing in Canvas 2.0 DA for free. It’s a special desk accessory version that puts some 80% of these features right under your Apple menu.

And if all this hasn’t convinced you that Canvas 2.0 is the drawing program you’ve been waiting for, send us $99.95 to receive a fully featured Demo Copy. With which you can finish convincing yourself.

After all, power like this can be very appealing.

Canvas 2.0 (including Canvas 2.0 DA) $299.95
Site licenses are available.
Canvas 2.0 Demo Disk $99.95
For more information or a demonstration of this or any of Deneba’s other products, see your local dealer or call us at 1-800-6-CANVAS. In Florida, call (305) 594-6965.
3305 Northwest 74th Avenue, Miami, Florida 33122
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These unretouched drawings were created in Canvas 2.0 and output to a Mirrus film printer. Please circle 80 on reader service card.
FOUR CLEAR REASONS YOU SHOULD BUY YOUR MACINTOSH II WITH A RADIUS DISPLAY

Now you can buy your Macintosh II with a powerful tool which will dramatically increase your daily productivity.

A Radius Display.
Radius offers displays for every type of Macintosh user and every type of Macintosh software application.

If you're involved primarily in intensive word processing and database management, we heartily recommend our FPD.

The Radius Full Page Display shows you an entire 8½"x11" paper-like page. With a refresh rate of 69 Hz, you have a virtually flicker-free display ideally suited for working with software like Microsoft Word and 4th Dimension.

If you're incorporating your word processing into page layout and design, we suggest that the Radius Two Page Display is clearly the more appropriate choice. For these reasons:

You have the same flicker-free resolution of the FPD and a full two-page horizontal layout. The ideal environment for viewing a magazine spread created in PageMaker or architectural plans drafted in MacDraft.

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Journalism has its rewards. One of them is that I can stand on the sidelines and come up with crazy ideas about what Apple should do next. Sometimes the craziest ideas turn out to be the best — like thinking that the world is round, that the VW Bug might catch on, or that chocolate and peanut butter just might taste good together. Or that a little computer with a 9-inch screen, a mouse, and a bunch of icons could compete with “real” computers.

Zen Buddhists spend years meditating to get rid of the preconceptions and dogma that inhibit just these kinds of thoughts. Once their heads are cleared, the crazy ideas don’t seem so crazy after all.

I’d like Apple to meditate on three ideas: consumer peripherals, Apple Windows, and an IBM-compatible development system.

Peripheral Vision

Consumer peripherals are similar to the monitors, tape drives, and CD-ROM drives already sold. Except in the consumer market, monitors are called TVs, tape drives are known as VCRs, and CD-ROM drives sell as "CD players." These are proven businesses that Apple could break into with the cachet of its logo alone. But the real value that Apple could add to consumer electronics is built-in intelligence and connectivity.

Apple has already reduced most of the Apple II to a single chip; Apple could build a line of consumer electronic products that use this chip as part of a sophisticated controller that gives the products special features, programmability, and the ability to be networked together.

The Apple TV would be a monitor with slots. You could plug in a variety of options, such as a receiver, special-effects boards, computer interfaces, or a CD-ROM drive. With the Apple-II-on-a-chip inside, you could connect a keyboard to the TV and it would become a computer. A Mac-on-a-board could fit into a slot in the TV, start with a TV, and upgrade it to a computer.

The Apple VCR would need to include AppleTalk so it could be connected to a computer network for backing up files or programming. VCRs can be ridiculously arcane to program. But imagine just downloading TV Guide from an on-line service and checking off the shows you want to record from menus or dialog boxes.

Or how about the Apple fax/phone/modem/printer/scanner/copier combination? A fax machine already has a printer, scanner, and modem in it. Adding AppleTalk and an intelligent controller could make it much more versatile than others, especially for computer users.

Crazy? Maybe. But it’s interesting to observe that Apple just joined a consortium of electronics companies working to develop high-definition TV.

Windows of Opportunity

Now here’s a really wild idea. Instead of suing Microsoft and Hewlett-Packard because they made a version of Microsoft’s Windows operating system that too closely resembled the Mac interface for Apple’s comfort, Apple should convince Microsoft to create a special version of Windows for Apple: Apple Windows.

Windows was a Mac knockoff from the start, but Microsoft tweaked the look of the thing just enough to avoid a suit in its own version. The tweaking usually made it not quite as nice as the Mac (the Mac’s Trash icon was changed into a box with an arrow pointing into it, for example). But when H-P wanted a custom version of Windows for its computers, Microsoft retweaked Windows and ended up with something that was closer to the Mac, setting Apple’s look-and-feel lawyers into motion.

If people want a graphical operating system for their IBM-compatible computers that looks and feels like Apple’s Mac operating system, they should buy it from Apple. And what better team than a cooperative effort between Apple and Microsoft? Apple could make major inroads in the DOS community and could get DOS users to switch to its operating system (a first step in eventually getting them to switch computers). With Apple Windows, Apple could become known as the company that made IBM’s computers easy to use. What a concept!

Crazy? Maybe. But IBM — with its Presentation Manager software — has all but formally endorsed the Mac way of doing things. And remember that IBM doesn’t include any operating system with its computers; that leaves the door open to Apple.

Apple could get a lot of the clone makers to bundle Apple Windows with its computers. Just imagine if PageMaker, Excel, Illustrator, and other now-popular applications that
Announcing LightningScan, the new hand-held scanner for Macintosh.
From Thunderware.

Now one quick pass is all you need to scan any image up to four inches wide. With resolution settings up to 400 dots per inch, LightningScan makes almost any scanning job easier to handle. And because LightningScan is controlled by the software that helped make ThunderScan famous, you have the powerful tools you need to enhance and edit your images. As for graphics compatibility, you name it: from PageMaker and Illustrator to ImageStudio and Digital Darkroom.

At its suggested retail price of $549, LightningScan makes the benefits of personal scanning very easy to grasp.

Thunderware
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started on the Mac required you to buy Apple's operating system for your IBM-or-compatible computer before they would run on it!

Am I Blue?

Apple must address the problem of its developers spending too much time working on IBM-related products. With 2.5 million Macs out there versus more than 20 million computers that run DOS, the financial temptations of the DOS market are a clear and present danger. Even more threatening to Apple is IBM's aggressive pursuit of Macintosh developers; IBM has just formed a "desktop software" division that is specifically designed to lure Apple's developers over to the IBM camp.

Apple's best defense against the potential brain drain in the Mac community is to create a dream development system for codeveloping Mac and IBM applications. This would encourage the talented programmers (who are in limited supply) to work on Macs instead of IBM hardware.

Crazy? Steve Jobs doesn't think so. The NeXT computer's NeXT-Step software-development system will be IBM compatible (on UNIX systems). Apple Windows would fit nicely into this scenario. Apple could create a development system that would allow applications to be ported easily to DOS or UNIX machines, but the ported software would require Apple's operating system, either Apple Windows or A/UX. Apple would control the development system and operating systems, so it could ensure that its computers ran the software just a little bit better.

Apple used to be full of crazy ideas. But underneath that wild and crazy guise was a clarity and brilliance that would impress a Zen master. Let's hope that Apple Computer is still crazy after all these years.
If you design on a Mac II, a screen that’s too small will cramp your style. That’s why you should be looking into a SilverView from Sigma Designs.

At 21”, this landscape monitor offers the biggest viewing area anywhere. A full 16” x 12” 2-page spread including rulers and margins.

Which means you can finally work in actual size. A fact that’s also made possible by SilverView’s 72 dots per inch typesetting standard.

Something else should weigh in our favor. The gray scale.

Besides black and white, there are SilverView models offering 16 or all 256 different shades of gray. So what you used to leave up to the imagination can now be in all your work. Like subtle half tones or delicate shadings.

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To find out just how much better your work can look, call Sigma Designs at (415) 770-0100 today.

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4684 ScreenRecorder 1.0 $135.

Fifth Generation ... 60 day MBG
4267 Pyrol 3.0 (screen saver) 15.
3954 PowerStation 2.5 32.
3955 Suitcase II 1.2 45.
3953 FastBack Mac 1.3 54.

FWB Software ... 30 day MBG
2232 Hard Disk Partition 2.0 41.
4683 Hard Disk Deadbolt 1.0 53.
2231 Hard Disk Util 2.03 53.

HyperTools #2 59.
4601 Stack Cleaner 59.

Lightspeed C 3.0 65.
4602 Lightspeed Pascal 2.0 65.
3420 Lightspeed C 3.01 95.

MacGallery
1668 Cricket Graph 1.3 119.
1670 Cricket Presents 2.0 289.

Multi-User SuperlaserSpool 2.0 199.
3382 SuperlaserSpool 2.0 82.

Net Software
2419 DiskQuick 2.10 27.

New Horizons
2591 The NightWatch 1.02 89.
2592 MacSafe 1.0B 89.

Olduvai Software ... 60 day MBG
3031 Icon-It! 1.1 39.

PCPC
3175 HFS Backup 3.0 54.
3471 MacInUse 2.0 42.

Microlytics ... 60 day MBG
3448 SmartScrap & The Clipper 2.0 46.
3449 SuperGlu 1.05 52.

SuperMac Software ... 60 day MBG
3383 SuperlaserSpool 5.0 54.
3382 SuperlaserSpool 2.0 32.
3378 Multi-User SuperlaserSpool 2.0 199.
3377 DiskKit 1.4 1.1 54.
3379 DiskKit 1.4.1 199.
3381 Sentinel 2.0 155.

SuperMac Software ... 60 day MBG
3383 SuperlaserSpool 5.0 54.
3382 SuperlaserSpool 2.0 32.
3378 Multi-User SuperlaserSpool 2.0 199.
3377 DiskKit 1.4 1.1 54.
3379 DiskKit 1.4.1 199.
3381 Sentinel 2.0 155.

SYMANTEC ... 30 day MBG
4728 MacSQZ! 1.05 49.
4729 S.U.M. 1.02 59.

ScreenRecord 1.0- Lets you create a continuous "tape" of any activity on your Mac screen. Tapes can also be combined with Hypercard and MacRecorder to create multimedia presentations $135.

UTILITIES

Affinity Microsystems ... 60 day MBG
1514 Altrifinite 1.1 46.
1016 Tempo II 1.0 89.

Berkeley System ... 30 day MBG
1514 Sidekick 2.0 68.

Beyond, Inc.
4203 MenuFonts 2.0 29.

Borland International
1510 Sidekick 2.0 68.

Casady & Greene ... 60 day MBG
1541 Stepping Out II 2.0 52.

Beyond, Inc.
4203 MenuFonts 2.0 29.

Microsoft
4471 QuickBasic 1.0 $69.

Farallon Computing
4684 ScreenRecorder 1.0 $135.

Fifth Generation ... 60 day MBG
4267 Pyrol 3.0 (screen saver) 15.
3954 PowerStation 2.5 32.
3955 Suitcase II 1.2 45.
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3383 SuperlaserSpool 5.0 54.
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3379 DiskKit 1.4.1 199.
3381 Sentinel 2.0 155.

SYMANTEC ... 30 day MBG
4728 MacSQZ! 1.05 49.
4729 S.U.M. 1.02 59.

ScreenRecord 1.0- Lets you create a continuous "tape" of any activity on your Mac screen. Tapes can also be combined with Hypercard and MacRecorder to create multimedia presentations $135.
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**Symmetry**
- HyperDA 1.1 .................................. $35.
- William & Macias
  - myDiskLabeler w/Color 2.9I ........... 31.
  - myDiskLabeler w/LaserWriter 2.9LI ... 34.
**Working Software**
- Findswell 2.0 .................................. 36.

**WORD PROCESSING**

- **Access Technology ... 60 day MBG**
  - MindWrite 2.0 ................................ 95.
- **MindWriteExpress 2.0**
  - MindWriteExpress 2.0 ...................... 145.
- **Word Finder 2.0**
  - Word Finder 2.0 ............................ 33.
- **Works 2.0**
  - Works 2.0 .................................. 189.
- **EndNote 1.1.1**
  - EndNote 1.1.1 ................................ 82.
- **Electronic WordFinder 220**
  - Electronic WordFinder 220 .............. 79.
- **Vantage 1.0**
  - Vantage 1.0 ................................ 59.
- **Comment 2.0**
  - Comment 2.0 ................................ 54.
- **Thunder! 1.1**
  - Thunder! 1.1 ................................ 32.
- **BigThesaurus**
  - BigThesaurus ................................ 42.
- **FULLWRITE 1.0**
  - FULLWRITE 1.0 ............................... 54.
- **MacWrite 5.0**
  - MacWrite 5.0 ............................... 102.
- **Word 4.0**
  - Word 4.0 .................................... 255.
- **FINDSWELL 2.0**
  - FINDSWELL 2.0 .............................. 69.
- **Super Studio Session 2.0**
  - Super Studio Session 2.0 ............... 75.
- **Alphabet Blocks 3.01**
  - Alphabet Blocks 3.01 ..................... 32.
- **Talking Tiles 1.0**
  - Talking Tiles 1.0 ......................... 69.

**Software Discoveries**
- **Merge Write 1.0**
  - Merge Write 1.0 ........................... $34.
- **More II 2.0**
  - More II 2.0 ................................ 225.
- **WriteNow 2.0**
  - WriteNow 2.0 ............................... 109.
- **WordPerfect**
  - WordPerfect ................................ 185.
- **Spelling Test Mac 1.0.1**
  - Spelling Test Mac 1.0.1 .................. 45.
- **Quick Letter 1.0**
  - Quick Letter 1.0 .......................... 75.

**MUSIC & EDUCATION**

- **Ars Nova ... 60 day MBG**
  - Practica Musica 2.1 .................... ... 75.
- **Bosig Productions ... 60 day MBG**
  - Studio Session 2.0 ....................... 49.
- **Country Disk**
  - Country Disk ................................ 15.
- **Heavy Metal Disk**
  - Heavy Metal Disk ....................... 15.
- **Sound Effects Disk**
  - Sound Effects Disk ..................... 15.
- **String Quartet Disk**
  - String Quartet Disk .................... 15.
- **Music Disk 4 Pack Special**
- **Alphabet Blocks 3.01**
  - Alphabet Blocks 3.01 ................... 32.
- **Talking Tiles 1.0**
  - Talking Tiles 1.0 ....................... 69.
- **Type 1.0.**
  - Type 1.0 ................................ 20.
- **Jam Session 1.1 (CP)**
  - Jam Session 1.1 (CP) ............... ... 30.
- **Geometry 1.0 (CP)**
  - Geometry 1.0 (CP) .................... 59.
- **Calcule 1.0 (CP)**
  - Calcule 1.0 (CP) ....................... 59.
- **MacDrums 1.0.1 (CP)**
  - MacDrums 1.0.1 (CP) .................. 32.
- **Perceive 1.0**
  - Perceive 1.0 ............................ 52.
- **Math Blaster! 1.0 (CP)**
  - Math Blaster! 1.0 (CP) ................ 27.

**Electronic Arts**
- **SmoothTalker 2.0**
  - SmoothTalker 2.0 ....................... $33.
- **First Shapes**
  - First Shapes .............................. 33.
- **KidTalk**
  - KidTalk .................................. 33.
- **Math Talk**
  - Math Talk ................................ 33.
- **Speller Bee**
  - Speller Bee ............................... 33.
- **Mavis Beacon Typing 1.28**
  - Mavis Beacon Typing 1.28 ............. 35.
- **Deluxe Music Construction Set 2.0**
  - Deluxe Music Construction Set 2.0 ..... 61.

**Farallon Computing**
- **MacConnection**
  - MacConnection ................................ 135.
- **Great Wave ... 30 day MBG**
  - TimeMasters 1.0 ........................... 22.
  - KidsTime 1.2 ................................ 26.
  - American Discovery 2.1 ............... 27.
  - NumberMaze 1.0 .......................... 27.
  - ConcertWare + 4.0 ....................... 39.
  - ConcertWare + MIDI 4.0 ............... 79.

**Individual Software**
- **Typing Instructor Encore**
  - Typing Instructor Encore ............... 26.
- **Learning Company**
  - Reader Rabbit 2.0 (CP) ................. 33.
- **The Perfect Score: SAT 1.0**
  - The Perfect Score: SAT 1.0 ............ 46.
- **Personal Training ... 60 day MBG**
  - Excellerate (intermediate level) ..... 29.
  - Page Tutor (beginner level) .......... 39.
  - LearnWord (intermediate level) ..... 39.
- **Simon & Schuster ... 60 day MBG**
  - Typing Tutor IV 1.2 ..................... 35.
- **Think Educational ... 60 day MBG**
  - SAT Score Improvement 1.0 (CP) ..... 58.
  - Early Games (CP) ....................... 28.
  - Atlas Explorer (CP) ..................... 28.
- **Unicorn ... 30 day MBG**
  - Animal Kingdom (CP) .................. 27.
  - Decimal Dungeon (CP) ................ 27.

**MacConnection, 14 Mill Street, Marlboro, NH 03446 1-800/622-5472 603/446-7711 FAX 603/446-7791**

**SofView**
- MacTAX-A sophisticated income tax prepara-
  tion program that allows you to organize, store,
  and print out tax information. Includes 74 IRS
  forms and schedules ....................... $65.
ENTERTAINMENT

Access Software
World Class Leader Board Golf... 28.

Accolade
1184 Hardball (CP) ....... 23.
4484 Mean 18 (CP) ... 24.

Activation
Quarterstaff (CP) .... 30.
Manhole .... 30.
Zork Zero (CP) .... 36.

Addison-Wesley
4407 The Hobbit .... 24.
4475 Quarterstaff .... 27.

Amazing Software
Crystal Quest 2.2C .... 32.

Broderbund Software
4229 Where is Carmen Sandiego? (CP) .... 30.
4407 The Hobbit .... 24.
4475 Quarterstaff .... 27.

Electronic Arts
1544 Ferrari Grand Prix (CP) .... 32.
4074 P5I Mustang Flight Simulator (CP) .... 32.

*Casady & Greene ... 60 day MBG
2268 Crystal Quest 2.2C (CP) .... 26.
4119 Crystal Quest w/Criter Editor 2.2C .... 42.

*Discovery Software ... 30 day MBG
4408 Arkanoid .... 27.

Electronic Arts
1850 Reach for the Stars (CP) .... 26.
1842 Chessmaster 2000 (CP) .... 28.
4064 Chuck Yeager Flight Simulator (CP) .... 32.
4588 Life & Art (CP, surgery simulation) .... 32.

Epix
2037 Sub Battle Simulator .... 29.
4660 Sub Battle Simulator for Mac II .... 29.

Infinity Software
2518 GO (CP) .... 27.
2519 Grand Slam Tennis (CP) .... 27.

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2787 MSFL Pro League Football .... 32.
3497 MicroProse .... 32.

A $3 bill
Microsoft
2668 Flight Simulator (CP) ....... 33.

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2764 Down Hill Racer (CP) ....... 24.
2767 Harrier Strike Mission II (CP) ....... 32.
2765 Fool’s Errand (CP) ....... 32.

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3957 Colony (CP) ....... 30.
2743 Crossword Magic (CP) ....... 30.
2745 Deja Vu (CP) ....... 30.
2749 Shadowgate (CP) ....... 30.
2750 Trust & Betrayal: Legacy of Siboot (CP) ....... 30.
2751 Uninvited (CP) ....... 30.

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4490 Might and Magic .... 36.

PBI Software
3110 Strategic Conquest Plus 1.3 (CP) ....... 35.
4320 MacGolf 2.0 (CP) ....... 35.
3421 Lunar Rescue (CP) ....... 34.
4517 Road Racer (CP) ....... 39.

Bogas Productions ... 60 day MBG


Primer Software
3169 Smash Hit Racquetball II .... 22.
4161 Mother Goose (CP) .... 19.
3397 Leisure Suit Larry (CP) .... 23.
3394 King’s Quest I (CP) .... 23.
3395 King’s Quest II (CP) .... 23.
3396 King’s Quest III (CP) .... 23.
3398 Police Quest (CP) .... 29.
3399 Space Quest (CP) .... 29.
3400 Space Quest II (CP) .... 29.

*Silicon Beach ... 60 day MBG
3501 Apache Strike .... 27.
3503 Dark Castle .... 27.
3502 Beyond Dark Castle .... 27.
3508 World Builder .... 41.

*Simon & Schuster ... 60 day MBG
3303 Star Trek Kobayashi Alternative (CP) .... 24.
3304 Star Trek Promethian Prophecy (CP) .... 24.
3347 Mac Wizardry (CP) .... 35.

*Softsream, Inc. ... 60 day MBG
4071 Mac•Man (w/adapter) .... 24.
4072 The Solitaire DA .... 24.

\n
Ti/Maker ... 30 day MBG
Write Now 2.0—Blends simplicity with power and performance. 2.0 has over 50 new features including mail merge, a 100,000 word spelling dictionary, direct import and export of Text, MacWrite, & RTF (Word option) ....... $109.

HARDWARE

NETWORKS & COMMUNICATIONS

*Abaton ... 30 day MBG
4589 InterFAX Modern .... 329.
*CE Software ... 60 day MBG
3963 QuickMail 1.05 .... 159.

*CompuServe ... 60 day MBG
1671 Grolier’s Online Encyclopedia .... 19.
1676 CompuServe Information Service .... 24.
1673 CompuServe Navigator 2.02 .... 45.
1674 Standard Service/Navigator Bundle .... 59.
*DataViz ... 60 day MBG
1823 MacLink Plus 3.0 .... 145.
4482 MacLink Plus/Translators .... 119.

*Dove Computer ... 60 day MBG
FastNet networking products .... call

*Dow Jones ... 30 day MBG
1789 Dow Jones Membership Kit .... 24.
1785 Desktop Express 1.03 .... 95.
1786 Market Manager Plus 2.0 .... 189.

*Farallon Computing ... 60 day MBG
4208 Timbuktu 2.0.0 (no MBG) .... 69.
4866 Timbuktu Remote (no MBG) .... 195.
4867 Timbuktu 30-Pack (no MBG) .... 1395.
2201 TrafficWatch 1.08 (no MBG) .... 145.
2202 PhoneNET AppleTalk 120 adapter .... 9.
2203 PhoneNET PLUS (DIN-8) .... 35.
2204 PhoneNET PLUS (DB-9) .... 35.
2205 PhoneNET Punch Down Block .... 69.

SENSORWARE

SuperMac Software ... 60 day MBG
Pixel Paint 2.0—New version includes PANTONE colors, color separation and halftoning, Masking tools, and special effects like smooth, blending and dithering make for a sophisticated 8-bit paint program ....... 199.

4073 Colour Billiards .... 35.
4078 Samba Paint (w/adaptive 3 files) .... 75.

Spectrum Holobyte
4001 Solitaire Royale (for Mac II) .... 20.
4175 Solitaire Royale (for Mac SE) .... 20.
3464 Teiris .... 20.
4472 Teiris (color version) .... 24.
3460 GATO .... 26.
3461 Orbit .. .... 26.
3462 PT-100 .... 26.
3459 Falcon 2.0 .... 32.

Spinnaker
2328 Sargon IV (CP) .... 29.

SubLogic
4698 Jat (CP) .... 32.

*Simon & Schuster ... 30 day MBG
*Dow Jones ... 30 day MBG
*Farallon Computing ... 60 day MBG

** SuperMac Software ... 60 day MBG
Pixel Paint 2.0—New version includes PANTONE colors, color separation and halftoning, Masking tools, and special effects like smooth, blending and dithering make for a sophisticated 8-bit paint program ....... 199.

** Sensorware

** Abaton ... 30 day MBG
** CE Software ... 60 day MBG
** Compuserve ... 60 day MBG
** DataViz ... 60 day MBG
** Farallon Computing ... 60 day MBG

** Spectrum Holobyte
** Spinnaker
** SubLogic

** Sensorware

** SuperMac Software ... 60 day MBG
Dear MacConnection,

A couple of weeks ago I had the sudden urge for a new Datadesk keyboard for my Macintosh Plus. Twelve hours later, I walked into my office and the keyboard was on the receptionist's desk. Instant gratification. No time to hunger after a new goodie. No wait, no muss, no fuss. This is not the spirit that built this fine country. Lincoln had to agonize through years of failure before he was elected President. Women had to wait 150 years for the right to vote. And here you are, indulging your customers' every whim in less than 24 hours. You guys are what's wrong with America.

You should be ashamed of yourselves.

Stephen Fleming
Sterling, VA
## DISKS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tr>
<td>3297</td>
<td>Sony</td>
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<td>3188</td>
<td>MacBottom HD 45 w/Modem</td>
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<td>MacBottom HD 45 w/Modem</td>
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<td>MacBottom HD 84 w/Modem</td>
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<td>MacBottom I HD 144 Meg</td>
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<td>2000</td>
<td>MacTilt SE</td>
<td>$68</td>
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<td>4623</td>
<td>Solid Oak Disk Case</td>
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<td>2379</td>
<td>MacLuggage Imageware II</td>
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<td>MacLuggage Macineware Plus</td>
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<td>2381</td>
<td>MacLuggage Macineware SE</td>
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### ACCESORIES

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<td>3½&quot; Disk Labels (Qty 250)</td>
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<td>8½&quot; x 11&quot; Transparencies (Qty 50)</td>
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<td>ImageWriter II Cover</td>
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<td>ImageWriter II Case</td>
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<td>Mac Plus Cover Case</td>
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<td>Mac SE Ext. Keyboard Cover Case</td>
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<td>ImageWriter II Cover</td>
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<td>2004</td>
<td>Mouse Cleaner 360°</td>
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<td>3992</td>
<td>The Muzzle (covers power outlet)</td>
<td>$62</td>
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<td>1998</td>
<td>MacI II (platinum)</td>
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<td>1999</td>
<td>Mac II SE</td>
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<td>Mac Plus Cover Case</td>
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<td>1997</td>
<td>Mac II SE</td>
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<td>The Macintosh Bible (2nd Edition)</td>
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<td>4843</td>
<td>Mac II Stand and Cable Kit</td>
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<td>2561</td>
<td>MasterPiece Mac II</td>
<td>$105</td>
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</tbody>
</table>

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**OUR POLICY**

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we charge freight on the shipment(s) that complete the order.
- No sales tax.
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- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 to 5:30 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST.

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- Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all non-C.O.D. orders shipped within MacConnection by UPS Ground). The total freight charge on any order placed with MacConnection is now $5. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional surcharge.
- Hawaii, Alaska and Outside Continental US: Call 603/446-7711 for information.

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**Accessories**

- *Avery ... 60 day MBG* 4864 3½" Disk Labels (Qty 250) $13
- 4865 3½" x 1½" Address Labels (Qty 3750) $15
- 4861 8½" x 11" Transparencies (Qty 50) $22
- *Computer Coverup ... 60 day MBG* 1721 800K External Drive Cover $4
- 1722 ImageWriter II Cover $8
- 1722 ImageWriter II Case $10
- 1720 Mac Plus Cover Case $9
- 1725 Mac SE Ext. Keyboard Cover Case $10
- 4657 ImageWriter II Cover $10
- *Ergotron ... 60 day MBG* 2004 Mouse Cleaner 360° $15
- 3992 The Muzzle (covers power outlet) $62
- 1998 MacI II (platinum) $68
- 1999 Mac II SE $68
- 4207 Mac Plus Cover Case $9
- 1997 Mac II SE $85
- *Goldstein & Blair ... 30 day MBG* 2267 The Macintosh Bible (2nd Edition) $21
- *I/O Design ... 30 day MBG* 4843 Mac II Stand and Cable Kit $65
- 2561 MasterPiece Mac II $105
- *MacConnection ... 60 day MBG* 4823 Solid Oak Disk Case, made by New England craftsmen (holds 90 disks) $29
- *Mobius Tech ... 60 day MBG* 4470 Fanny Mac OT $65
- *MouseArt ... 60 day MBG* 2694 Moustrak Pad (standard 7"x9") $8
- 2692 Moustrak Pad (large 9"x11") $9
- 2693 Moustrak Pad L/F (9"x11") $10
- *Moustrak Designer Series* Features selected photos from the book, "A Day in the Life of America." $65
- 4001 Thin Light $12
- 12 Thunderstorm $12
- 4007 Old Cajun $12
- 4008 Vietnam Memorial $12
- 4009 Dance Class $12
- 4010 Tea Lesson $12
- *Ribbons* 3255 ImageWriter II Ribbon $4
- 3261 ImageWriter II 4-color Ribbon $9
- 3270 ImageWriter II Rainbow Six Pack $20
- 3280 ImageWriter LQ Black Ribbon $17
- 2379 MacLuggage Imageware II $49
- 2376 MacLuggage Macineware Plus $64
- 2381 MacLuggage Macineware SE $75

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**Overnight**

- *FWB Software ... 30 day MBG* 4263 PocketHammer40 $1999
- 4264 PocketHammer80 $1999
- 4267 Hammer155 $2999
- 4270 Hammer300 $3999
- *PCPC* 3177 HD-WSI (Apple HD-20 to SCSI) $269
- 3161 MacBottom HD 21 SCSI $659
- 3165 MacBottom HD 21 with SC/6 $699
- 3184 MacBottom HD 32 with SC/6 $829
- 3188 MacBottom HD 45 with SC/6 $859
- 3190 MacBottom HD 70 with SC/6 $999
- 4658 MacBottom HD 84 with SC/6 $1249
- 3176 MacBottom HD 144 Meg $1485

---

**Dove Computer ... 60 day MBG**

MacSnap 512—Bring your old Mac into the future. Increase your Mac 512k's memory to a full 2 Meg. Easily installed. Patented socket technology allows better than Plus performance without soldering. $499.
### INPUT/OUTPUT

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tr>
<td><em>Abaton</em> 30 day MBG</td>
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### Practical Peripherals 30 day MBG

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### Microsoft

*File 2.0*—Intuitive database handles large numbers of records with ease. Integrates with *Word* to develop mailing labels and customized forms letters. Predesigned templates print common forms & labels. $129.
Letters

Dan Girard of Colonial Graphic Services in St. Paul, Minn., wrote to say why he prefers QuarkXPress to PageMaker: “Sure the additional features of QuarkXPress might take a few more hours to master, but the operator control and high-quality results are worth it.” Dan’s credentials and Quark’s were attested to by his carefully typeset letter, which almost exactly duplicated the type specs for this department. Alas, he neglected to set his name and address in caps and small caps, so we couldn’t save any money on our own typesetting bill.

Your letters are always welcome, whether caps, small caps, or no caps at all. Just send them to the Letters to the Editor, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. All letters become the property of MacUser, and we reserve the right to edit letters we print.

FYI:

NG answer to RDC of TN RE: FDs in Nov. ‘88. DDs are OK for Macs up to SE and most IIs. But if you want 1.6 or 1.4 MB on a Mac with IWM (or from PS/2s, BTW), you need HDs for extra $5.

DJR

N.Y., N.Y.

THE SHARPER ImageWriter

I read with some dismay your recent review of the ImageWriter LQ (January ’89). As a charter LQ user (I’ve had mine nearly a year), I can vouch for the accuracy of some of the factual material presented. There are other LQ fonts available besides Apple’s. The machine offers all sorts of paper feed options, but my kids have no trouble with them at all. Sure it screeches, but it’ll print on almost anything.

I’d like to have a LaserWriter, but a real one with PostScript, not the watered-down SC. Anyway, no one pays $1,400 for this machine: $1,000 is more like it. I feel I’m getting my money’s worth.

SETH M. LEWIN, M.D.
NEEDHAM, MASS.

9,600 TEARS

I was appalled by the review of the Hayes V9600 modem (January ‘89). The reviewer implied that it was compatible with the CCITT V.32 standard, while it clearly is not. Hayes sells another modem, the Hayes 9600 (which is considerably more expensive) for V.32-compatible applications. The reviewer also implied that it is necessary to run Smarticom on both ends of a connection using these modems to gain the maximum speed possible. This is also very misleading, as at least two other programs, Viacom and MicroPhone II, support the hardware handshaking needed to gain optimum efficiency from these modems.

Your reviewer should also have noted that 9,600-bps modems will not communicate with any other brand of modem at speeds over 2,400, and that the file transfer speeds of 14,000 bps are due to compression of text files. Transmission of typical compressed files that you find on a BBS will be perhaps 75 percent of the speed quoted. Finally, the reviewer completely neglected an important consideration to many users, which is that modems such as the V-9600 are not full-duplex, so that in interactive applications, such as typing data to a remote system, the user can often encounter an annoying delay for the modem to “turn around” when the character is echoed from the remote system.

ERIC LARSON
MARCELLUS, N.Y.

PRINTER’S DEVILS

I would like to comment on Dave Valiulis’ “Shifting Shapes” piece in the December ’88 DTP section, page 242. It pointed up differences in the screen and LaserWriter appearance of several font characters shipped with the ImageWriter LQ.

This is just as applicable to fonts shipped with the LaserWriter IISC, since they’re the same as for the LQ except for the selection of sizes. The discrepancies that exist between different sizes of the supplied fonts tickled Pete Mason’s (of Altsy’s) wry sense of humor. He and I have noticed a few more of these, such as different sizes of Geneva having different styles of the letter y. The larger sizes intended for the LQ and IISC were undoubtedly made by someone else at a later time than the sizes up to 24. I resolved these inconsistencies in my own variations of Helvetica and Times for the ImageWriter LQ and LaserWriter IISC. Called Hermes and Tribune, these fonts print slightly less bold than those shipped with the printers and will be marketed by Altsy Corp.

I wanted to point out an error in the “Symbol Sampler” illustrations that accompany Valiulis’ article. In each of the five samples, your LaserWriter (PostScript) comparison sample is Helvetica. Since for three of the samples (four, if you count Geneva) that’s not the font under consideration, it

20 MACUSER APRIL 1989
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**Letters**

serves to confuse the issue rather than clarify it.

**DOUGLAS G. MILES**

**ELLENSBURG, WASH.**

Picky, picky. Some of the symbols are also wrong in the LaserWriter samples. For example, several symbols should have been missing from the Courier printout, which would have made it more consistent with the text. Sometime during the production process, Helvetica was inadvertently substituted for the proper fonts, resulting in the confusion. — AA

**CHIPS AHoy**

The article “Efficient Chips” by Salvatore Parascandolo (January ’89) was superb in that it dealt only with how to operate more efficiently. I have all the hardware and software, but my personal chips need improving so the excellent tools can become better utilized.

Many users work in small environments without a “computer expert” around to help. We don’t all have access to other users or user groups to exchange information and learn the simple points. I for one use the Mac as a business tool. I’m not inclined to get involved in the programming aspects. I need to be a “user expert,” not a “computer expert.”

Some readers may be interested in the price of Crayolas — with sharpener — or what Jobs and Woz are doing, but many couldn’t care less. Please maintain some basics and give us more helpful articles written for users, not computer experts or gossip mongers.

**DOUGLAS L. VINCENT**

**TULSA, OKLA.**

The real differences come after you’ve bought the basic machine. Want to add a hard drive to an IBM? Buy a disk controller card in addition to the drive. Want a second serial port? Buy a serial card. Want a SCSI interface? Buy a SCSI controller card. Want 1 megabyte of RAM? Buy another 512K, since only 512K comes standard in Big Blue’s box. Also buy the memory card to put it on. Want a mouse? Buy it. Want a decent (well, as close as you can get) interface? Buy Microsoft Windows. Want to connect to a network? Buy a network interface card for a lot more money than an AppleTalk connector. There are a lot of hidden expenses in an IBM machine that aren’t there on a Mac.

**TIMOTHY ORR**

**MERRIMACK, N.H.**

**VENI, VIDI, VIDEO**

Music, music, music. What about video, video, video?

**GUY BRADLEY**

**BATON ROUGE, LA.**

Mac-based video products began appearing in significant numbers only late last year, but it’s a rapidly expanding field. Rest assured; we’ll be covering it. Stay tuned. — RI

**THE NEW PRICE IS RIGHT**

Jim Seymour’s “The Pricing Game” (January ’89) wins my MacReader award for the “things I’m sick of reading about category.” Last year I bought my SE. Since then, I’ve been doing a lot of thinking about what it cost me. I’ve been watching IBM’s prices, not closely, just checking out the ads once in a while. Guess what I’ve figured out?

The Mac is not terribly expensive compared with those IBM thingies!
Now Macintosh and Wang can communicate and nothing gets lost in the translation

Transferring files from one system to another is somewhat pointless if you spend most of your time reformatting the data. Which is why we introduced MacLinkPlus for Wang. Whether you're running a Wang VS system, an OIS or a Wang PC, MacLinkPlus provides a complete solution for document transfer and file conversion.

MacLinkPlus includes the entire collection of more than 40 translators — the key to accurate conversion of file formats such as rulers, indents, bold and plain text styles, margins, tabs, underlines, superscripts, subscripts, paragraphs, and tabular tables. If it looks a certain way on a Wang, it will look the same way on a Mac. And, of course, vice-versa. No time-wasting and difficult pre-conversion to ASCII or print files is necessary.

MacLinkPlus doesn't stop there, however. It offers full Wang VS Workstation capabilities, allowing easy access to Wang word processing, data processing and electronic mail. All 32 Wang Workstation functions can be executed through familiar Macintosh menus or command keys, and you'll even be able to use the mouse on Wang displays.

Software for the Macintosh, software for the Wang (8" or 5.25"), software for the PC and a direct connect cable (you can use a Hayes or compatible modem if you prefer), is included in the MacLinkPlus package; everything you need to be up and running in minutes.

So call (203) 268-0030 for your nearest DataViz dealer, because no matter which Wang system you're using, there's a MacLinkPlus solution to connect it to the Mac.

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Letters

And speaking of logic tricks — you guys would really go under if you ethically refused to print adult entertainment garbage? Why that must mean that if about 10 or 20 subscription renewals were refused because of this trash logic — if-you-have-the-money-we-print-it philosophy — you might fold, or the publisher might change editors. Why, in an otherwise decent magazine, aren't folks tired of this kind of crap!

GEORGE STEVENSON
SACRAMENTO, CALIF.

Three cheers for Steve Damascus’ response to Ms. Deborah Mason’s letter of protest! Not everyone finds amusement in the same fashion, but that doesn’t make it wrong, immoral or, least of all, sexist. If I threw verbal spitballs at everyone who got their giggles from “adult” literature or other adult amusements, my mouth would go dry. Chill out, Deb!

NANCY E. LIGOS
WARMINSTER, PA.

DVORAK CRACK OF THE MONTH

Q. What do John Dvorak and a new No. 2 pencil have in common?
A: Both are soft at one end, and neither has a point.

NELSON HAUKAP
CARROLL, IOWA

CLARIFICATIONS

Obfuscations obviated, ambiguities arbitrated, and errors eradicated.

The Price Is Right

Compugraphics' new CG 9400PS imagesetter suffered from price inflation in the January ’89 DTP section. This 2,400-dpi PostScript machine, which competes with the Linotronic 300, retails for $39,995.

Strange Answer

Dialing the telephone number we gave in the November ’88 DTP section for Springboard Publisher would have resulted in hearing a strange tone generated by a fax machine. The voice telephone number is (612) 944-3915.
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MORE II: PLANNING, WRITING AND DESKTOP PRESENTATIONS.

Being MORE productive means everything you plan, write, or present is MORE organized. And it shows in everything you do.

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Economy. Mirror's great looks in a zero-footprint design that brings mass storage within anyone's budget, yet includes - free of charge as with all Mirror hard drives - Mirror's hard drive value package*. And with Mirror Technologies' return policy and one-year warranty, you can't go wrong.

Our most popular drive. Enough storage for most personal applications at manufacturer-direct prices. Preformatted and easy to use - just plug in and play! Super reliable, and with all the extras at factory-direct prices.

Again, your choice: high speed or lower price. We'll double our usual one-year warranty on the 10ms "Plus" drive to two years. 80 Mb is enough for highly complex networking and accounting applications. Shop the price on other 80 Mb drives. Ours is less expensive, and you still get all of the Mirror extras!

Mega-memory at a micro price. And talk about speed! The M100 is fast, but the M200, at 15ms, is awesome! Fan-cooled reliability, and Mirror's conservative philosophy means you can't find a more secure storage medium. Preformatted. Just plug and play!

We set the standards for low-cost removable storage. This little drive packs 8 Mb (800K) of data on each 3½ disk! MacWorld says of our RM.8, "So quiet it would be unobtrusive anywhere except a library on a Friday night." Try it for 30 days, and if you don't like it, we'll take it back. You won't find a similar brand-name product for less!

Quality is always a better value. Especially if it costs less.

Lost data can put you out of business. That's why Mirror Technologies uses only the best. And why we build in those extras that mean greater data security. When integrated with rugged power supplies and whisper-quiet cooling systems in our steel chassis, you can double-click "Save" with confidence.
You won't find a brand-name 60 Mb drive for less. And you still get Mirror's EMI/RFI protection, heavy-duty power supply, AC convenience outlet, whisper-quiet cooling fan, rear-panel SCSI address, and other standard Mirror features. Compare. Then give us a call!

Include Mirror Technologies hard-drive value package.

**VisionScan 300**

VisionScan works as a DA so you don't have to exit the program you're using! Get the 200 dpi VisionScan 200 for excellent line art and affordable halftones, or the 300 dpi VisionScan 300 for excellent line art and excellent halftones, and we'll send you Zedcor's DeskPaint, free! Optical character recognition software available.

**RM20 Removable Flexxy Disk Drive**

Think of it as a huge floppy disk. Using media developed by Kodak and Verbatim, the Flexxy disks can last a lifetime! Our RM20 is as fast as most 20 Mb hard drives! An extremely low cost per Mb for backup, archiving, or as your primary storage medium. And we sell our RM20 for over a hundred dollars less than the competition, complete with Hard Driver™ formatting and diagnostic utility, Symantec's LaserSpeed™ LaserWriter print spooler, and numerous other utilities, including a backup utility. External SCSI address selector, our whisper-quiet cooling fan, built in AC EMI/RFI noise filter.

You could be using a Mirror Technology drive tomorrow.

We almost always ship within 24 hours. If we don't ship within 24 hours of credit approval, we'll pay the freight! And with optional express shipping, you could be up and running by noon tomorrow. You simply can't find better products, with better service, at a better price—anywhere. Call today.

**Internal Hard Drives:** 30, 40, 80, 100, 200

**$497**

Only Mirror Technologies allows you to add an internal hard disk in an SE already containing either two floppy or a floppy and a hard disk! Up to 200 additional Mb in your SE! And Mac II users can add two of our drives; up to 400 Mb of internal storage, another Mirror exclusive!

Include Mirror Technologies hard-drive value package. 40, 80, 100, & 200 Mb Call.

Another number you'll love.

30 days at our risk.

We know you can't get a better value anywhere. It's up to us to prove it to you. Try a Mirror product for 30 days; if you don't think it's a great value, call us, send it back, and we'll refund the price of your unit. We're confident that you will like our prices, our products and our service.

**$897**

You'll get better help than from a computer store salesman.

If you need to know about any product, ask its maker. At Mirror, our Mac experts have been hand-picked and trained to be able to answer your questions. Better help than you'll get from salesmen in most computer stores. If you've ever had trouble getting help before, you'll find welcome relief at our number.

**$797**

You could be using a Mirror Technology drive tomorrow.

We almost always ship within 24 hours. If we don't ship within 24 hours of credit approval, we'll pay the freight! And with optional express shipping, you could be up and running by noon tomorrow. You simply can't find better products, with better service, at a better price—anywhere. Call today.
When a Stranger Calls

Wrong numbers take on a whole new dimension when it comes to modem security. Since the biggest threat to a system's security comes from unauthorized people calling in, it makes sense to add security to telecommunications hardware.

That's the idea behind Tri-Data's four new OZ Guardian 2,400- and 9,600-baud modems. With these units, each call can be screened for password-controlled access. When a remote terminal enters a password, the OZ Guardian hangs up and automatically calls back the telephone number associated with the password. It's less obnoxious than call waiting, and it's an effective way to ensure that unauthorized users don't get their calls returned.

Tri-Data offers upgrade or exchange options in case you discover that you need more power or security than you originally thought. The modems provide compatibility with all major data-communications protocols from Bell 212A and 103J to CCITT V.22 bis and V32.

Stand-alone models list from $750 to $2,275 (volume discounts are available) and are available from Tri-Data Systems, 1450 Kifer Road, Sunnyvale, CA 94086-5306; (408) 746-2900.

James Bradbury

A Scanner in the Hand

It might look like a vacuum cleaner attachment, but it's a lot more fun. LightningScan by Thunderware is a hand-held scanner for Macintosh computers that is driven by software similar to that used in the popular ThunderScan.

A Thunderware-supplied controller connects LightningScan to any Macintosh SCSI port. Using the scanner is like playing with a large mouse — just hold down the button and drag the scanner over the image to be scanned. The image is immediately displayed on the Mac screen — albeit in a 4-inch-wide strip. You can even achieve some special effects by turning the scanner as you scan. (If your hand isn't steady, you can even get special effects you don't want.)

LightningScan quickly scans graphics, photos, charts, and logos — anything reasonably flat, including wood and fabric that fits within its four-inch scanning width — at resolutions of 100, 200, 300, and 400 dpi. It supports magnification, three dithering patterns, a line art mode, and adjustable brightness. The software includes editing tools and controls for frames, rotations, and captions for output to PostScript printers. LightningScan supports TIFF, Encapsulated PostScript Format (EPSF), PICT, and paint file formats.

LightningScan images can be imported into major desktop-publishing software, including PageMaker, QuarkXPress, and Ready, Set, Go!, and graphics packages such as Illustrator, FreeHand, ImageStudio, and Digital Darkroom.

Billed as a "personal scanner," LightningScan is targeted for graphic designers, desktop publishers, businesses, and schools. It will be available by the time this is in print at a suggested price of $549. Thunderware can be reached at 21 Orinda Way, Orinda, CA 94563; (415) 254-6581.

— Laura Johnson

It's not a vacuum cleaner attachment. It's LightningScan, the hand-held scanner from Thunderware.
WORM Killer

"Look ma, no dioxin!" Killing WORMs without pesticides isn't easy, but Pinnacle Micro has come up with an answer: the REO-650, a 650-megabyte, removable media, WORM without pesticides isn't a true WORM killer. The REO-650 uses magneto-optical technology to achieve its read/write capability, and the company boasts a reliability rate of up to 1 million individual file erase/rewrites.

This SCSI drive uses a 5.25-inch, double-sided cartridge and has an average seek time of 90 milliseconds. It boasts a burst transfer rate of 1.2 megabytes per second.

All this WORMicide power doesn't come cheap, but at $5,995 for the drive and $230 each for the cartridges, it's not bad. To find out more, contact Pinnacle Micro, 15265 Alton Parkway, Irvine, CA 92718 (800) 553-7070 or (714) 727-7777 (in California).

— Russell Ito

My Kingdom for a Case

No, that wasn't Perry Mason; it was a Mac traveler — maybe you looking for something to transport a Mac Plus or SE in. For those times when a soft case just isn't good enough, Zero Halliburton has come up with an aluminum alloy case that's the perfect complement to Guy Kawasaki's briefcase.

The Zero Halliburton Macintosh case comes with a customized foam insert for the Plus or SE, with room for a standard or extended keyboard, mouse, cables, and disks. It has a combination lock, weighs 12.5 pounds, and measures 13-x-18-x-21.5 inches. And unlike soft cases, it's made to be checked in and tossed around by the nearest gorilla disguised as a baggage handler.

The case has a suggested list price of $299.95 and is available from Zero Halliburton, 12224 Montague St., Pacoima, CA 91331, Attn: Macintosh Dept; (818) 897-7777.

— Russell Ito
MathType 2.0

Equations for Word Processing

If you need an easy way to create technical reports, slides, class notes, research papers, or even entire books, then MathType is the tool you've been looking for. It's an intelligent equation editor for the Apple Macintosh or for IBM PCs and compatibles that lets you build up complex equations using simple point-and-click techniques...

Import the finished equation into your word-processing document, and get publication-quality results like this...

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\left\{ \int_a^b \left( \sum_{i=1}^m z_i(x) \right)^p \, dx \right\}^{1/p} \leq \sum_{i=1}^m \left\{ \int_a^b z_i(x)^p \, dx \right\}^{1/p}
\]

MathType 2.0 has all the highly-acclaimed features of earlier versions, and some important new ones, too:
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Speaking Out: MACdex versus Comdex

What if they gave a MACdex and nobody came? The first MACdex will be held concurrently — but separately — with this April's Comdex show. Comdex organizers said they created MACdex at the request of exhibitors, although Apple Computer apparently was not among the requestors. We asked several potential exhibitors and industry leaders for their opinions.

"We won't participate in this spring's MACdex because our show schedule has been planned for quite a while. We're in Comdex because it's a multivendor exhibit where we can show people how our computers are doing a better and better job of connecting to other computers. That message is important to us and to our users." — Patty Tulloch, spokesperson for Apple Computer

"When users think of personal computers, they think of a number of brand names, so they naturally want to see computers working together. So I don't see where this segmentation meets the perceptions and needs of customers. Personally, I'm more interested in a show where users get to see the total solution rather than an exhibition that's limited to just the Macintosh. We're not planning to exhibit at MACdex, but we'll still have a booth at Comdex." — Gordon Eubanks, Jr., president of Symantec Corp.

"MACdex seems like a nice idea but it's a little too late. WordPerfect Corporation is already committed to three Macworld Expos and two Comdex shows every year. Right now, attending those shows is sufficient for us because we get a lot of attention for our Mac products. I don't think we'd meet anyone at a MACdex that we wouldn't meet at Comdex. That may change as MACdex develops and becomes a more important show; that could well depend on whether Apple participates or not." — Roger Bell, director of Macintosh products marketing for WordPerfect Corporation

"The best way to display the Macintosh at Comdex is to have the Apple booth in the center of the floor where anyone can wander in and learn about the Mac. We already have two big Macintosh shows plus Seybold; that's enough exhibits with a Mac focus." — Heidi Roizen, president of T/Maker Company

"The addition of MACdex and a few more shows to the already busy convention schedule is going to overload the marketplace — there's just not enough demand for that many shows. I also don't think segregating the Mac to a separate location is good for Comdex because the Mac is the leading edge in the IBM-dominated personal computer world, so it deserves to be among the rest of the computers. Also, when the Mac is part of Comdex, it brings some market credibility to the Macintosh and makes it look like it's a growing part of the business market." — Mike Bailey, president of Apple Professional Exchange
The Interface Group’s launch of MACdex in Chicago on April 10–13 alongside the Comdex/Spring ’89 show marks what is likely to be a new phase in the industry’s perception of Apple and the Macintosh. Paradoxically, MACdex represents the Macintosh’s increasing role in the mainstream of corporate and personal computing, even as it reaffirms the Mac’s uniqueness.

In establishing a separate show aimed at Macintosh dealers and other resellers, the Interface Group is explicitly recognizing the size and strength of the market for the Mac and related products. At the same time, however, MACdex represents the assimilation of what an early brochure called “The Mac Mystique” into the mainstream of business.

Until now, Macintosh shows have tended to be in-groupie gatherings of the Macintosh faithful. They’ve sometimes had the aura of revival meetings, reaffirming the faith of the true believers and inviting the heathen to conversion. What’s more, they have tended to be aimed at individual users as much as (if not more than) industry professionals. Lots of college students, parents with children in tow thinking about buying a Mac, and the usual assortment of MacMoonies roamed the aisles.

Wonderful as it may have been for many participants, the typical Mac show until now did little to convince the admittedly sometimes unimaginative and uninspired types who generally run things in the real world that the Macintosh should be taken seriously. Though the Mac was billed as a computer “for the rest of us,” the typical Macintosh show gave “the rest of them” the impression of a gathering of some sort of deviant sect.

The Interface Group’s fabulously successful Comdex shows, however, have always been for professionals in the business and have been seriously businesslike despite the numerous and gala receptions and parties.

Hardware and software vendors, resellers, and (increasingly) information-system professionals from larger organizations come to Comdex to do business. Having been oriented to microprocessor-based systems from the start, Comdex has flourished while older shows (like NCC) that were oriented toward traditional mainframe systems withered and died.

Apple, of course, was an important participant in Comdex from the start. As Apple grew and flourished in the early 1980s, its presence at Comdex grew accordingly, reaching a peak of sorts in 1984 with a giant Macintosh in the middle of one of the largest displays at the show.

During Apple’s period of trouble and transition in 1985, however, it pulled back from Comdex, disappearing from the floor entirely for a time. Apple returned with a modest presence in 1987 in the form of a room for Mac software vendors to display their wares. Still, as Comdex set records for size and attendance at its Fall ’88 show, Apple and the Macintosh remained seriously under-represented in what had become the industry’s most important show.

Apple is returning to Comdex in a bigger way in 1989. But even as Mohammed approaches the mountain, the mountain is moving toward Mohammed in the form of MACdex. Recognizing the importance and growing maturity of the Macintosh and its markets and, even more important, of the need for a more businesslike forum for the Mac, the Interface Group has made a big investment in a Comdex-like show devoted to the Mac, complete with an impressive conference program.

Ironically, the Interface Group’s enthusiasm for the Mac so far has not met with a reciprocal enthusiasm from Apple. Although taking a bigger part in Comdex, Apple (at least as of press time) has opted not to take booth space at MACdex and has declined to provide speakers or panelists for the MACdex conference sessions.

Chances are good, however, that MACdex will succeed in providing a forum for those who want to do business with the Macintosh — even without a strong commitment of support from Apple at the start. While it is unfortunate that Apple should prefer to remain with those Macintosh-specific shows that are already familiar and “safe,” it would perhaps have been better had Apple more enthusiastically endorsed the obvious need for a more professional show for the Mac.

The other Macintosh shows with their retail orientation certainly are not going away. They will continue to furnish the enthusiastic, if somewhat inward-looking, assembly of the faithful they have always provided. But if the Macintosh is to reach its full potential, it cannot remain within the enclosed walls of what amounts to a permanent minority religion. Rather, it needs to roam freely the streets of the secular marketplace provided by a show like MACdex.

For MACdex to fail would mean failure for Apple Computer and for the Macintosh as well: failure to reach beyond what are really ghetto walls, however brightly appointed and spacious the ghetto may appear to be from within.

Separate butEqual

BY WILLIAM ZACHMANN

Illustration: Mark W. Shepperd/MACuser

APRIL 1989 MACUSER 33
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Cheat Sheets

If you've ever spent five minutes searching for the chi sign in Symbol or the Star of David in Zapf Dingbats, you may have become frustrated enough to bang out your own rudimentary reference chart. Sure, it was low-tech and crude, and you probably spilled coffee on it, but at least you could find those pesky font characters.

Now there's a more elegant solution: Perma-Charts, a series of at-a-glance reference guides from Papertech. These laminated charts put a wealth of Mac information at your fingertips in an easy-to-read, well-nigh indestructible format. Macintosh Shortcuts I and II cover keyboard equivalents, hidden commands, and tips on a variety of operations from rebuilding your desktop file to working with the Font/DA Mover. Introduction to HyperCard provides a comprehensive list of keyboard shortcuts plus usage notes. The font guides to Symbol and Zapf Dingbats cover every possible symbol, including those not shown in Key Caps.

Each laminated Perma-Chart comes in both binder size ($3.75) and wallet size ($2.75). Contact Papertech at 3800 Steeles Ave. W., Suite 010, Woodbridge, Ontario, Canada L4L 4G9; (416) 856-2577. (And for the record, pressing the C key and Shift-C will get you Symbol's chi sign; pressing Shift-A gets you the Star of David dingbat.) — Aileen Abernathy

Take the IEEE Bus

Macintoshes are popping up on lab benchtops everywhere for use in data acquisition, analysis, process control, and monitoring, replacing dedicated controllers of IEEE-488 bus equipment. Keithley Instruments recently made its line of 28 data-acquisition cards accessible to the Mac with its 556 measurement and control system.

The 556 is an intelligent controller with room for ten data acquisition cards. Up to fourteen 556 boxes can be chained together to give a Mac thousands of inputs and outputs. The IOtech Bus Controller, which Keithley markets, sits between the 556 and your Mac. The controller comes in versions that plug into the Mac's serial and SCSI ports as well as a board for NuBus. By not having computer-specific cards, Keithley's existing line of data-acquisition cards becomes the biggest selection available for the Mac.

When Keithley's AMM2 analog-to-digital converter is put in one of the slots, the system offers up to 6,000 samples-per-second acquisition and 16-bit resolution. A Motorola 6809 chip and 20K of RAM are used in the 556 to assign buffers to each card dynamically and to perform memory-management tasks, thus freeing up your Mac's CPU for other tasks.

The software interface is IOtech's desk accessory, which makes use of device-dependent commands common to IEEE-488 equipment. Third-party software packages such as LabView, Labtech Notebook, and others are compatible with the 556 system.

Even including the price of a Mac, the Keithley system is less costly than equivalent dedicated IEEE-488 systems. An empty 556 box retails for $1,400. Data-acquisition boards run from $300 to $1,000 each, and Keithley says a typical fully configured system runs around $3,000. Contact Keithley Instruments, 26775 Aurora Road, Cleveland, OH 44139; (800) 552-1115. — John Rizzo

The Power Game

“Oh, $#@! I didn’t save!” You usually hear words to this effect just after a blackout — or right after you’ve stepped on that little red switch on your power strip. To ease you through these crises, Kensington has introduced the Power Backer line of uninterruptible power supplies (UPSes).

The Power Backers have a listed response time of between one and four milliseconds and will continue to power your Mac for 5 to 65 minutes, which is more than enough time to save and shut down.

The three models suggested for Mac use are the Power Backer 330 (330 VA, $399), the Power Backer 450 (450 VA, $599), and the Power Backer 800 (800 VA, $1,099). If you want to find out more, or you’ve just said those awful words, contact Kensington Microwave, 251 Park Ave., New York, NY 10010; (900) 535-4242 or (212) 475-5200 (in New York). — Russell Ito
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What’s Nu?

NuPaint, that’s what. A black-and-white paint program with some usual and unusual implementations. NuPaint’s shape and selection tools work predictably, but each shape tool can remember its own fill and pen-size setting. Selections can be freely rotated, skewed, distorted, or given perspective. Documents can only be in portrait orientation. A Revert Eraser converts the swept-over portion of your document to its last saved version.

New tools include a Mixing Bowl that jumbles pixels to soften edges and randomize patterns. The entire screen image can also be uniformly or randomly mixed. The Masking Tape tool defines an area whose inside or outside is temporarily protected from the effects of the spray can and sweeping transformations.

Shadows can be added to existing shapes by selecting the subject and defining the plane of the shadow. With this effect, you can simulate lighting from any direction. Fill patterns can be 8-x-8, 16-x-16, or 32-x-32 dots. NuPaint’s extensive fill pattern editing features include random dot placement, symmetry, shifting, and rotation.

Two unusual tools may save you some bit-fiddling. The Trowel repairs edges whose pixels may have been dislodged by distortion or reshaping. It scoops up stray dots and scoots them in the direction you push. The Razor removes loose clumps of dots with a specified cross section. It can be used to de-speckle an image or to de-fuzz distorted lines. Special Save options let you create high-resolution (150 to 300 dpi) paintings by dividing your document into 4 or 16 8-x-10-inch pages and letting you edit each as a separate page at 72 dpi. At printing time, NuPaint can automatically recombine the pages and scale the image (and its dots) to achieve high resolution.

NuPaint works on Mac 512KEs and on up. For all you future trowelers and shavers, the program sells for $139.95. Contact NuEquation, Inc. P.O. Box 516143, Dallas, TX 75251-6143; (214) 699-7747.

—Salvatore Parascandolo

Behold NuPaint’s unusual tool palette and its vast scrollable pattern palette. These images showcase the shadow, distortion, and mixing-bowl effects.

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Everybody talks about multimedia, Computer Friends was the first to do something about it. We are still the first to give you a complete, professional and integrated solution for your TV, print, animation and paint production requirements, at a price you can afford.

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Finally 300 dpi color printing in a compact, reliable and affordable thermal color printer. Produce beautiful color illustrations or instant color transparencies for your presentations.
Serial Multiplication

Many Mac owners have gotten to know their Mac's back panel a lot better than they ever wanted to. You'll see them yanking the cable out of that single Centronics RS-232 port only to jam another cable in— it's like watching someone juggle a toaster, a coffee maker, and a blender in a kitchen with one socket.

For those who've grown tired of looking at their Macintosh's backside, Method Systems has introduced the DataCaster, a configurable signal buffer/broadcaster that gives you eight RS-232 ports and lets you send the same signal to as many as seven devices simultaneously. And if you need to send your data through several DataCasters, you can increase the distance between units with MSI's Mini-Mux short haul multiplexer. The DataCaster lists for $345, the Mini-Mux for $395. So to stop working Mac backwards, contact Method Systems at 3511 Lost Nation Road, Willoughby, OH 44094; (800) 533-6116.

—Russell Ito

Tidal Waves

Are you putting out to sea? Planning a fishing trip? Do you want to know the best time to visit the tide pools? If you answer yes to one of these questions, you might want to consult Tide Guide '89 from Zihua.

Tide Guide is a DA that predicts tides at 14 locations by the harmonic method. Previous tides and the influence of moon, sun, and planet orbits are studied to make future projections.

A tide graph for either a day or a week is displayed on-screen for the location and date of your choice. Options include standard or daylight saving time, horizontal (time) and/or vertical (feet) axes, and a 12- or 24-hour time line. You may choose to display the moon phase; shaded nighttime hours and time of sunrise and sunset; and color patterns for sunrise, sunset, and the moon (no, it won't bring color to your black-and-white screen). All these options are available in a dialog box under the Tide Guide menu.

Order Tide Guide '89 or Tide Guide '90 (if you like to plan ahead) for $19.95 each (California residents add sales tax) from Zihua, P.O. Box 51601, Pacific Grove, CA 93950; (408) 372-0155.

—Laura Johnson

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Speed is a silly thing. You know how fast you're going only by how fast you used to be, and whatever your speed is, it's never as fast as you wanted it to be. So go figure.

And in the meantime, you might consider the Accelerator II, a 33-MHz 030 accelerator for the Mac II from DayStar Digital.

The Accelerator II is actually a pair of connected boards, one of which houses a 32K cache of 25-nanosecond static RAM, while the other carries a 68030 processor. To round out the package, DayStar also offers an optional 68882 math coprocessor, although the company says that its system will work fine with the Mac II's standard 16-MHz 68881 coprocessor.

The price of this speeding ticket is $6,000, plus an additional $1,000 for the optional 68882 math coprocessor.

You can catch up with DayStar Digital at 5556 Atlanta Highway, Flowery Branch, GA 30542; (404) 967-2077.

— Russell Ito

Mini Scan

Scanners are becoming as common as printers these days, and that means working space is becoming as scarce as $200 SIMMs.

To help reclaim some of that precious territory, Microtek Lab is introducing a new line of smaller and cheaper scanners for original equipment manufacturers.

The first model in the line is the MS-II, a 64-shade, gray-scale, sheetfed unit that's approximately half the size of the average flatbed scanner. A 50-page-document feeder is built-in, and users can select from 196 brightness and contrast settings and 12 halftone patterns. The MS-II's resolution is adjustable from 76 to 300 dots per inch (dpi), and images can be scaled from 25 to 100 percent in 16 increments of 5 percent each.

The MS-II will be available only to OEM vendors, and Microtek's pricing will depend on the number of units purchased. To find out more about the MS-II, contact Microtek Lab, 16901 S. Western Ave., Gardena, CA 90247; (213) 321-3131.

— Russell Ito

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PC Tools/Mac.
Now that we've told you how to upgrade your memory, here’s a ripple: When is a SIMM (yes, those single in-line memory modules that the world is so short of) not a SIMM? Well, if it doesn’t work in your Mac, it might as well not be one. And the new 4-megabyte RAM SIMMs that are starting to become available won’t work in a Mac Plus, SE, or II.

Why not? Simple. Apple walked out of a SIMM standards meeting some time ago. A standard was adopted. Apple didn’t follow it. Is there a solution? You bet there is. It’s called a new logic board.

Do you think Apple is going to give it to you free? Do you think your dealer will install it free?

The current clip-art boomlet will continue unabated. There’s an enormous amount of clip art now available, and it sells remarkably well. Once use of the new small scanners becomes widespread, look for lots more clip art. Scanners seem to be the seed from which clip art publishers grow.

On the subject of scanners, the market for these popular peripherals (the modem of 1989?) is rapidly expanding in two directions. There are several new small models (as alluded to above), capable (in general) of recording 64 gray levels. Some of them feature resolutions as high as 600 dots per inch (dpi), while all can achieve at least 300 dpi. None can scan in color (well, what do you expect at the tiny prices asked?), and several don’t even have bundled software! You provide your own drivers and other software. That might save you some money if all you plan to do is run an optical character recognition (OCR) program like OmniPage or TextPert that comes with all the necessary software. (But if you can afford one of those programs, you can afford a better scanner. But I digress.) Beware the hand-held units. Few people have hands steady enough to achieve 200-dpi resolution. And be leery of units that don’t provide any software. Many a manufacturer has tried and failed to get software.

The second new direction in the scanner market is the trend toward very-large-bed, full-color scanners. The prototype we saw had a 30-x-40-inch bed and could scan 256 colors. The manufacturer hopes to offer an option that will scan up to 4,096 colors. No one was willing to talk price, but we were told they would take a Ferrari in an even-up trade—a new Ferrari.

We now have low-end word processors (like MacWrite, MoonRaker, and WriteNow) and high-end word processors (like Word, If you missed MacUser Labs’ color

If E-Machines told you the T16 color Macintosh monitor set the standard to which all others aspire, you’d probably think we were tooting our own horn.

But what would you think if we told you MacUser Labs made the T16 the standard bearer? It’s true. Of the 25 color monitors they tested, MacUser Labs scaled their ratings of all the monitors against the best monitor—the T16.

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You can put a little color in the cheeks of your company president next time you produce the newsletter. Or use color to distinguish multiple layers and objects in CAD drawings. Or create charts to transform complex numbers into easily understood color graphs.

Whatever you do on your Macintosh, you’ll do it more productively with a T16.
FullWrite, and WordPerfect). That leaves a gap in the marketplace. There is no middle-of-the-road Mac word processor. Several large software houses have noted this “window of opportunity,” and efforts to be the first in the middle are now reaching fever pace. You might even see some results later this year, but remember that the average gestation time for a Mac word processor is nearly two years.

There’s a scandal brewing in the hard disk industry much like the famous Chevy-engine-in-a-Cadillac brouhaha that rocked General Motors a few years ago. If you forgot what happened there, GM was selling premium cars at premium prices with engines from cheaper lines. What’s happening with hard disks is similar. A new model is introduced and is touted as having a well-known, highly regarded, very reliable, and very expensive HDA (hard-disk assembly — the actual guts of a hard disk). Several months down the road, a cheaper HDA (often made overseas) is substituted without any fanfare and without any price reduction. And you wind up buying something inferior to what you think you just paid for. You should ask your hard-disk dealer exactly what HDA is in each hard disk you buy.

The Tandy/Radio Shack Macintosh II clone project is still alive and kicking. Reports of its death were premature. It was on hold for a while until Tandy could be sure that Apple intended to produce Macintosh II-type machines for a few more years. After all, there’s no point in building a clone only to discover that the original has mutated to an entirely different and possibly incompatible form. By the way, the prototype Tandy units can use 4-megabyte SIMMs.

Have you heard any good rumors recently? Started any yourself that you’d like to take credit for? Can you share your “knowledge” with us? Does your legal department agree? Will you share anyway? If we use your rumor we’ll send you a token of our appreciation and promise not to use your name. Anonymous contributions also accepted.

Our old-fashioned mailing address is Rumor Manager, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. Our electronic addresses are MacUser (on MCI Mail), 74206.204 (on CompuServe), and X0259 (on AppleLink). No calls please; the Rumor Manager has an unlisted number and much prefers it that way.

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**As with other E-Machines models, the T19 screen image is very sharp and has excellent color quality and gray purity. Image quality is comparable to the T16, and for those who want a larger screen, the T19 is the way to go. E-Machines has once again produced a winner in the color monitor market.**

**72 hertz eliminates flicker.**

Try staring into a 19-inch monitor with a 60 hertz refresh rate for an 8-hour day. You’ll be watching a constantly throbbing screen, and your eyes will feel like they put in a 24-hour day. Not exactly conducive to getting things done. The T19 has the fastest available refresh rate of 72 Hz. Now that’s refreshing.

Even more refreshing, the T16 and T19 are the only color monitors certified to comply with ANSI Human Factors Specification 100.

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**We’d like to color your thinking.**

Of course we would—but you should decide for yourself if the T16 and T19 are as good as MacUser thinks. Go see one and conduct your own review. For details, write E-Machines at 9305 SW Gemini Drive, Beaverton, OR 97005 or call us direct for your nearest dealer: 1-503-646-6699.

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Introducing MarkUp, Workgroup Editing & Review Software

It's ironic that documents created with hi-tech efficiency revert to archaic methods for review: lots of paper, red pencils, scribbles, mail delays and wasted time. Now there's real improvement for group editing, review and approval — MarkUp.

Here's how it works: print an image of a Macintosh document to disk from any application with MarkUp Document Creator. Publish it electronically to a workgroup for review.

Group members don't even need the creating application, just MarkUp. Reviewers work simultaneously — on a network or by transferring files — making comments on transparent overlays of the MarkUp document. MarkUp provides tools to rewrite, annotate, highlight, strike out, correct, manage and approve documents of all types. It even keeps a journal and status of editing activity.

When review is completed, use MarkUp's powerful merge feature to combine a group's comments and print the annotated document as a basis to rework the original. Better yet, open the original document next to the MarkUp document with MultiFinder and copy changes directly.

Real productivity improvement means working better — together! Whether your group numbers two or twenty-two, you'll produce higher quality documents in much less time. Reduce paper traffic, meetings and travel. Use MarkUp for reports, drawings, letters, spreadsheets and proposals.

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GraphistPaint II

GraphistPaint II is a paint program of a different color. Able to import a variety of file formats and armed with some interesting special effects, GraphistPaint II might, despite a cumbersome painting environment, find its niche combining and retouching graphic documents. Built with image processing in mind, GraphistPaint looks for Data Translation's Quick-Capture video digitizing card when launched. If found, the Digitize command in the File menu is activated, letting you grab video images and open them directly in GraphistPaint.

A "stencil" beneath the document layer is the major feature that sets GraphistPaint II apart. The stencil can be used as a guide, letting you display construction lines that will not appear in the finished work. Or, since selections can be transferred to and from the document, the stencil can serve as a library area, holding working shapes and brushes. But most importantly, the stencil can hold an entire image. One use would be to keep a copy of the working document for quick restoration should your editing go awry, like the Snapshot feature in MacPaint 2.0. Another use would be to combine separate images.

GraphistPaint can read Paint, PICT, TIFF, and IRIS files. The manual claims PixelPaint files can be opened with 5-megabyte Macs, but that option remained dimmed on my machine. Aha suggests trimming the System file to free up memory. Some export options were also not implemented in this version. (Support of raster image file format, or RIFF, mentioned on the package could not be licensed.) Images may be opened normally, superimposed on the working document, or imported into the stencil layer. By toggling it forward, you can edit an image in the stencil. Since stencils exist only in memory, they'll be lost when the document is closed. However, they may be saved as standard files, and since documents and stencils share coordinates, reopened works in progress will remain aligned.

Images in the stencil can be incorporated into the document — seemingly from within. The Incrustation feature lets you paint the stencil (with brushes, paint bucket, filled shapes, and text) into the working document. Incrustation also works by color. One option limits it to only targeted pixels; another selects which pixels from the stencil will incrust the document.

Unique among color paint applications, GraphistPaint II supports 16 "ink" modes, which determine the final effect when two or more graphic elements overlap. The eight logical modes (Copy, Or, Xor, Bic, and their four inverses) should be familiar to most Mac users. The eight arithmetic modes (additive, subtractive, on lighter, on darker, blend, white transparent, and additive or subtractive cyclic) are new. These modes operate on the numerical values of the color pixels to calculate the new colors. The results of these calculations will be limited by the status of the current palette. If the resulting color is not in the palette, the nearest available shade will be substituted.

Six paintbrushes form the core of GraphistPaint's retouching tools. The round and square brushes paint with the current pattern in sizes from 1 to 125 pixels. (Brush sizing is global — it also affects the line tool, spray can, and the borders of shapes.) The paintbrush
Quick Clicks

GraphistPaint II holds a collection of ten (nine preset, one user-defined) brushes. The anti-aliasing brush works in color to smooth jaggies and may be adjusted for size (1 to 16 pixels) and transparency (the degree of blending). The polybrush (a user-defined filled polygon) and pixel brush (which paints with the last image placed in the stencil) complete the array. Colors may also be smoothed with the diffusing action of the water drop.

Unfortunately, the full impact of these features is undermined by details that are less well thought out. For example, three selection tools (rectangle, lasso, and polygon) would seem to have all bases covered. But none of them can be adjusted to cinch down onto an object when you release the mouse button, limiting your ability to select with precision. As a consequence, it can be difficult to apply visual effects (like smooth or blur) to specific locations. Further, areas defined with the lasso and polygon are nonetheless selected with an accompanying rectangle when transferred to the Clipboard or when dynamic effects (distort, flip, rotate, and spherize) are applied.

GraphistPaint II also has a nonstandard implementation of pasting. Any image transferred through the Clipboard is pasted at the top-left corner of the stencil and automatically selected as a pixel brush. (Odd-shaped selections are pasted with a surrounding white bounding rectangle that will mar the document when the selection is applied to the document with the pixel brush. Aba suggests using the White Transparent mode as a remedy.) The advantages are quick duplication and the ability to paint with the pasted image. However, these are outweighed by the potential damage to unsaved stencils.

Using GraphistPaint's palette is also less than intuitive. For example, to create a filled shape with a contrasting border, you must drag across the palette: the first color for the border, the last for the fill. If the desired fill color is to the left of the border color on the palette, the combination cannot be produced. Dragging the palette only works in one direction.

Colors for gradients are selected in the same way, making palette organization even more important. GraphistPaint II has several options for building color gradations and shading effects, but to access them you must set parameters in one menu (Shadings dialog box, Edit menu) and turn them on in another (Shade on the Effects menu).

GraphistPaint II is not terribly forgiving. Even with a substantial allocation of RAM, undo capabilities are limited. Some functions cannot be undone at all. Others, like rotations or distortions, can be undone if you click to check the results of the action. Worst of all, if you hold down the Option key and copy an area, move the duplicated area and delete it while it's still selected, it leaves a rectangular hole in the document — this action also can't be undone.

These considerations mean GraphistPaint II won't be your first choice if you need to create an image. Though this version will not suit everyone or, for that matter, every job, GraphistPaint II's strong importation capabilities and the stencil's power to combine pictures are useful features.

— Carlos Martinez

[At press time, Aba Software had suspended operation; a new distributor has not yet been announced. — Ed.]

GraphistPaint II

List Price: $495
Published by: Aba Software, 41 Great Valley Parkway, Malvern, PA 19355; (800) 234-0230.
Version: 1.0
Requires: Mac II with 2 megabytes of RAM (4 or 5 megabytes recommended), 8-bit color board, and hard disk.
Compatibility: MultiFinder friendly with enough memory.
Application Size: 156K
Copy Protection: None
**H A R D W A R E**

**WriteMove**

GCC Technologies' WriteMove is the smallest, lightest Macintosh printer available. This unit is based on the proven and popular Kodak/Diconix 150 portable ink-jet printer. GCC provides a version of the printer modified so that it can produce 192-dot-per-inch (dpi) resolution (twice its normal resolution), a Chooser-selectable driver, special fonts, the necessary cable, and a power adapter.

It's very hard not to be impressed with the WriteMove's tiny size. It's cute. And once you get it going, you'll be very impressed by its extremely low noise level. The sound of the paper moving is often all you can hear.

Ink-jet printers have both advantages and disadvantages. Ink-jet printers are basically very simple and very reliable, and their ink reservoir and print head are a small, easily replaceable unit ($11.95 list, with a street price of about $8.75). That's the plus side.

Getting consistently good results is difficult. The papers that work best (special coated ink-jet paper and 25-percent rag bond) are expensive. The ink-jet paper has a hard, slick surface, and I find it unpleasant to work with. You need to experiment to find the ink (either plain or a special ink-jet formula) and paper that produce the results you prefer.

The ink and print-head cartridges are rated to print 100 high-quality pages at 192 dpi or 400 pages at 96 dpi per cartridge. Those ratings are conservative. If you print mostly text, you'll get much better performance.

WriteMove prints at about the speed of an ImageWriter in high-quality mode. Draft mode is about four times faster. Since WriteMove creates font images in your Mac before it prints, however, there's often a time lag of 30 to 60 seconds before printing actually commences.

WriteMove needs a lot of disk space to create an image file. That means you can't print some documents immediately if you're using a 1-megabyte machine or if MultiFinder is active. In either of those cases, the image document will be saved and can be printed later when more memory is available.

The quality of the printing varies incredibly depending on the paper and ink used. Your choice of font also affects final quality. Some test results were surprising. For example, using ink-jet ink and very expensive (7 cents per sheet plus) ink-jet paper resulted in overly dark text and graphics with grays that printed nearly solid black. Cheaper paper worked better in this case.

However, that doesn't mean that very cheap, ordinary printer paper works well. It doesn't, and you shouldn't waste time with it. Also stay away from draft mode except for very rough working drafts. Draft quality is not impressive.

WriteMove comes with a good, basic selection of Bitstream fonts. These outline fonts are optimized for GCC's 300-dpi Personal LaserPrinter and sometimes don't work perfectly at 192 dpi. Additional fonts are available from GCC.

Setting up the printer is very easy, particularly if you plan to use the power adapter rather than the batteries. I found that paper fed better when I put the printer on a thick book, lifting it an inch or two off the table surface.

Your best bet is to use fanfold paper. Trying to get consistent alignment in manual feed mode is very frustrating (and nearly impossible). WriteMove can handle paper up to 8.5 inches wide and as small as 6 inches wide by 5 inches long. Regular business envelopes are too wide to be fed normally through the WriteMove. They must be inserted end first.

Unfortunately, the cable supplied is too short. It's only about 3 feet long. The manual says that you must use this cable and doesn't provide pin-out charts to enable you to build or buy a longer one. My normal printer position is about 10 feet from my Mac. Obviously the WriteMove couldn't go there. I had some trouble finding a clear space close enough to my Mac, so I finally resorted to putting the WriteMove on a chair next to my desk. Good thing it's so quiet.

I really wanted to like this printer. Actually I really wanted to love it. It's quiet and it's tiny. But it's also very frustrating. The longer I used it, the less I liked it.

Don't use the batteries unless you absolutely have to. WriteMove requires NiCad cells, which are expensive and require special rechargers. Since you can't (yet) use your Mac without having an electrical outlet handy, carry the power adapter. It's...
A recent tracking study performed by Numerical Understanding Methods Bureau, Inc. has determined that constant and prolonged exposure to spreadsheets output may result in cases of extreme drowsiness and lethargy. Contributing factors have been numbers with no context, lack of graphic elements, and limited abilities in the treatment of text.

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Full Impact is a spreadsheet program designed expressly for the Macintosh that goes beyond the basic number-crunching capabilities of Microsoft Excel: it gives you the ability to easily turn your work into clean, crisp—and understandable—documents.

How? By letting you take full advantage of the way you're already used to working on the Macintosh.

Start by simply entering your data. Then, select all or part of it, and instantly create a chart using those values—simply by clicking on the appropriate chart icon from the icon bar.

Need to write some text explaining your analysis? And highlight certain passages? Full Impact's text editor gives you plenty of fonts, sizes, and styles to choose from.

What if that block of text would look better somewhere else? Fine. Just click on it, and drag it there. You can even bring in art from other programs, then merge it with your text and data, all on the same page.

But lest you get the impression that Full Impact is merely a presentation program disguised as a spreadsheet, consider this: with over half a million usable cells (far more than any other Macintosh spreadsheet), Full Impact gives you more than enough room to handle even the largest projects. And more than enough speed to recalculate them quickly.

You can work with as many as eight spreadsheets simultaneously. And then link them all together. Or create powerful, time-saving macros, and even customizable icons to tie them to.

You can also exchange files with many other popular programs, including Excel and Microsoft Works, Lotus 1-2-3, all of Ashton-Tate's dBASE® products, and much more. So you won't lose your investment in your current data.

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MacIntosh

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Virex is the first comprehensive solution to the threat of Macintosh computer viruses. Virex is unique among anti-viral programs because it both DETECTS the presence of computer viruses AND REPAIRS application and system programs on files, disks and servers.

Virex was written and is updated by Robert Woodhead, the author of Interferon and a leading authority on computer viruses.

Virex uses a simple icon-driven interface. You just select a file or disk, click the diagnose or repair icon and let Virex do its work. A comment window tells you what Virex finds. Help is always on-line.

Virex combats all known Macintosh viruses including Scores, nVIR, Hprat and INIT29. HJC Software plans to update Virex if and when new viruses occur.

Virex runs on the Plus, SE and II, with a minimum single disk drive.

I really wanted to like this printer. Actually I really wanted to love it. It's quiet and it's so tiny. But it's also very frustrating. The longer I used it, the less I liked it. I think that ink-jet printers have a good future with the Mac, and WriteMove is a good first effort, but unless you have to travel with a printer frequently, I advise waiting for the next model and some better fonts.

— Steven Bobker

WriteMove

WriteMove's printing ability is not obvious from a photo. How good a job can something so tiny do? Very good, if you can find the right combination of paper, ink, and fonts.

WriteMove

List Price: $699
Manufactured by: GCC Technologies, 580 Winter St., Cambridge, MA 02154; (617) 890-0880.
Version: 1.0
Requires: A hard disk for practical use; works with Mac Plus, SE, SE/30, II, IIx.
Compatibility: Mac SE/30, Mac II, IIx, MultiFinder friendly.
Hardware Size: 10.8 inches wide, 5.5 inches deep, 2 inches high; 3 pounds without batteries, 3.75 pounds with batteries inserted. Power adapter is 2 x 3.5 x 1.75 inches, weighs under a pound, and has a 6-foot connector cable attached.
Software Size: Depends on which fonts are installed; can easily exceed 1.5 megabytes.
Copy Protection: None
Graphic Notes
Music Publisher

Graphic Notes’ Music Publisher 2.0 does for music notation what desktop publishing did for newsletters. This vastly improved and enhanced version has beautiful output. While it is not a sequencer, it does support full MIDI playback of what is written on-screen through whatever synthesizers or MIDI instruments you may have.

Because there have been so many new music programs introduced recently (see Paul Lehrman’s article, “The Write Staff,” October ’88), there is a tendency among musicians to want to compare one with another in trying to decide which is best for them. I would say that the closest comparison would be with Mark of the Unicorn’s Professional Composer, another high-end music notation and publication program that’s been out for some time now. There are two major differences between Music Publisher and Composer that are apparent immediately: page layout and ease of data entry. Page layout is of prime importance, and this is where Music Publisher shines — it is page-oriented from the start. At last, a music program that lets you decide how the music will be laid out!

The first thing you see after launching the program is a Publication Format dialog box, asking you to define the page size you want to work with. There are three default sizes: A4, US Letter, and Classical, as well as a Custom option. You are then presented with a blank page with the margins shown in dotted lines and rulers on the top and left side, with ruler guides that correspond to the location of the mouse pointer. On the right side of the screen is a tool palette with 15 tools available — all the tools you’ll need to create your document.

Sound familiar? It should if you’ve ever used Ready, Set, Go! or any other page-makeup program. It is this consistency with other programs and the Mac interface in general that gives Music Publisher an edge on the competition. Choose the text tool to place a title and other information on the page; under the Type menu you’ll find all the familiar listings: font, size, style, and even leading and alignment.

Before you can put notes to screen, you’ll need to tell Music Publisher what kind of staff, or system, to use. The command Add a System produces a dialog box that allows you to pick from six predefined systems, such as Piano/Vocal or Melody, or one of your own that you might have created with the Custom System option. This is also where you get to pick the actual note size: small, standard, large, or big note. Next, put in the bar lines where you want them with the Bar Line tool. If you don’t like where a bar line is, you can grab it and move it. After the page is set up, it’s time to enter the music. Here’s where the other major improvement, ease of data entry, becomes apparent.

Music Publisher has a unique way of achieving note entry as well as avoiding copy protection, and the solution to both is the Presto keypad. This is an extra keypad, about half the size of the regular Mac keyboard, that is included with the program. It is an ingenious solution to the problem of copy protection: You can make all of the copies of Music Publisher you want, but without the Presto keypad, there is no way to get data onto the screen! With the Presto keypad, you can enter notes many times faster than before. It has four rows of keys that correspond to octaves, with the scales from left to right. You use your right hand to determine pitch using the Presto, and the left hand determines duration using the regular Mac keyboard. Graphic Notes even includes self-adhesive keycap stickers to place on your regular keyboard. I tried some informal tests and found that I was able to get music onto the screen eight to ten times faster with Composer. This is an important fact: If you’ve got a real deadline to meet with big money riding on the next downtown, you don’t have the time to enter music slowly. If it’s faster to do it by hand, why use a computer? Note entry with the Presto is just as fast as entering the music by hand — in some cases faster.

Music Publisher uses its own screen and printer font called Repertoire and is in every way compatible with PostScript. That means that all screen objects can be manipulated, as in page-makeup programs. Don’t like where the crescendo is? Pick it up and move it. Dynamic marking not quite right? Grab it and move it as well. Slurs and ties are no problem. Music Publisher uses true Bezier curves with handles in the middle as well as on either end. There are automatic ways to tie notes together, as well as a few options for automatic beaming of notes. Triplets and tuplets can be defined and activated with just a few keystrokes. Measure numbers can be added with your choice of font and size, and pick-up or odd time bars are no problem. If the notes start to look too close to each other or jumbled, which can happen on occasion, use the Custom Note Spacing option to take care of it — try the ratio of 89 to 35 and watch the result as everything proportions itself perfectly.

Putting lyrics to music, the bane of
AutoCAD® on the Mac®: A new window of opportunity opens.
AutoCAD, the world-standard CAD software, now runs on your Macintosh® II.

Your designs reflect the quality of your thinking. And your drawings reflect the quality of your designs. Put AutoCAD on your Mac II and nothing gets lost in the translation.

AutoCAD's extensive set of drawing tools enhances your productivity. Its effectiveness is proven every day by over 175,000 architectural, civil, construction, aerospace, electrical, cartographic, facility, industrial, manufacturing and mechanical design professionals around the world.

AutoCAD has been refined through ten major upgrades. You get menus full of powerful, high-precision drawing and editing commands, numerous drawing entities, and a multitude of easy-to-use features. You can window, zoom, fillet, scale, layer, annotate and associatively dimension, hatch, stretch and scale. And a simple click can undo anything or everything.

AutoCAD on the Macintosh also supports the features that have made Apple the acknowledged leader in user interface design, offering pull-down, tear-off, and pop-up menus, complete support for Multifinder™ and the Mac windowing system, along with file dialog boxes to make access to your drawing files quick and easy. Clipboard support allows the transfer of AutoCAD drawings to a wide variety of Macintosh applications software.

A Better Perspective. AutoCAD is an advanced three-dimensional modeler that helps you solve design challenges on your Mac the way you would with physical prototypes. AutoCAD makes 3-D easy with user-defined construction planes, dynamic viewing and multiple viewports.

You can also model complex surfaces with AutoCAD using sophisticated tools such as tabulated cylinders, surfaces of revolution, ruled surfaces and Coons patches so you can represent surfaces accurately.

For even greater utility, AutoCAD provides entity handles that allow external applications to associate alphanumeric information, such as part numbers and capacity ratings, with graphical elements in the drawing. This associativity is creating an entirely new generation of useful third-party applications software.

A Reflection of You. AutoCAD is an open-architecture system including AutoLISP®, an embedded programming language that lets you program AutoCAD to reflect your way of doing things. Add your own menus to enter your own commands, write macros, develop custom symbols and drawing functions, or program standard procedures for document production and management.

Hundreds of third-party programmers have used AutoLISP to develop entire systems that make AutoCAD perfect for applications ranging from chemical engineering to technical publishing. Many of these programs run on the Mac II and more are on their way.

Maintain Your Standards. AutoCAD is the most extensively used, most broadly supported, widely taught design software in the world. AutoCAD is backed by over 1,400 highly-trained dealers and 150 Authorized Training Centers in 60 countries. We'll make sure you get what you expect from your CAD investment. That's what standards are all about.

Opportunity knocks just once. The CAD software you standardize on today will determine your productivity for years to come. To see a demonstration at the dealer nearest you, call Autodesk at 800/445-5415, extension 25, at your earliest opportunity.

AutoCAD makes Macintosh a standard player in CAD applications ranging from architecture to automated manufacturing. And AutoCAD is the standard for communication in the CAD world. AutoCAD's file portability allows seamless transfer of drawings and applications between different platforms and operating systems—without conversion to a generic format.

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each other so that one program can't cause another to crash and one that offers the applications hooks to use to attempt graceful shutdown instead of total failure. These kinds of capabilities must be designed into the architecture, and a lot of effort must go into making it a workable system. Apple should take the time to design this kind of long-overdue exception handling and reliability into its future operating systems.

Judging from the hints and leaks coming out of Apple, we know that we're in for some treats in the coming years. The Macintosh hasn't stopped by the snowy woods but is instead moving rapidly into the 1990s. The software and hardware wizards will be working long into the night to improve the Macintosh hardware and its operating system. By adding capabilities such as those proposed in this column, they'll have some additional miles to go before they sleep. I hope Apple takes the time and trouble to give business users the kind of system that they need.

Pinstripe Picks

Products worth looking at if you're using your Macintosh in business:

Silverserver (La Cie). Software that allows you to create file servers, remote file servers, and modem servers. Comes with Silverlining, an excellent disk partitioner. Definitely deserves a look if you have networked Macs.

QuarkStyle (Quark). Recognizing that desktop publishing does not suddenly make everyone a good designer, Quark has taken the technology of QuarkXPress and blended it with examples of good design to create a template-based publishing system. You lose only a little flexibility to ensure good-looking output.

Illustrator 88 (Adobe). If you haven't checked this one out yet, you're missing something. The people who invented PostScript have revised their popular PostScript drawing program to include capabilities such as color separations. Excellent for producing high-quality graphic output.
TAKE YOUR MACINTOSH TO THE HIGHEST POWER

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All LEGEND™ SCSI disk sub-systems come complete, pre-formatted and ready to run. All you need to do is mount the drive, select the SCSI ID*, and size the disk partitions (it's so easy with our universal onboard, comprehensive manual and SOFTWARE™ automatic configuration software).

To solve the integration problem, our 3½ internal disk sub-systems use a universal mounting system that fits Macintosh® II. Or one and two floppy disk Macintosh® SE systems (even with the expansion slot filled). And for those applications where higher capacity is required, we offer 64/80 Internal sub-systems for the Macintosh® II, with up to 325 Megabytes of formatted capacity!

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Another thorny problem, for those with failing eyesight such as myself, has been the difficulty associated with entering written-out chords. Placing the pointer on just the right line or space when there are already three or four notes on a stem can get tedious quickly, but here again the Presto keypad comes to the rescue. It has a Chord key; press it and all notes typed will be on the same stem until you hit the space bar to go to the next beat! You'll never know how you got along without this feature.

Music Publisher uses the concept of voices to achieve multiple parts on one staff (stems up and stems down) or on different staves. Each voice can be assigned its own MIDI channel, and this is how playback is achieved. The program also is capable of complete transposition by part or piece, either key-specific, by interval, or diatonic. Part extraction is also available, as is the ability to produce music examples for inclusion in books or other publications that require just a few measures of music and not a whole page. You can even make the staff lines disappear, leaving just the notes.

There's a lot to like here; the only drawback so far is the same one I've encountered in other music programs: screen speed. I use a standard Plus with 1 megabyte, and the bigger my document is, the more everything slows down. Don't even think of using this program without a hard disk. You can use it with floppy disks, but you wouldn't want to.

If you are a music copyist, arranger, songwriter, band leader, or choir director, or if you write music and play an instrument other than a keyboard (there are people who don't even own a synth, you know), this is the program you've been looking for. However, Graphic Notes promises that, by year's end, version 2.5 will be out and will be able to handle the new MIDI File Specification. If you're a synth whiz, version 2.5 will enable you to take a MIDI file created on your favorite sequencer and format it into a Music Publisher file ready for publication.

— Ken Gruberman

Graphic Notes Music Publisher

List Price: $595 (including Presto keypad).
Published by: Graphic Notes, Inc., 200 Seventh Ave., Santa Cruz, CA 95062; (800) 336-6683.
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HARDWARE

MacBottom HD-70 Hard Disk

The HD-70 is the latest in PCPC's long line of MacBottom external hard disks and it shares the same very small case that every other MacBottom hard disk has used. Its footprint is exactly that of the Mac Plus or SE, and its height (including the rubber feet) is approximately 2 1/4 inches. There are small indentations in the top to hold a Mac or another hard disk securely.

The front panel has a green power/activity light. It gets noticeably brighter with disk activity. The back panel contains the on/off switch, the power cord receptacle, a DB-25 SCSI connector (for chaining SCSI devices), and the built-in, 18-inch-long SCSI cable (which terminates in a standard male DB-25 SCSI connector — the SCSI connectors built into Macs are female DB-25 connectors). It’s nice having the cable already attached — there’s no question about a bad connection — but extending that cable, if you should want or need to, is a real pain. Also, having a female DB-25 connector as the extra port, rather than the more common 50-pin Centronics-type connector, can cause unnecessary cabling complications when hooking up additional SCSI devices.

The HD-70 is sturdily constructed. It has a plastic case with ventilation grills on the top and bottom, and a built-in fan. This fan will please you — it’s the quietest computer fan you’re ever likely to come across.

The hard-disk assembly (HDA) is made by Rodime (although that could change). It’s a standard half-height unit that is neither particularly fast nor slow. It is a reliable unit, used by many other hard-disk manufacturers.

The unit is terminated internally, so an external terminator is not required. Getting to the terminators (if it’s necessary to remove them) is not easy. The SCSI ID number is set with a mechanical switch on the bottom of the unit. The HD-70 comes preformatted, with a good selection of utility software on it. Units are shipped formatted with a 2:1 interleave, which is optimal for a stock SE. The manual suggests using that interleave for Pluses as well but suggests a 1:1 interleave if you’re using a Mac II or a 68020 accelerator board.

The HD-70 comes with the latest version of Apple’s System software, PCPC’s Floppy Copy, HFS Backup, Eureka DA, LW SpoolInit and DA (for the LaserWriter), and SpoolInit and DA (for the ImageWriter). The System software is standard issue and includes Font/DA Mover so you can install the three DAs provided. Floppy Copy is a very fast and efficient disk copier. It has no copy-protection—removal functions. And it requires that the HD-70 be formatted with a special area (approximately 2 megabytes) reserved for it and the spoolers (all units are shipped with spooler and copy space already configured).

HFS Backup is one of the finest backup programs available. The version shipping with the HD-70 (version 2.02) is fast and versatile. However, it’s a fairly old program and can no longer be considered state-of-the-art (those honors go to Redux and Disk-Fit). Eureka is a small file-locating DA. It uses highly optimized search techniques and is much faster and better than Apple’s similar Find File DA.

Two spoolers are provided, one for the ImageWriter and one for the LaserWriter. They both consist of two parts, an INIT and a control DA. Both can be installed if you have both types of printers available. These are good, but not great, spoolers.

The manager software of the HD-70, SCSI Tools, can reformat at the interleave of your choice. The manager is a very powerful tool and can do damage if you don’t know exactly what you’re doing. But don’t worry; the functions of the SCSI Tools are well explained in the manual, and excellent technical support is available (no 800 number, though). SCSI Tools can perform a wide range of diagnostic tests, provide lots of information about your hard disk, and do any necessary formatting and initialization chores.

Dangerous activities require that you enter a code, which you can get only by calling PCPC Tech Support. They’ll stay on the phone with you and walk you through the procedures.

A 300/1,200-baud Hayes-compatible modem is available as a factory-installed option for $200. It’s worth considering if you frequently travel with your hard disk and require a modem for communications.

Two manuals are provided, one for the hard disk and most of the software and the other for HFS Backup. Both are adequate, although the hard-disk manual should be updated. Still, you should find all the information you need in them.

Why should you buy a fairly expensive hard disk like the HD-70, especially when you can get units of similar capacity (even using the same HDA) for much less? Reliability is one good reason. PCPC has been making hard disks of this basic design for a long time. They hold up well. And if something goes wrong, the Tech Support department is superb. It’s also reassuring to deal with an established hard-disk manufacturer. The final reason is aesthetic — the HD-70 is deadly quiet. If it didn’t have a power/activity light, you wouldn’t even know it was on.

— Mal Emmett
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MU 489
RoundUp is a utility program that searches your files for a specified text string. It can search MacWrite, Word, WriteNow, Ready,Set,Go!, MORE, and all other text files. It does that.

Unfortunately, that’s the only good thing I can say about RoundUp. It’s a slow, awkward, overpriced performer. It also won’t work on a Mac II or on a Plus or SE equipped with a 68020-based accelerator. It works for a few matches and then freezes if a 68020 is in use.

The program is presented very oddly. It’s written in a language called APL.68000. That’s not necessarily a problem, but you don’t get a compiled application. You get an actual copy of APL.68000 and a document called RoundUp! That means that when you run RoundUp you’re running an interpreted program. Such programs are inherently slower than normal, compiled applications. And RoundUp sure is slow. Another problem with the language/document combination is that it takes a few more steps to launch RoundUp if you normally work from something other than the Finder.

The interface is crude and ugly. Whenever RoundUp finds a match (or hit), it stops and forces you to take action to move on. It doesn’t keep a list of hits, so you have to sit and pay attention to what it is doing. That can take a while. The actual search speed depends on the type of files being searched, with text files being searched fastest and heavily formatted files, such as MacWrite documents, being searched slowest. Maximum search speed appears to be about half a megabyte per minute, which is less than half as fast as competing programs.

RoundUp works under MultiFinder, but you have to remember to keep checking RoundUp. It doesn’t run in the background when MultiFinder is off (all of the competing programs do).

As a test, I started RoundUp on a search for a short string. A few seconds later I started the Locate DA (included in Central Point Software’s Copy II for the Macintosh, Quick-Clicked in March) on a search for the same string (operating in its background mode). All went well for a few minutes until, apparently, both programs tried to search the same program at the same time. Since neither appears to use the file system in a normal manner, the result was a system crash. This was an abnormal use of both programs (I wanted to compare their searching speeds head to head). However, RoundUp never crashed while running as intended on a 68000-based machine.

The short manual adequately covers the few features of the program. However, its appearance is as inelegant as the rest of the package.

Searching all your files for a specific string sounds like a great idea. For most of you, the idea is more useful than the reality. And, once you discover the slowness of all the text-searching programs (of which RoundUp is the slowest), you won’t search that often. But if you really do want text-string-searching capability, get either Microlytics’ GOfer (the quickest, most elegant, and most versatile program) or Locate (part of Copy II for the Macintosh). Locate is nearly as fast as GOfer, can search filenames as well, and offers the most for the least money. GOfer and Locate are both DAs that work in the background regardless of whether MultiFinder is on or not.

There’s no reason to get RoundUp.

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**QuickLetter**

Working Software has an enviable software publishing record. Its previous offerings, Spellswell, Lookup, and Findswell, have been top rated. These products were brilliantly designed, nearly flawlessly implemented, and marketed well. Working Software's newest product, QuickLetter, continues that string.

QuickLetter is a DA for creating letters and envelopes. It doesn't pretend to be a full-blown word processor, and it isn't. It is a very nice letter-and memo-writing tool with some features that put much larger word processors to shame.

The basic QuickLetter window is the equivalent of your letterhead. It can contain your logo or any other graphics desired. You enter text using standard Mac text-editing commands.

Each writing window has its own menu bar and a well-designed, very useful ruler. You have full control over font, point size, and style. Left and decimal tabs are provided, as well as left, right, centered, and fully justified text positioning. Line spacing is possible in increments of a half line; the allowable range is 1 to 9.5 lines. About the only thing you can't have is multiple rulers. That means to set, say, the date flush right in material that is otherwise all flush left, you have to use a decimal tab. Tabbing to position various elements in your letters soon becomes second nature.

QuickLetter can read its own documents, special QuickLetter Stationery documents, MacWrite documents, and ordinary text documents.

QuickLetter Stationery consists of special read-only documents. These are style templates, and you can have as many of them as you want. One Stationery document can be designated as the default document that appears whenever you request a new document. This system works well — all low-level word processors should have a similar system (but most don't).

There's a small eye icon near the upper-right corner of the screen. Click on it to go to Preview mode. Normally, text appears centered vertically in Preview, but you can move it anywhere on the page you want by clicking on it and dragging. Again, very nice. The Print Picture check box is a very thoughtful feature. It lets you see the exact area your letterhead logo uses, so you can properly position the text. QuickLetter doesn't print the graphics unless you tell it to (by clicking a check box), so you can use preprinted letterhead.

That brings up one of QuickLetter's real drawbacks. Your graphic is placed in the top-left corner of the page and can't be moved at all. If your letterhead includes material at the bottom of the page, you need to create a page-sized graphic for it. This works since your text can be placed over a graphic, but it's an awkward solution. And entering a logo takes some real trial and error.

QuickLetter also does envelopes. In fact, it has the best envelope addresser and printer in any word processor, bar none. The easiest way to get to the envelope function is to hold down Option and click on the Preview eye. If a name and address in your letter are selected, they're automatically pasted into the address area of the envelope.

Envelopes can have graphic or text return addresses, and two special message areas (either graphics or text) are available, one at the top center and one at the lower left. These areas have fixed positions; they'd be more useful if they could be moved.

The Address Book, a powerful name, address, and phone number database, can also be useful for your letters and envelopes. The program can take any name and address information it needs from this one master file, selecting, for example, only addresses and not phone numbers for salutations. It has a fast, effective search function. You can import data into the Address Book if the data is set up as a tab-delimited file with the right fields. The process is clearly explained in the manual.

The only part of QuickLetter that disappointed me was the manual. From little things like not having a title page to more important matters like not going into real detail on printing envelopes, it doesn't match the quality of the rest of the package. Still, QuickLetter is so well designed that the manual is rarely necessary.

Overall performance is excellent. Writing can be slow if there are large graphic areas, but graphics can be turned off temporarily to speed things up. Printing letters caused no problems on either a LaserWriter or ImageWriter, but printing envelopes on the ImageWriter took some practice. The LaserWriter printed envelopes perfectly.

QuickLetter has quickly earned a place on my most-used DAs list. In particular, I use its envelope creation and printing abilities several times a day. It's a slick piece of work.

— Steven Bobker
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POWER2 EXPAND!
When I waxed somewhat euphoric over Apple’s Knowledge Navigator in my January column, I naively assumed—if I thought of it at all—that other opinion was divided between “Where can I get one?” and “Who cares?” Who’d have thought there’d be people who view this yet-nonexistent device and its kin as something like Friday the 13th, Part XII: Freddy Gets a HAL 9000. I was wrong.

There is apparently a large group of people who have taken it as their charter to view new technological developments with, if not alarm, then at least a jaundiced eye. And, to be fair, what I know about the November 1988 Stanford meeting of Computer Professionals for Social Responsibility, at which the Knowledge Navigator came under fire, I learned from two articles on the front page vaguely recalled papers by other people, and nifty graphics. The Computer Professionals don’t like the way our wayward prof does all this without necessarily reading any of it himself. He lets the machine do it.

I would like to offer a rebuttal to both the broad and specific issues.

Every new technology comes with the potential for misuse: ask the gentlemen from the Manhattan Project or the first casualty of gunpowder. The real problem, however, lies in the human rather than the technological element. And until further notice, we can’t get away from that state of affairs. What we can do is take steps to limit the potential negative impact as best we can. If you want to see the result of what blaming the technology itself can do, I recommend A Canticle for Leibowitz by Walter M. Miller, Jr.

The group seems to have two main objections/reservations/fears: One is the feeling that this kind of technology has the potential for misuse by everyone from the government to telemarketers. This is the invasion-of-privacy issue. Humanlike telemarketers, for instance, without (I quote the Merc here) “true ethics or value systems,” will be ringing up all the time, trying to sell you things you didn’t even know existed.

The other objection is to the professor’s own (presumably unethical) approach to putting together a lecture. The Knowledge Navigator does yeoman’s duty pulling up hard data.

As for the evil electronic telemarketers, they are already with us. They visit my answering machine on a regular basis; their machine talks to my machine. The only new drawback I can see to the computer version is that I’d have to look at them as well as listen. At that, I’d prefer them to TV evangelists.

And after six years as a graduate student, I can reliably tell you that professors who personally research every point of their lectures and read everything in their field are a mythical breed. In the first place, there are few fields in which any one person could keep up unaided. That’s one of the reasons we invented computers and databases. In the second place, hell, a significant number of tenured professors don’t even bother to give their own lectures. The ideal against which the Apple professor fails exists rarely, if ever.

While I find these particular arguments (as reported by the Merc) silly, the Computer Professionals for Social Responsibility are on the money in terms of what I take to be their broader purpose. The history of technology supplies ample reason for keeping a suspicious eye on new developments—and not just in the computer field. On the other hand, human history generally demonstrates the futility of fighting extremes with extremes. Why, I can remember (she says, tousling the rumpled curls of her grandchil-
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A couple of years, the best and most useful trade shows I've ever attended: well-timed; well-produced; large enough to achieve a critical mass of new ideas and new products; small enough that you can see and comprehend. By contrast, the August Macworld Expos in Boston are disjointed, sloppy, infuriating, crowded, badly produced in the wrong halls in the wrong corner of the country. But that doesn't mean a MACdex in parallel with Comdex is a better answer. Spring Comdex moves this year from Atlanta — where it had been dubbed "SwelterDex" — to Chicago's McCormick Place, one of the best trade-show facilities in the country. That may help some.

But grafting a mini-Comdex focused on the Macintosh onto the hind end of "the real thing" is still a dumb idea. It demeans the Mac market, misunderstands that market's needs, and seems unlikely to endure. Nearly every Mac vendor I've spoken with agrees. Too bad they won't speak up in public. [For another

Growing Pains

Readers often ask how I find so many things to write about. The truth, I confess, is just the opposite: Every time I sit down to write one of these essays, a dozen different ideas contend for this one small space. In the Mac universe it's a surplus of ideas we face, rather than a scarcity. This time, let me touch more briefly on several of the items bubbling to the top of this rich broth.

MACdex Is Coming

You may have read that Shelley Adelson, the promoter behind the Comdex series of personal computer trade shows, has announced that he'll be running a MACdex show concurrently with future Comdices. I may be alone in this, but I think MACdex is a terrible idea. Its existence confirms what has been clear to anyone who's strolled the aisles of the last four semianual Comdices: These shows are for IBM PCs and clones, with the Mac taking a seat way back in the bus. There is a lesson here about Mac dealers' and Mac users' and Mac buyers' interest in joining the 100,000 or so people who come to Las Vegas each winter and the 50,000 to 60,000 who come to Atlanta each spring to fight each other for cabs. It's silly for those principally interested in Mac hardware and software to subject themselves to the orgy of self-abuse that Comdex has become. And so they have been, in the comic's line, "staying away in droves." In part, Adelson's MACdex announcement is a reaction to the success of Mitch Hall's shows. In part, it's a natural grab for turf in the intensely competitive trade-show business. But in the largest part, it's a stellar example of simply not understanding a market.

The January Macworld Expos are elegant, useful, fun, and well-situated in San Francisco. They have been, over the past point of view, see this month's installment of The Macintosh Analyst by William Zachmann. — Ed.]

Psst: Wanna get rich? Become a Mac programmer. Actually, I've got that in the wrong tense. Because to make a potful of dough as a hired-gun Mac programmer, you should have become a Mac programmer a couple of years ago. Because right now the action in the market is for "experienced" Mac programmers, who are difficult to find and astonishingly expensive. I've spent a lot of time lately talking with software developers who tell me they'll pay almost anything to get a really solid Mac programmer into their shops. Where once making it big as a programmer meant writing some magical code, then selling or licensing that program to a Big-Time Software Publishing Firm — or starting your own company, making the program into a modest hit, then selling the whole company to aforesaid BTSPF — today the salaries being paid to skilled Mac programmers are so high they look like professional baseball salaries. Good Mac programmers can easily earn $60,000 to $75,000. Better ones hit $90,000. And a lot of very

Salaries being paid to skilled Mac programmers are so high they look like pro baseball salaries.

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good Mac programmers are earning well over $100,000 a year as employees of the big software shops.

Reality has set in at those places, and they’ve discovered that, as easy as the Mac is to use, it’s damned hard to write sophisticated programs for. Unlocking all the toolboxes and unearthing all the skeletons takes a long time. And there’s no easy conversion process from DOS or Cobol or UNIX or your name-it to the Mac world: It ain’t like nothin’ else. So those sky-high salaries are likely to continue. If I had a smart kid…. Take a look at the Sunday employment classifieds in the Boston Globe or the San Jose Mercury News or San Francisco’s Examiner or Chronicle. You’ll see some very big names in the software business in there wooing Mac programmers. You’ll also get to do a little tea-leaf reading, too, as you spot earnest ads from the likes of Ashton-Tate and (gasp!) Lotus, pledging their troth to the future of the Mac and offering some amazing deals.

**A Patch of Blue**

Speaking of wooing Mac software people, guess who’s also doing it in a big way? Big Blue, that’s who. (Try saying that three times fast.) IBM has a new “business unit” (IBMese for something larger than a department, smaller than a division, and slower than you’d believe) that is supposed to attract software developers to produce application programmers for the new Presentation Manager version of OS/2. That’s the graphic interface version of OS/2, a bastard relative of...
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Microsoft Windows. And where do you think IBM is going for Presentation Manager applications? Deep into the world of Mac software, that’s where.

IBMers active in this unit are remarkably candid about their goals. “The Mac people know how to write good graphics-interface software; they understand it,” one told me. “And besides, they’re doing the most interesting applications today, anyway.”

Ahem. Sounds like Willie Sutton when a reporter asked him why he robbed banks. Perplexed, he looked at the reporter and said, “Because that’s where the money is.” But almost without exception, Mac developers aren’t buying. To say that their reaction has been cool would be an understatement. They say there’s no market for Presentation Manager applications yet; that the growth in the installed base of IBM-style PCs powerful enough to run the resource-hungry Presentation Manager version will be slow for years to come; and that — in the end — they can’t afford the opportunity cost of diverting inherently scarce resources (read: those high-priced Mac programmers) away from developing for their bread-and-butter Macintosh marketplace.

Sounds as if John Sculley’s off-the-record saber rattling a few months ago, intended to discourage Mac developers from taking their Mac interface skills over to the IBM camp, did the job. Or maybe it was just the market: OS/2 still looks like a slow-burn/slow-build product — while the Mac market continues to explode.
Hints of things to come have been slipping out from Apple. John Sculley has been the primary leak, and, since he’s the boss, no one can complain. Sculley doesn’t always just hint, either; sometimes he minces no words. Like when he said that Apple will ship a laptop in 1989 but not in large quantities, and that the holdup has been finding an acceptable screen. Other Apple employees have also let some hints slip, although Apple employees as a group have gotten better at keeping secrets. Sometimes have been leaked on purpose, such as the fact that desk accessories will be disappearing (in their present form, anyway). These leaks help third-party developers plan for the future, at least in a limited way.

Wherever the leaks and hints come from, they paint a consistent picture of change. The Macintosh of tomorrow will be very different from the Macintosh of today. Part of the change will be because of technological advancement, with new hardware making new ways to do things feasible. Part of the change will be architectural, with improvements from the software and hardware wizards. And part of the change will be competitive reaction, with Apple and IBM/Microsoft trying to outdo each other in the operating-system power and elegance sweepstakes (this competition is what keeps Apple from doing more than just hinting at future directions).

All of this is good. The Macintosh will be made better and better, and Apple will drop enough hints to keep people tantalized and help its developers stay on course. But I’m afraid that Apple may move so fast in its efforts to keep up with technological changes that it will neglect some of the issues that are important to the business user. Most of these issues have been discussed in this column before, but I’ll cover them one more time in the hope that someone at Apple will recognize that there’s more to making an insanely great computer than speed and elegance. The Macintosh has come a long way in a few years, but in some areas it still has miles to go.

Security: The Macintosh is a very vulnerable computer and, since security is only as good as the weakest link, anyone with Macintoshes included in a network is exposed. People have made jokes about the IBM keylock, but it’s a simple system that works, and I don’t know many companies that don’t include it in their orders for PCs. Now that many Macs have internal hard disks, anyone can walk up to a Mac, turn it on, and have full access to its data. Using products like Timbuktu, they can have almost unlimited access to an entire network. A computer with little or no security is not acceptable to most companies. Apple needs to consider security at both the hardware level and the operating system level if it truly wants to offer a total business solution.

Integrity: Related to security is system integrity, which is the ability of the system to protect itself from assaults such as viruses. IBM’s flagship mainframe operating system, MVS, strives for full integrity, and the company accepts bug reports and develops program fixes if anyone can find a chink in the operating system that allows a program to bypass operating-system controls. While it’s somewhat unfair to compare the Macintosh operating system with something as huge and sophisticated as MVS, the concept of integrity is one that Apple should look at seriously, especially in light of the problems with viruses that have been getting so much media coverage.

Recovery: When a mainframe crashes and restarts, almost everything can be restored to how it was when the failure occurred. In most cases, the recovery is performed by the application software. However, the same sort of recovery could easily become a reality on the Mac with hooks in the operating system to help the applications. With true multitasking on the way, this kind of capability becomes even more important.

Reliability: One strength of mainframe operating systems is their sturdiness. Their error recovery is often so good that even in the case of severe hardware errors, the software can continue operating, even if all it can do is oversee an orderly shutdown. Many installations can go for weeks without a system crash, while handling thousands of users’ demands. This kind of reliability can be offered only by a good operating system: one that keeps applications isolated from...
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*You are the surgeon! Test your skills with the scalpel. The first interactive medical movie for the Mac. Read charts, order X-rays and monitor EKG. The patient's life is in your hands. Gloves and mask included. (entertainment) $34.*

**Linkword Languages**

*Learn a foreign language in just 10 hours. 400 word vocabulary that's ideal for travel and business. An audio tape lets you hear the correct pronunciation. It's easy and enjoyable. French, Spanish or German. (educational) Each $25.*

**Images w/Impact**

*New Business Clip Art. Create professional presentations with over 150 sharp, contemporary PostScript Images. Contains computers, occupational and public symbols and much more! (graphics) $69.*

**Script Expert**

*Programming for HyperTalk by the author of HyperTalk Programming. Script Expert knows the rules for every command, function, and message in HyperTalk. Requires no programming experience. (HyperTalk) $49.*

---

**DESKTOP PUBLISHING PRODUCTS**

<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Adobe</td>
<td>ACE-Textures, Fill, and Patterns... 168, Illustrator 88... 309, Streamline... Call</td>
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<tr>
<td>Aldus</td>
<td>PageMaker 3.0... 399, Broderbund... 47, Letraset... 279, Read-It! 2.0 (OCR)... 195, QuarkXpress or QuarkStyle... Call</td>
<td></td>
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<tr>
<td>Solutions</td>
<td>SuperGlue 1.05... 52, Springboard... 109</td>
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</tr>
</tbody>
</table>

**MYSTERY GAME**

**LNX Turbo Trackball**

*(LYNX Computer Products, Inc.)*

*Let aerospace technology give you precise fingertip control over cursor movement in less than half the space. Desktop publishing CAD/CAM drawing and graphics, as well as standard cursor movements, are easily accomplished. Needs no cleaning, gives you automatic accelerating and eliminates running off a mouseseye. Get twice the speed, twice the resolution in less than half the space. Lifetime Manufacturer Warranty. (input/output) $69.*

**FINANCIAL AND ACCOUNTING SOFTWARE**

<table>
<thead>
<tr>
<th>Company</th>
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<th>Price</th>
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<td>Aatrix</td>
<td>Payroll 3.5... 99, Payroll PLUS... 159, Bedford... 219, Chang Labs... 289, Intuit... 33</td>
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**MEGA**

*Managing Your Money... 128, Monogram Business Sense... 279, Softview MacinTax Federal 88... 69, TaxView Planner... 64, Survivor MachMoney 3.02... 62.*

**STATISTICAL ANALYSIS**

<table>
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<tr>
<th>Company</th>
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<tr>
<td>Abacus Concepts</td>
<td>StatView II... 349, StatView IV... 229, BrainPower... 175</td>
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**D2 Software**

**MacSpin 2.0**

*Odesta Data Desk Professional... 289, Paracomp Milo... 169, Select Micro Systems, Inc. Extatix... 219, Software for Recognition Tech MacEcon... 24.*

**MUSIC AND SOUND**

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<th>Company</th>
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<tr>
<td>Applicant Software</td>
<td>Music Manager... 279, Sound Track... 64, Music Mouse... 59, Passport Designs... 169</td>
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</table>

**LINGUISTICS**

**Linkword Languages**

*(Sp, Fr, Ger)*

*Each $25.*
### DATABASE SOFTWARE

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Acius</td>
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<td>4th Dimension</td>
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<tr>
<td>eBase Mac</td>
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<td>Borland</td>
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<td>Reflex Plus</td>
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<td>Chang Labs</td>
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<td>FileMaker II</td>
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<td>Double Helix II</td>
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<td>GeoQuery</td>
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### BUSINESS SOFTWARE

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<td>Ashton-Tate</td>
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<td>Excel 1.5</td>
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### TECHNOLOGY

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<td>Deneba</td>
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<td>BigThesaurus</td>
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<td>WordFinder</td>
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<td>Working Software</td>
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### GRAPHICS

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<td>MacPaint 2.0</td>
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<td>MacGallery</td>
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<td>MicroBliss</td>
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<td>Art Clips</td>
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<td>Parasimp</td>
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<td>Symmetry</td>
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<td>PictusBase &amp; WetPaint</td>
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<td>DeskPaint 2.0</td>
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<td>Zeck</td>
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### SPICKING SELLERS

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<td>Aegis</td>
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###EDUCATIONAL SOFTWARE

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<td>Solution</td>
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<td>CIRCUIS</td>
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<td>Zeck</td>
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### 3G Graphics

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<td>Business Graphics</td>
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<td>Aegis Development, Inc.</td>
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<td>Showcase FX</td>
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<td>Alius</td>
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### WORD PROCESSORS AND OUTLINERS

<table>
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<td>Ashton-Tate</td>
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<td>WordPerfect</td>
<td>265</td>
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<td>FreeHand</td>
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<tr>
<td>Streamwriter</td>
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### HARDWARE

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<td>ProModem 2400M</td>
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<tr>
<td>Rags to Riches 3 Pak 3.1</td>
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<td>Rags to Riches 3 Pak 3.1</td>
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<tr>
<td>ProModem 2400M</td>
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### SOFTWARE ORGANIZATION

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<tr>
<td>Silver Screen</td>
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<tr>
<td>Managing Your Money</td>
<td>28</td>
</tr>
<tr>
<td>ProModem 2400M</td>
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### SHIPPING

- All orders are shipped via UPS ground. Packages are insured at no additional charge.
- Orders placed by 5:00 pm EST are shipped the same day.
- Orders placed after 5:00 pm EST are shipped the next business day.
- Orders shipped to Alaska, Hawaii, or outside the continental U.S. are subject to a $10 handling fee.
- All orders shipped via UPS and received by 2:00 pm EST on a non-holiday weekday are delivered the next day.
**OVERNIGHT... ONLY $3.00**

**BrightStar**
Talking Tiles ........................................ 69.

**Bootware Software**
ResumeWriter Pro .................................... 39.

**Great Wave**
Kids Time ............................................. 26.

**Simon & Schuster**
Mavis Beacon Teaches Typing ....................... 35.

**Payroll Plus**
Access Software Inc. ................................ 34.

**DISK DRIVES/ MEMORY UPGRADES**
1 MEG SIMM ........................................... Cali.
AST Mac286 Co-Processor (Mac II) .............. 1079.
CMS TapeStack 60 Meg ............................... Cali.
CMS Stack 20 Meg .................................. 569.
CMS Stack 40 Meg .................................. 789.
CMS Stack 60 Meg .................................. 949.
Cutting Edge 800K Disk Drive "NEW" ............. 175.
Wedge XL 30 Plus .................................. 579.
Wedge XL 45 Plus .................................. 729.
XL 30 Internal or 45 Internal ....................... Cali.

**GAMES**

**PageMaker 3.0 Video Tape** ....................... 35.
**Word 4.0 Video Tape** ............................. 35.

**Access Software Inc.**
World Class Leader Board ............................ 34.

MacInTax Federal! 1988 (Softview)
This sophisticated, easy to use income tax preparation program allows you to organize, store, and print out income tax information. Includes 74 IRS forms, schedules, statements and worksheets. Links forms automatically to reduce input errors. Program features the IRS instruction booklet on-line. All forms can be printed, complete with data onto blank paper or preprinted forms, both IRS approved (finance) $69.

**Word 4.0** (Microsoft)
Word 4.0 adds new page design capabilities! Create newsletters with multiple columns. Automatically wrap text around graphics. Tables are a breeze. Use Style Sheets to create tables with self-calculating columns. Word 4.0 has a spelling checker, hyphenation, glossary, mail merge, and automatic indexing. Word 4.0 also includes SuperPaint 1.1 at no extra charge (word processing) $249.

**C.A.T. 2.0**
Automate activities with this relational database designed to manage Contacts, Activities and Time Plan activities, do forecasting scheduling for the future, track and share data among multiple users. Database, mailmerge and calendar functions in one easy to use program. (database) $52.

**FastBack**
Now you can take all your key files on your next business trip! FastBack is a high speed backup program that copies data from hard disk to standard floppy's at a rate of 1MB per minute (or better). Also features Error Correction Codes. (utilities) $54.

**C.A.T. 2.0**

**Gopher** (Microlytics)
The high speed text-retrieval a cessory from Microlytics. Summon Gopher with one keystroke and search out infomration in your disk files. Enter one or two words and have a document at your fingertips within seconds! Work with almost any file. (utilities) $49.

**Arkanoid**
The #1 Coin-Op Game has come home, offering the breathtaking animation, digitized sound and dizzying gameplay you've been seeking! Features Multiple Levels, Arcade High-Score Table, Variable Skill levels and more! Guaranteed to push you to the limit and beyond! (entertainment) $27.
Aztec MPWC by Manx Software Systems

Experience the best of both worlds with the complete Aztec C system plus the full MPW Shell. When you use Aztec MPWC, you benefit from the sophisticated MPW Shell, adapted to work with the superior Aztec compiler, assembler, and linker. With Aztec MPWC, you actually have a choice of development environments, the UNIX-like Aztec Shell, or the Apple developed MPW shell. The MPW shell has a powerful script facility, sophisticated windowing, and Multitinder compatibility.

Aztec MPWC ......................................................... 99
Utility Software

ALSoft Disk Express 35. Olduvai Software 39. Icon-It or MultiClip
Field OA Logger Plus 42. Read-It TS (For Thunderscan) 75. PCE2
Berkeley System Design 52. Read-It O.C.R. 2.0 (For Image Scanners) 199.
Stepning Out II 53. FHS Back-Up 3.0 54.
CE Software 52. Softworks
QuickKeys (Macro Program)
Central Point Software 20. Stack Cleaner 29.
Copy III Mac (Includes MacTools) 46. HyperTools 1 Or 2 69.
PC Tools Deluxe Mac 46. Super/Mac Software
Fifth Generation Systems 54. Super/Spool 5.0 54.
SuperScope 5.0 54.
Sunsoft 32. Power Station 32. HyperTools 32.
Power Station 32. SegaPaint 15.
PlyComm 15. Sentinel 2.0 155.
HAC Viren 65. Symantec
Icom Simulations 36. MacDef2 36.
On Cue 95. Windows & MacMac
TMGON 24. Williams & Maclacs
Microlyics, Inc. GC/Other 44. myDiskLabel w/Color
Microseconds 44. myDiskLabel w/LabelWriter Option
Apple 34. Remote Workstation
Working Software 34. ScreenGems
1. Findswell 20 (Document Finder) 36.

Printers & Digitizers

Digital Vision
Computer Eyes-Mac Special 209.
Kasta Technologies Corp. 219.
MacVision 2.0 (Digitizer) 279.
Kurta 279.
IS A/D Tablet 205.
Cordless 4 Button Cursor 65.

FASTAT by SYSTAT

FASTAT is a statistics and graphics package for people who need graphs, tables, financial projections, and surveys now. FASTAT's point-and-click interface insures an ease of use that won't compromise accuracy and sophistication. FASTAT will handle up to 50 variables and unlimited cases. FASTAT does it all. Summary statistics, one-way and multi-way tables, chi-square, etc. With FASTAT, sophisticated two and three dimensional graphics are easy.

FASTAT

Disk Drives/Hard Disks/Upgrades

AST Research
MacC25 Co-Processor
(Mac II) 59.
Mac 80 Cross-Processor 419.

CMS
SD Series MacStack SD20 (Mac+ SE/II) 53.
SD Series MacBlack SB30 (Mac+ SE/II) 615.
SD Series MacBlack SB60 (Mac+ SE/II) 849.

Cutting Edge
Cutting Edge 800k Drive 175.
Cutting Edge Wedge XL 30 579.
Plus SCSI Hard Drive 579.
Cutting Edge Wedge XL 45 729.
Plus SCSI Hard Drive 729.
Cutting Edge XL 30 Internal Hard Drive 469.
Cutting Edge XL 45 Internal Hard Drive 469.

Apple Computer Disk Drive Corporation
FastNet Networking 1039.
MacNetion 1039.
Marathon 200 Accelerator 1039.
Marathon 400 Accelerator 1039.
MSE 1 (16 kHz) 53.
MSE 2 (16 kHz w/1MB) 979.
MSE 3 (16 kHz w/ Math Co-processor) 979.
MSE 4 (16 kHz w/1MB & Math Chip) 515.

MacSnap 524S (512E to 1MB w/ SCSI) 379.
MacSnap 548 (512E to 2MB w/ SCSI) 458.
MacSnap 548 (512E to 2MB w/ SCSI) 548.

MAC-101 Keyboard by DataDesk

If you are looking to replace your Mac's keyboard, the MAC-101 by DataDesk is the way to go. It comes in an ADB variety for the Mac SE and II, and a non-ADB version for the Mac 512 and MacPlus. The positive tactile, firm feel 101 includes a full numeric keypad, 15 function keys, 6 page control keys, and a T-style cursor pad.

Keyboard status indicator lights let you know when everything is going smoothly. Includes ADB-Keypad access software, a powerful numeric utility which allows you to exploit the full power of the function keys with almost any Macintosh application.

MAC-101 Keyboard (Specify ADB or non-ADB).
Network Software & Hardware

<table>
<thead>
<tr>
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<tbody>
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<td>QuickMail</td>
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<td>Multi-User SuperLaserSpool</td>
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<td>TOPS</td>
<td>119</td>
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<td>TrafficWatch</td>
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<td>TOPS FlashBox</td>
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<td>TOPS Starter Kit</td>
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<td>TOPS Teleconnector DM8 or DB9</td>
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Desk Accessory Programs

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<td>Electronic Arts Desk Tools Plus</td>
<td>31</td>
</tr>
<tr>
<td>Mainstay</td>
<td>51</td>
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<tr>
<td>Think! Time</td>
<td>67</td>
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<td>Olduvai Software</td>
<td>433</td>
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<tr>
<td>SmartScrap &amp; The Clipper V2.0</td>
<td>46</td>
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<tr>
<td>HyperDA</td>
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<tr>
<td>TENpointIO</td>
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MiniCad+ by Graphsoft

MiniCad+ is a professional CAD system that offers users high precision 2D drafting, including hierarchical symbol editing, fillets, bezzers and cubic splines, auto-point, auto-dimensioning, continuously variable zoom, and auto-joint, auto-dimensioning, calculations.

Accounting Packages

<table>
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<tr>
<th>Package Name</th>
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<tbody>
<tr>
<td>Aegis Development</td>
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<td>Lundeen &amp; Associates</td>
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<td>Microudios, Inc.</td>
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<tr>
<td>Sensible Software</td>
<td>45</td>
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<tr>
<td>Spelling &amp; Grammar Checkers</td>
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<td>Accounting Packages</td>
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Spelling & Grammar Checkers

<table>
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<th>Program Name</th>
<th>Price</th>
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<td>45</td>
</tr>
<tr>
<td>Spelling &amp; Grammar Checkers</td>
<td>45</td>
</tr>
</tbody>
</table>

Rags to Riches ‘3-Packs’ by Chang Labs

Rags to Riches is the flexible and powerful modular accounting system that’s winning praise from accountants and reviewers nationwide. Now, Chang Labs offers its popular Rags to Riches ‘3-Packs’ at a special price and with a special bonus! Each ‘3-Pack’ offers the user flexible reporting, batch totals for any time period, user definable accounting cycles, and impressive speed. When you need to analyze, graph or present your accounting information, just export it to your favorite program! As a special bonus, if you choose the ‘3-Pack’ that suits your needs before April 30, 1989, Programs Plus will send you an Atrix Payroll program, absolutely FREE!!

Visit us in the Electronic Mall on Compuserve - G0 PP
ComputerEyes by Digital Vision

ComputerEyes introduces a new dimension to image processing technology with the most versatile and comprehensive video digitizing system in its class. ComputerEyes lets you digitize high quality images from any standard video source, videotape, camera, video disk, and store them on your Macintosh. In as little as six seconds, you can digitally reproduce three-dimensional objects. ComputerEyes images can be directly imported into documents created with PageMaker and ReadySetGo! for unparalleled results!

ComputerEyes

Graphics Software

3G Graphics
Images w/Impact Graphics & Symbols 59
Images w/Impact Business I 69
A/B Software Draw II Again 520
GraphicPrint II 289
Adobe Systems Adobe Illustrator 88
Adobe Fonts (Various volumes) 309
Aldus Freehand 249
Allyas Corp. FONTastic Plus 20
Fontographer 2.2 239
 Ashton Tale Full Page 69
Broderbund Print Shop or Clip Charts 25
Drawing Tables 26
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The computer did not start with IBM or DEC. It started with the abacus and the slide rule. Computers have had a long relationship with numbers, and oddly enough, people who work with numbers have had a love affair with the computer. That Macintosh over there on your desk? Don't let anyone tell you differently — it's really a number-crunching machine.

So why are accountants and others paying such close attention to the Mac? Simply accounting for the reasons, you'd marvel at all the software packages that are available. And because the accounting market for the Mac is so competitive, the software continues to get better. Now, not only can these packages add, subtract, multiply, and divide faster than 10,000 clerks, but they can also keep track of innumerable invoices, checks, and ledger pages. They can even help you prepare your taxes (see “Mac Tax Force” in this issue).

Small businesses are also attracted to these packages. One of the most important decisions you face as a manager of a small business is selecting the right package. An accounting program can either help your business grow or cut it off at the jugular vein.

Choosing a package from any of the top vendors can be difficult unless you have a combined degree in computer science and accounting. This article is intended for those of you who don't have the aforementioned credentials. While we're not giving you an exhaustive look at all packages, we hope to provide some insight into some of the top programs: Checkmark Software's MultiLedger and Payroll, Bedford Software's Simply Accounting, Layered's Insight, and Great Plains Software's Great Plains Accounting Series.
book, I could no longer imagine doing it manually.

A welcome and impressive bonus is the Payroll program, which can be linked to MultiLedger. Like MultiLedger, Payroll can handle multiple companies with up to 200 employees per year, keeping track of hourly as well as salaried employees, up to six user-defined deductions for company plans or programs, two additional income categories, and overtime as well as double time. The Payroll system prints the complete line of documents needed, such as paychecks, W-2 forms, earnings registers, payroll verification reports, check registers, and tax summaries. The interfaces of the two programs are consistent, and at $690 for the entire system ($395 for MultiLedger, $295 for Payroll), MultiLedger and Payroll are a bargain for companies that don't need a networked accounting system.

MultiLedger comes with a standard chart of accounts that can be copied into the new company and used as is or modified for your special needs. You also have the option to create your own from scratch. Once the chart of accounts is established, accepting transactions in MultiLedger is a straightforward job of filling in information requested by the dialog boxes concerning your company, your customers, and your products. All major aspects of small-business operation are covered — item purchases, customer invoices, and sales journals. And you can forget about hiring that budget director, once you get this program. Budget information is added by relating budgeted amounts to income or expense accounts, and it can be added in total for the year (annualized by MultiLedger) or in a monthly amount.

REPERTOIRE OF REPORTS

Rest assured, when report time comes around, you'll have help in this area, too. The reporting modules produce all of the standard reports: income statement, balance sheets, trial balance, detailed transaction reports, as well as a host of receivables information. MultiLedger also produces a series of bar charts that compare the current year's performance with that of the previous year for selected account ranges. Reports can be quickly converted to SYLK format for use by spreadsheets or graphics programs. Text files can also be created to integrate reports into word-processing documents.

When you're ready to churn out a report, MultiLedger lets you add an artistic touch. You can use PICT files created with drawing programs such as SuperPaint or MacDraw as templates for the forms that MultiLedger generates. You can print these out si-
multaneously with information from the program on a high-resolution printer such as an ImageWriter or LaserWriter.

**ACCOUNTING MADE SIMPLE**

Unlike MultiLedger, Simply Accounting handles only a single company’s books on a nonconsolidated basis, so it can’t be used for multiclient consolidated work. But don’t judge the package on this basis alone; after all, Simply Accounting does live up to its name. It’s very easy to learn, and its $349 list price makes it competitive with MultiLedger and Payroll.

Simply Accounting uses an elegant scheme for classifying accounts within the system. In addition to the classic account ranges for asset, liability, and expense accounts, the program uses a simple notation to determine how these accounts will appear on printed statements. It determines print format, justification, and the totaling characteristics of the accounts. A powerful feature of the system is that it can suppress accounts that have zero balances on the financial statements.

The system setup is accomplished by filling in a series of dialog boxes that prompt you for the information necessary to run the program. Some of the information, such as payroll withholding rates, may not be readily available, but you can reenter the program at a later date to make your entries. And setting up the various modules of Simply Accounting is not a difficult task, though the new user can become easily discouraged by the amount of information required. Again, don’t let this turn you away from this package — Simply Accounting is very thorough in its operations.

---

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Perhaps the feature that most distinguishes Simply Accounting from MultiLedger is the job-costing module. Also known as Jobcost, this module is something of an outlier. Jobcost allocates revenues and expenses to a particular profit center or project.

All income and expenses items can be automatically passed to this module by the system. The resulting reports show the profitability of a particular business or project. Jobcost reports are abbreviated income statements that track information at a micro level of detail. Manufacturing organizations will find them valuable. All the information in the system can be easily exported to word processors in a text file or spreadsheet. The system uses preprinted forms, which can be ordered for all invoices, checks, and the like.

ACCOUNTING FOR THE FEATURES

You can create your own chart of accounts using one of Simply Accounting’s six “starter companies” or input a chart of accounts from scratch. The system has a few limitations concerning accounts, though. For instance, it can handle up to only 1,000 ledger accounts, vendors, customers, employees, or projects for its job-costing system.

The payroll module handles all required payroll operations smoothly, and it automatically posts information to the Jobcost system as well as to the ledger. It also supports all necessary W-2 accruals, as well as state tax information. The accounts-receivable and accounts-payable modules use the open-invoice method to keep track of full as well as partial payments — a real plus in this system. The user can define the aging periods for invoices during the system installation, which helps relate those periods to the business’ billing and collection policies.

Simply Accounting’s inventory system can be used by a broad spectrum of business, such as wholesalers, retailers, and manufacturers. The system affords a great deal of flexibility in the way it tracks information but is standardized on the average-weighted-cost method. The program accommodates all adjustments and transfers, “flagging” predetermined reorder points when it happens upon them. The reports can be generated on either a margin or markup basis, and two diagnostic reports — one on quantity and the other an inventory synopsis — are generated quickly and easily.

Simply Accounting is an equal to its competitors, with the exception of its limited reporting capability. From the perspective of performance the system also places highly. AppleShare is supported but is limited to single users.

The program does have some shortcomings. No password protection is built into the program, which leaves sensitive information such as payroll

$1,395. Plus $125 for an interface kit that connects simply and cleanly.

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records open to anyone with network access. We were also disappointed in its integration with the Macintosh's capabilities. The software felt like the IBM transplant it is.

**INSIGHTFUL ACCOUNTING**

One of the heavyweights (literally) of the accounting packages mentioned is Insight from Layered, Inc. This program comes in four large binders, one for each module — General Ledger, Accounts Receivable and Billing, Accounts Payable, and Inventory (each costs $695). Multiuser accounts-payable and accounts-receivable systems are available for $895 each.

Once you've lugged the software to your Mac and cleared an area big enough to accommodate the documentation, you'll find that Insight is an exhaustive accounting system and that you're an exhausted accountant. The documentation, although voluminous, is informative and easy to use. Installing and configuring the system is also easy.

The software is patterned after the ancient but efficient ledger-card concept, wherein transactions are posted to ledger cards for specific accounts. These cards are then processed to produce reports. In depicting this and other accounting concepts on-screen, Insight makes outstanding use of the Mac's graphical interface. Icons are clean and crisp, as are the ledger-page designs.

In addition to the standard sets of financial reports you would expect, Insight offers a series of useful Expert Reports. These reports provide a general analysis of the information contained in the General Ledger. The reports themselves are broken down into two types: financial-statement ratios and pie charts.

The financial-statement ratios provide 12 ratios in three areas: liquidity, profitability, and asset management. The liquidity ratios produced include the quick ratio, current ratio, debt-to-equity ratio, and the long-term debt ratio. The pie charts plot any financial statement as a single pie chart, or a series of pie charts. Slices can be expanded to show the detail behind them. And, to help interpret the numbers, tabular reports can be generated.

Profitability measurements generated are return-on-equity, return-on-sales, return-on-assets, and operating margin. The asset-management ratios include inventory turnover, average accounts-receivable collection days, days' sales in inventory, and average accounts-payable payment days. You determine which accounts should be included in the analysis, as well as the time period covered by the analysis. The entire analysis can be graphed, and an on-line definition and interpretation of each ratio is available for those of you who don't have a Ph.D. in Managerial Accounting.

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THE PROOF IS IN THE PACKAGING

Insight’s Inventory, a perpetual costing system, is the most complete of all the systems in the packages mentioned here. Items can be valued using the LIFO (Last In, First Out), FIFO (First In, First Out), average, or last-cost method. Receipts can be batch-entered, as can withdrawals and warehouse transfers; this cuts down the contention time for the system in a busy environment. Dynamic and flagged reordering are also included. The Inventory module provides a remarkable number of reports and runs smoothly without exception.

The Accounts Receivable and Billing module has a number of nice twists in it. The system can quickly perform on-line credit checks and credit reporting, which makes it quite valuable to a small business trying to manage its risk. In the end, this module produces a series of reports, organized by customer, that help to gauge customer profitability and activity. These reports can be useful for targeting marketing strategies to customers.

The Accounts Payable module allows the user to quickly select payments by due date and instantly develop a cash-requirements schedule. You can automatically allocate expenses by vendor for easy departmental expense tracking. For companies with multiple bank accounts, Insight offers a facility to disburse easily from multiple accounts. The management reporting is on a par with the other packages in the series.

PLAINLY THE HEAVYWEIGHT

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package weighs in at a hefty 28 pounds. The seven major modules are General Ledger, Accounts Receivable, Accounts Payable, Inventory, Purchase Order, Order Entry, and Payroll. Each is comprised of three volumes of documentation: a reference manual, learning guide, and orientation manual. Each of these modules costs $795. Great Plains provides you with a multimedia approach to accounting. The tutorials consist of the reference manual, learning guide, and orientation guide. In the orientation guide, you get a guided tour on cassette tape of each module. Given Great Plains' sophistication, the time and energy the company has expended to train the user is fascinating. The learning guide provides an introduction that starts with computerized accounting ABCs and ends with the operation of the system.

The actual package looks and acts like a mainframe accounting system, even though it runs on the Mac. In fact, it was designed with this in mind; there's also a multiuser version available (Network Manager, $995, works with the regular package to make it multiuser). Undoubtedly, Great Plains strove to bring big-system functionality to the Mac with its product, and it has succeeded.

The software is as easy to run as Checkmark Software's MultiLedger but is full of features and functions that make it a good bet in almost any small to medium-sized business.

**REPORTING ON THE GREAT PLAINS**

In Great Plains report modules, information can be printed on customized forms or on blank paper. Great Plains easily handles returns, which is a real plus for a wholesaling company. The analysis capabilities of the module are also strong. The print options for the reports are powerful. Aggregate accounts can be printed, as well as detail. Accounts with a zero balance can be suppressed, and percent-of-total assets can be calculated on the fly and printed on the reports.

The General Ledger has a few managerial accounting features built in that generate interesting reports, such as a sales-ratio analysis. The General Ledger can also print comparative statements, which place the current period's data against that of an earlier period.

The Chart of Accounts capability in Great Plains is the most powerful of any of the systems we've mentioned. An extensive list of customizations is available. Setting up and managing recurring transactions, which can be problematic in other systems, is simple with this program. An especially attractive feature is the comprehensive on-line help included in the program.

**AN ADDED ATTRACTION**

An additional module that Great Plains offers is the Executive Advisor. Using the vast database created by the accounting system, the Executive Advisor acts like a combination graphics program, report writer, and pseudo-artificial intelligence system. Executive Advisor produces more than 75 different reports that focus on your company's finances, customers, vendors, inventory, staff, and the like. Current information can be compared...
with historical data, budget figures, or even a set of industry averages that come with the program.

Executive Advisor provides functionality similar to Insight's Expert Reports. The distinction is that Great Plains' software is a separate module, rather than being an integral part of the system. Executive Advisor is priced at $595. The analysis the system produces — as well as its presentation — is top-notch.

THE ENVELOPE, PLEASE

Price Waterhouse didn't tabulate the votes for this contest, though Peat Marwick did test two of the packages mentioned here — Great Plains and Insight. But no accountant can single out one accounting package as the definitive one, because needs differ from firm to firm.

We have attempted to give you an insider's view of four of the top packages on the market. They naturally fall into two categories. In the low price range are Bookmark Software's MultiLedger and Payroll and Bedford Software's Simply Accounting. Both of these packages can be used in small businesses or as starter systems. At the high end are Layered's Insight and the Great Plains Accounting Series, both of which are full blown systems for sophisticated, small to medium-sized businesses.

Many businesspeople have likened choosing an accounting system to choosing a business partner. The development and technical support teams of a company do become your partners when you select their package, so be sure to find out as much about each company as you can. Call the vendors to see what enhancements they have planned, as well as to gauge the responsiveness of their support staff. Smart businesspeople don't pick a partner they can't live with or don't like.

KEN LANDIS HAS BEEN WRITING ABOUT THE USE OF APPLE'S COMPUTERS IN PERSONAL AND PROFESSIONAL FINANCE SINCE 1981. IN THAT TIME, HE HAS PUBLISHED MORE THAN 200 STORIES ON THE SUBJECT.

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**Directory**

Bedford Software Corporation  
15311 N.E. 90th St.  
Redmond, WA 98052  
(206) 883-0074  
*Simply Accounting*, $349

Checkmark Software, Inc.  
P.O. Box 860  
Fort Collins, CO 80522  
(303) 484-3541  
*MultiLedger and Payroll*, $690 ($395, MultiLedger; $295, Payroll)

Great Plains Software  
1701 S.W. 38th St.  
Fargo, ND 58103  
(701) 281-0550  
*Great Plains Accounting Series*, $795 each for the following seven modules: General Ledger, Accounts Receivable, Accounts Payable, Inventory, Purchase Order, Order Entry, and Payroll; $595, Executive Advisor module; $995, multiuser Network Manager.

Layered, Inc.  
529 Main St.  
Boston, MA 02129  
(617) 242-7700  
*Insight*, $695 per module: General Ledger, Accounts Receivable and Billing, Accounts Payable, and Inventory; $895 each, multiuser accounts-payable and receivable systems.

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**Passport**

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For Your Information —

Apple Computer uses hard drives manufactured by Quantum for both their 40 and 80 megabyte Macintosh II. These Quantum drives feature an 18 ms access-time, and because of a built-in disk cache these drives can access information effectively at 12 ms. CDA can provide a Mac II with an Apple Quantum drive or with an Everex Quantum drive. Differences?

1. The Apple warranty is 90 days, the Everex warranty is 1 year.
2. Price! The Choice is Yours.

<table>
<thead>
<tr>
<th>Macintosh II Systems</th>
<th>Everex EMAC 40 Hd Dr.</th>
<th>Everex EMAC 80 Hd Dr.</th>
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<td>Apple 80 Meg Hard Drive</td>
<td>Sugg. List $9021</td>
<td>Sugg. List $8981</td>
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<td>CDA Price $6995</td>
<td>Pkg #9861</td>
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The above Macintosh II complete systems include:
- Macintosh II Computer w/ Apple or Everex Hard Drive
- 1 Megabyte of Memory
- Extended Keyboard and Mouse
- 1 - 800K Disk Drive
- Macintosh II Video Card

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<th>Macintosh IIx 80 Meg Color System</th>
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<td>• HyperCard Software</td>
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<td>• Diskettes - Box of 10</td>
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<td>• 1/2 Case of Computer Paper</td>
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<td>• Dust Covers for Macintosh, Keyboard and Printer</td>
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<td>• Cutting Edge 800K Ext. Drive</td>
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<td>• Apple ImageWriter II w/cable</td>
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Macintosh SE
Super System
Complete system includes:
- Macintosh SE Computer w/ 2 Internal 800K Drives
- 1 Megabyte of Memory
- Keyboard and Mouse
- ImageWriter II Printer
- ImageWriter cable
- HyperCard Software
- Diskettes-Box of 10
- Computer Paper-Pkg of 500
- Dust Cover for Macintosh SE
- Dust Cover for ImageWriter II
- Mouse Pad
Sugg. list $3980 Pkg #8970

CDA Price $3099

Macintosh SE Hard Disk 20 System
Same as SE Super System except includes one 800K floppy drive and an internal Apple 20 Megabyte Hard Disk.
Sugg. list $4469 Pkg #8971

CDA Price $3599

Macintosh SE Hard Disk 40/2 System
Same as SE Super System system except includes one 800K floppy drive and an internal Apple 40 Mb hard disk and 2 megabytes of memory.
Sugg. list $5180 Pkg #8972

CDA Price $3899

Macintosh SE/30 System
Same as SE Super System system except includes the new SE/30 with a 40 meg. HD.
Sugg. list $5680 Pkg #8996

CDA Price $4349

Macintosh SE/30 Hard Disk 80/4 System
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CDA Price $5599

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Mac SE 40/4 Keyboard $3395
Mac SE/30-Keyboard $3449
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Mac IIx/40 w/Ext. Keyboard $4899
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Monitors
Apple Mac II Monochrome $329
Apple Mac II RGB Monitor $799
Apple 4 Bit Video Card $399
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Apple 8 Bit Video Enhancer $1119
Sony CPD1103 RGB $675
E-Machines T16 $2779
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Magnavox RGB w/Tilt/Swivel $599
NEC Mac Sync $599
Radius Monitors Please Call
RasterOps19 Color TriTron $3995
RasterOpsColor 108 Board $1149
RangerOps Color 104 Board $6349
Sigma LaserView SE $1799
Sigma LaserView II w/Video Board $1799

Printers
- Prices include required cable
- Apple ImageWriter II $499
- Apple ImageWriter LQ $1099
- Apple LaserWriter IIISC $2199
- Apple LaserWriter INT$ $3795
- Apple LaserWriter INTX $3305
- Apple Toner Cartridges $100

Apple CardWriter $1575
Apple CardWriter Rev. $549
HP DeskJet $799
QMS PS810 $3359

Orange Micro
Grapper/C/MAC/GS (9 pin) $79
Grapper LQ (24 pin) $99
Grapper LS Serial Laser Driver $89

Apple 3.5 Disk Drive $349
Cutting Edge 800K $179

CDA Enhancements
Compact SC30 (30ms) $587
Compact SC45 (30ms) $789
MacStack SD20U (65ms) $503
MacStack SD30U (65ms) $503
MacStack SD40U (25ms) $699
MacStack SD45U (40ms) $780
MacStack SD60U (40ms) $732
Tape Stack 60 $479
Internal PRO SE-30 (38ms) $879
Internal PRO SE-45 (40ms) $839
Internal PRO SE-65 (32ms) $899
Internal PRO SE-80 (19ms) $1099

Everex
EMAC 20 Deluxe (40ms) $549
EMAC 40 Deluxe (29ms) $799
EMAC 60 Deluxe (29ms) $999
EMAC 80 Impact (12/19ms) $1279
EMAC 80 Impact (12/19ms) $969
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EMAC 20ID (Mac II) or 20SE $449
EMAC 40ID (Mac II or 40SE) $688
EMAC 60ID (Mac II or 60SE) $889
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Everex Internal Hard Drives - 120MB Tape Backup $1195
Everex Internal Hard Drives - 150MB Tape Backup $1399

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40 Megabyte Tape Backup $195
60 Megabyte Tape Backup $195
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Plus External Series 20 thru 140 Megabytes Please Call

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- Apple Extended Keyboard $199
- Data Desk 101 Keyboard ABD w/MaxiKeys Software $137
- Kensington Mouse MousePad AB08 $108

Memory/Speed Upgrades
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- Dow Tool Kit $24
- Apple MacSnap 2SE $439
- MacSnap Plus 2SE (Mac Plus) $439

Accelerator Boards
- Dove SE Marathon Acel. $579
- Iris Accelerator SE/16 $317
- Radius 23 Accelerator $1375

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- Apple SE/30 Drive $29
- AST Mac SE (Mac SE) $479
- Mac SE 266 (Mac II) $1099
- DayFile 2660 IBM Drive $519
- DayFile other configurations Call

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- Apple Scanner Please Call
- Apple Flatbed Scanner $1499
- ThunderScan 4 $189
- Lighting Scan NEW Call

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- AppleFax Modem $595
- Epic Internal 2400 $319
- Practical 2400SA Mini $85
- Practical 2400SA with cable and Microphone Software $225
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Too bad for Al Capone. If the Mac had existed in his time, maybe he would not have spent so much time in the slammer.

Thanks to a bumper crop of tax templates and stand-alone applications, the Mac is becoming the tax machine of choice. With the Mac's ease of use and the intuitiveness of tax programs, you can set aside the abacus, adding machine, and even your phalanges (as far as counting is concerned). Not only do these programs perform all calculations for tax forms, but also they save you countless trips to the post office or library by providing almost all forms, worksheets, and schedules — all approved by the IRS.

Why the fuss over Mac tax applications? One new wrinkle this year is the evolution of accounting packages. Many of these packages are designed to export data to your electronic tax forms. Although it has been possible to export data to your tax forms line by line for a couple of years (see “Marriage of Convenience,” March '87), now some applications can transfer practically all the information necessary to complete tax forms with a simple double-click of the mouse.

Returning to this year's lineup are Tax Templates from Heizer Software and EZ Ware (EZTax-PREP) along with the full-blown tax package from Softview, MacInTax. In the freshman class, there's Bottomline from Computer Craft, and Tax Stacks, a HyperCard stack from Stackware. As is true every year, by press time we have seen only last year's forms and prerelease versions of this year's.

All the tax templates require either Excel or Works. A few work with MultiPlan, although MultiPlan lacks macros. While all the templates are straightforward tax forms, you should be familiar with Excel, MultiPlan, or Works — learning the application while figuring out the template is not optimal. Although the manufacturers maintain that they've thoroughly tested their programs for bugs (in formulas), they advise that users check the figures on their returns carefully. Ultimately you — and not a tax software manufacturer — are responsible for what you send into the IRS.

**TAX PROGRAMS? WHO NEEDS 'EM?**

Many tax preparers use the Mac to do their clients' taxes with the same software that's available to you. Some packages, like MacInTax, provide corporate forms for Fortune 500 companies as well as for individuals who have incorporated their businesses. I expect to see professional tax preparer packages on the Mac soon; perhaps next season. Softview is supposedly going to make electronic filing available for MacInTax forms this season, but I will be surprised if it is ready this year. It isn't such a loss if they don't because the IRS doesn't accept electronically filed returns from individuals yet — only returns from specially registered tax preparers and those requesting a refund are eligible.

Are these packages absolutely necessary for filling out a 1040EZ? Probably not, considering that you have few financial variables in your tax equations and that the form takes about five minutes to complete by hand anyway. But if your annual financial situation requires more than a 1040EZ, you're probably a good candidate.
headaches with Mac tax software.

BY SCOTT BEAMER

Many consider buying tax software just to save the cost of having a service do it for them. I don't think tax preparers should worry about losing business over these programs, however. In fact, they may find they will do more business by incorporating a tax program into their operation. Tax programs save a lot of data entry and cross-referencing. More importantly, they give users better control over their own financial situations.

As a rule of thumb, I fill out my own forms and show them to my accountant before filing them. I recommend this to pretty much everyone. You will incur only a minimal fee from your tax preparer, and you will sleep better not having doubts about how good a job you did. The most surprising thing about filling out income tax returns on your Mac is how enjoyable it is. This may not be apparent at first because there is so much to learn. But over time, you may find yourself, as I do, actually looking forward to tax season.

INSIDER TRADE SECRETS

I have two secrets that make preparing taxes a breeze. While they are obvious tips, it is amazing how many people don’t use them. First of all, use a home accounting package all year round. Also save last year’s form as a dummy. Sure, most receive that advice with the same enthusiasm they do a reminder to go to the dentist twice a year, but it’s not that bad, and it pays big dividends.

In the old days, it took me a week’s worth of evenings with a good part of the weekend thrown in to do my tax returns (which tend to run over 20 pages). Now I get most of it done in an afternoon. The other advantage to using an accounting package throughout the year is that you know how you stand all year long and not just at tax time when the accountant tells you the bad news.

THE STAND-ALONE CHAMP

There’s only one program that is an independent application — MacInTax. It’s so good that it has literally driven the competition from the market. This year’s version has over 40 forms, schedules, statements, and

Double-clicking on a line of your tax form frequently opens another window in MacInTax. Note here that double-clicking on the wages line opened a W-2 worksheet. Double-clicking on a line in it produced an itemization window handy for totalling figures, showing the derivation of a figure, or just leaving yourself notes.
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worksheets. It also has special State forms for California and New York for an extra fee.

For first-time preparers, this package is great because you have so much help. They even give you a Macintosh tutorial. In filling out any form, you have on-line, context-sensitive help courtesy of the IRS booklet. You just double-click on the text next to a line or group, or select a line or group and choose Instructions from the Edit menu. An instruction window pops on-screen instantly, explaining the particular line. If you have multiple forms and schedules to fill out, MacInTax will help you keep track of what you’ve completed and what you have left to do. Pulling down the Schedule or Form menu will cause a list with the names of the forms and schedules that are open to appear. Incomplete forms and schedules are denoted by an outline font; completed forms and schedules, with an underline.

When starting, you see a screen explaining who may need each form. You can decide which forms and schedules you need. It is advisable to have all schedules and forms you need open at once. Information carries over to the appropriate line on forms that are open, saving you from having to reenter data and from making careless mistakes. You can toggle among all the open windows from the menu bar. To print out your forms, you can print from the Finder or through the program. Either way, the output will be on forms you can submit to the IRS.

MacInTax also has an Error Scan feature that locates missing, estimated, and erroneous data. Just press Option along with either Return, Enter, or Tab. The program will also scan backward if you hold down the Shift key in combination with the Option and Enter, Return, or Tab key. MacInTax performs another error/ incomplete check in the printing routine: If you choose to print any form that contains an error or is incomplete, the program asks you if you want to print it with these mistakes. You used MacInTax last year and have saved the file? MacInTax has a converter that will transfer all appropriate data from last year’s return over to this year’s.
Tax Templates from Heizer's Excellent Exchange this year include ChedIt, a check register and an Excel template, so it is not surprising that it summarizes the entries and inserts them into the 1040 templates.

This all sounds great, doesn’t it? It does carry a hefty price tag (as Mac tax packages go anyway) of $119 ($55 for upgrades). But MacInTax is best for beginners. You’d better know what you’re doing as far as Excel is concerned when you work with a template.

THE PEOPLE’S TEMPLATES

Tax templates are a cheaper alternative to MacInTax, ranging from $35 to $100. Unfortunately, they not only assume a user’s knowledge of the Mac but also require a certain competence in Excel. You definitely have a lot less hand-holding with these.

Steve Willett’s Tax Templates from Heizer Software are my favorite. In the three years that these templates have been around, they haven’t changed much. New to the package are 34 more federal forms, including a depreciation worksheet that uses different methods for calculating deprecations. There’s also an electronic checkbook that consolidates records for your taxes along with special forms for California and New York. Businesses can get their own tax forms for an extra $45; more than 20 forms come with the package.

With Tax Templates as with MacInTax, you should open up all the forms needed to complete your taxes—the data transfers easily among the open forms. Furthermore, you should keep all the forms you’re using open at all times when preparing your taxes. To keep operations moving along quickly, turn off Auto Calculation as this will keep your work at a sluggish pace. To calculate, select that option from the Utilities menu or press Command—-. When moving from one sheet to another, calculate your input. This operation will put the correct information into protected cells and clear up #REF errors (#REF appears whenever there is an incorrect entry or a skipped line).

To print out completed forms, just select the Print option from the File menu. To avoid any printing errors, make sure the forms you’re printing use Helvetica 10-point type. Also, to get regular-sized output from a LaserWriter (the on-screen display was designed to be viewed on a Mac II), change the Reduce or Enlarge box in the Page Setup option under the File menu from 100 to 86 percent.

TAX TEMPLATES MADE EZ

EZ Ware, which has made tax templates longer than any other company mentioned here, has not changed its templates much this year. It has no corporate forms, though it continues issuing a separate package for limited partnerships. EZ Ware prepares Form 1065 and carries over the limited partnership information from year to year. EZTax-PREP 1065 offers nearly 30 forms and state forms for California, New York, and Pennsylvania (for an extra $15 each).

Unusual features in the EZ Ware template package include a live window always visible at the bottom of the screen showing the aggregate growth index (AGI), tax rate, and your current tax bill. It also has its own fuzzer of sorts—the Audit Alarm. This alert sounds whenever your deductions stray too far from the national average. This is a warning that you run a risk of having your return flagged by the IRS computer. There’s a graph that works with Audit Alarm to show how your deductions compare...
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So. What are you waiting for?
EZTax-PREP includes an Audit Alert, a chart comparing your deductions with IRS averages. Presumably, if you are significantly above the average for your AGI, you may trigger an audit. (This chart is an example only. The data used is from an earlier tax year.)

<table>
<thead>
<tr>
<th>Yearly Income</th>
<th>Medical</th>
<th>Taxes</th>
<th>Contributions</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0-$5,000</td>
<td>1,975</td>
<td>17,564</td>
<td>32,775</td>
<td>32,000</td>
</tr>
<tr>
<td>$5,001-$10,000</td>
<td>2,017</td>
<td>18,162</td>
<td>33,624</td>
<td>31,521</td>
</tr>
<tr>
<td>$10,001-$20,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$20,001-$40,000</td>
<td></td>
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</tr>
<tr>
<td>$40,001-$60,000</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>$60,001-$100,000</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Actual deductions compared to typical deductions, based on Adjusted Gross Income.

EZTax-PREP 1040 is more expensive than the other templates on the market, but it does offer a lot of extras. For instance, there are dot-matrix paper versions of Form 1040 for ImageWriter owners and transparencies of Form 1040 for those who don’t have a PostScript-compatible printer. If you happen to have a PostScript printer, then EZ Ware provides you with a special LaserPrep1040 (copy this into your System Folder and then select it through the Chooser to get the official form), which prints out the official form from a LaserWriter. In any case, you can submit any of these forms to the IRS.

THE BOTTOM LINE
The folks at CompuCRAFT went to great lengths to have their package, Bottomline, approved by the IRS. The brief manual is a miniencyclopedia of official tax form trivia. For instance, did you know that the approved font for tax forms is Helvetica 10-point? And I’ll bet you didn’t know that the weight of the “chemical wood writing paper” for the official tax returns needs to at least 18 and preferably 45 pounds.

Would you trust your taxes to this stack? Actually, behind the cornball humor is a better tax preparation program for beginners than you might expect, and it is the cheapest alternative for those who don’t own Excel.

All this trivia aside, CompuCRAFT is making a strong play for a piece of the Mac tax template market. It offers a novel approach with its template package by getting users to subscribe to a series of templates. This is in anticipation of new tax forms (to reflect any changes in tax laws) throughout the years as they are available from the IRS. This Excel template package includes 50 forms, schedules, and worksheets for personal and business returns.

Like Heizer’s entry, Bottomline requires you to have all the necessary forms open so data can transfer from one schedule to another. A Window menu lets you toggle among the open forms. No special printer prep is needed with these templates—they’ll print out in normal printer operations.

STACKING THOSE FORMS
Sooner or later, you knew a HyperCard tax stack had to appear, with the popularity of HyperCard and all. What’s surprising about HyperCard Tax Stacks from Stackware is how well they work. You can click between the top and bottom of any form without any special controls (though printing may be slow because of Hyper-
Card). For now, there are 30 official IRS forms and schedules along with IRS instructions from within the program.

Tax Stacks is obviously aimed at novices—I was tipped off by the questionnaire style of the package and the "Yankee Doodle" sound track at the beginning. This inquiry insults your intelligence by asking questions in elementary language to help you decide which form is for you and to set up personal data. And I think the inclusion of tax jokes is tacky.

You must go through the questionnaire each time you want to change or add data. Once you've completed a template, however, you do not have to do it again.

Beyond the questionnaire, the stack performs wonderfully. The forms and schedules appear in half-screen increments, and buttons let you toggle between different forms.

At $69.95, Tax Stacks is another inexpensive alternative for those who don't own Excel, and it is easy to use.

FUTURE MAC TAXING

For now, the standards in the Mac tax market are MacInTax and the Excel template packages. But what of the future? Excel is going to have some competition in the spreadsheet market from Wingz and Full Impact. This means that Excel template packages along with their manufacturers will have to make room for other templates.

In fact, I expect to see some templates that work with these other spreadsheet programs soon. I also suspect that templates will be made to work with major database applications—expect a template for Panorama in the near future too.
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he next time the stock market crashes, a high percentage of the

winners, or just plain survivors, may be Mac owners. If you invest

in any of the capital markets: stocks, bonds, futures, and the like, and you’re not using your Mac to help you choose and manage your investments, you’re simply not making as much money as you could, and chances are you’re spending too much time making the money you are making.

Your Mac is an invaluable portfolio accountant, technical and fundamental analyst, market reporter, and investment counselor, and it is better suited than any personal computer in history to be an investment genius. Its adroitness lies in its high-speed processing, graphics, ease of use, and lineage (specifically the Apple II, which just five years ago boasted more than 200 available investment software packages, more than there are today for the Mac and IBM PC combined).

Because the tools and techniques used for investing are well known and stable, software vendors have had to compete with each other based on price or market position. As a result, the survivors, like Smith Micro Software and Dow Jones, now sport a wealth of experience in understanding the market’s needs, producing software, and providing customer support.

**JOB DESCRIPTION**

Your Mac can fulfill three major investment functions: technical analysis, fundamental analysis, and portfolio management. Technical analysis is the somewhat arcane art of predicting future market performance based on past market performance. You may have heard of magic formulas like Joe Granville’s On Balance Volume (OBV), oscillators, or momentum indicators. No matter what the approach, the goal of all these technical studies is the same: to isolate an upward or downward trend in the market, or even more importantly, to forecast the reversal of a trend. Because if you’re on the right side of the market when it changes direction, you can make a lot of money. Technicians use formulas in an attempt to quantify the emotion that drives the market.

Fundamental analysts despise technical analysts. Instead of looking at the market as a mass of greed-crazed investors, fundamental analysis looks at the basics of a given company, industry, or economy. If the company has better earnings, a cleaner balance sheet, or better prospects than its competition, a fundamental analyst would recommend buying that company’s security because it was a “better investment.” On the other hand, a technician wouldn’t care. He’d look only at how that security was performing in the market and not care why.

Portfolio management is something that everyone, technician and fundamental analyst alike, needs. Portfolio-management systems keep track of what securities you bought and sold, how much money you made or lost, what you need to report for tax purposes, and so on. In the world of Mac investment software, the technical-analysis systems are the eccentrics, fundamental-analysis systems are the average suburban commuter, and portfolio-management systems are the nerdish accountants.

**THE WALL STREET TICKER**

If you’re a serious investor, you need serious market information and that means, at a minimum, daily price quotations. You have two choices: You can enter the prices yourself from the Wall Street Journal, or you can use an on-line quotation service like Dow Jones, Warner, or CompuServe. The Wall Street Journal is inexpensive, incomplete, and time-consuming. Online services are relatively expensive, but they provide a host of data and are fast.

The average investor should plan on spending $75 to $100 a month for quotes. All the investment software packages included in this article use one or more of the major quotation
should know — and they aren’t SEC.  

BY KEN LANDIS

FUTURES & MAC

vendors, and they do so with an eye on time, which reduces your charges. If you’re considering an investment package that doesn’t provide an auto-dial, auto-log-in, auto-retrieve capability for one of the big three quote services, don’t.

THE ECCENTRICS

In 1954, a book that is still in print today, Technical Analysis of Stock Trends (Boston: J. Magee), by Robert D. Edwards and John Magee, ushered in the discipline we now call technical analysis. Originally, technical analysis was nothing more than watching how the market or a set of securities behaved on a chart. Hence, the first nickname applied to technicians was “chartists.”

Then, in the 1960s and 1970s, a new breed of technicians began using sophisticated mathematic and statistical analyses that earned them the nickname “gnomes,” because their work appeared to be magical, suspended in space with no visible means of support. The nickname remains in use today.

Technical analysis relies primarily on math and graphics, tasks that are well suited to a Mac. The mathematics used for technical analysis doesn’t require any special floating-point hardware or turbo-charged math processors, but displaying the results does require high-resolution graphics.

Three popular packages for technical analysis are Dow Jones Market Analyzer, Pro Plus Software’s Wall Street Investor, and Wall Street Watcher, from Micro Trading Software. Dow Jones Market Analyzer has undergone a number of transformations, from its Apple II origins to DOS.

Built specifically to take its quotation feeds from Dow Jones News/Retrieval, the software leverages all the information available on-line from Dow. The four charts Market Analyzer produces are bar, comparison (two securities versus each other), a relative-strength index (which compares a security price to an index), and an oscillator (which subtracts one security or type of study from the other).

The technical studies performed by Market Analyzer are moving averages, where security prices are graphed as averages with the periodicity determined by the user; trend lines; support and resistance lines, which “channel” the up and down price movements of a security or index; and least-square-fit lines, which are the results of a linear regression.

For any of the charts or technical studies, you can resize and move the charts around the screen, view raw price data as well as the chart or analysis, stack multiple chart windows, easily adjust data for stock splits, and store on disk up to a year’s worth of information for up to 72 securities.
Market Analyzer makes very good use of the Mac interface, and it's supported by one of the industry's best online telephone support teams. Included in the Market Analyzer is the Dow Jones Straight Talk communications package, which is a general-purpose communications system. Straight Talk is helpful for navigating around Dow Jones News/Retrieval, especially for investment-analysis reports and market news.

Pro Plus Software's Wall Street Investor starts its technical-analysis program by providing classic high, low, and close bar charts for the securities you're following. The technical studies are then overlayed on the bar chart. Wall Street Investor performs moving averages (simple, weighted, and exponential), stochastic studies (which are momentum indicators), relative-strength indexes, advance/decline lines (number of days the security closes up minus the number of days the security closes down), trading bands (channels based on averages), performance to index, moving-average performance to index, momentum rate of change, average daily volume, over-bought/oversold index (average number of days the securities price advances versus declines as an index), On-Balance Volume (Granville's theory that a change in volume precedes a change in price), accumulation/distribution (similar to OBV), but a more leading indicator, and the classic point and figure charts, which show the upward and downward movement of a security over time using strings of x's and o's.

Wall Street Investor offers a number of studies that Market Analyzer doesn't. In addition to its added functionality, the documentation for the software is part documentation and part technical tutorial. A companion piece of software for commodities trading is Wall Street Commodities, which has been tuned to meet the needs of technical commodity traders. Both Wall Street Investor programs use Dow Jones News/Retrieval data and offer crisp screens that make excellent use of the Mac interface.

Micro Trading’s Wall Street Watcher is a robust technical-analysis tool. Oriented for the die-hard technician, the software adds to Wall Street Investor’s list of studies with Wiler’s relative-strength index, stochastics, MACD oscillators, William’s Percent R, Arm’s index, and advance/decline volume lines.

The program uses an ingenious English-like macro command language for automatically producing charts and reports. The system can even be set to “wake up” before you or the market does, and do all your work before you get up.

Up to five technical indicators can be displayed on a chart, and Wall Street Watcher makes excellent use of the mouse for drawing trend lines and channels, and for examining data points. All scaling is user-definable, and the software can retrieve quotes from Dow Jones, CompuServe, and Commodity Systems.

THE SUBURBAN COMMUTER

Fundamental analysis is indeed fundamental. This technique compares the earnings, dividends, and other facts about one company with those of another. Once the information is retrieved from the company’s balance sheet or income statement, the company is force-ranked versus its competition. Based on your fundamental bent, the competition could be other companies in the same industry, such as all blue chips, or another criterion such as “only companies with a price/earnings multiple greater than 8 and less than 15.”

There are two ways to do fundamental analysis on a Mac today. The most common method is to use a Dow Jones product called Spreadsheet Link and a spreadsheet. The other is to piggyback your fundamental analysis onto your technical analysis with the Wall Street Investor.

If you're analyzing and sorting numbers, a spreadsheet is probably the easiest way to go. That's why there's only one other fundamental-analysis package on the market. Investment-software vendors quickly discovered that unless they combined their fundamental analysis with other functions, such as a strong technical-analysis system, they couldn't compete with Excel.

Spreadsheet Link lets you define exactly what information you want to import into your spreadsheet, and even the cell you want it in. Once you've constructed your spreadsheet, the software automatically logs on to Dow Jones, retrieves your information, and populates your spreadsheet. It's easy and fast.

Wall Street Investor uses a module known as The Prospector. The Prospector retrieves its fundamental information from the I.P. Sharp database (I.P. Sharp is a major quotation supplier to institutional investors). Once The Prospector is started, you choose from a list of 30 screening criteria. Each criterion can be set to look for values that are less than or greater than a value you choose, such as a dividend greater than $1.50. Once the criteria have been set, The Prospector screens I.P. Sharp's entire database and returns information only on the companies that fit your criteria. After the screening, you can download information on the company into a spreadsheet as a SYLK file for further analysis.

The difference between using The Prospector and Spreadsheet Link is
Every member of APDA has just gained considerably more clout in Cupertino. Because from this moment on, we're not just APDA, close friend of Apple. We're APDA, a part of Apple.

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This holdings report, from Dow Jones Market Manager Plus, shows the composition of an investor's portfolio, including commissions, current price/value, and gain or loss.

that The Prospector is a menu-driven system that doesn’t let you make mistakes. With Spreadsheet Link, your screens will be only as good as your spreadsheet-building skills. Novice spreadsheeters or fundamentalists should use The Prospector. For advanced users, the Spreadsheet Link approach wins because your spreadsheet is populated just the way you want it.

THE NERDISH ACCOUNTANTS
While most people can’t agree on the weather, politics, or religion, every fundamentalist and every technician agrees on portfolio management. Without good portfolio management, you don’t know what trades you’ve done, how much money you’ve made, or how much you have to pay in taxes.

Portfolio-management systems are the accountants of the investment world. Every trade you make flows through your portfolio manager and shows up on transaction reports. All your realized positions are transferred to a tax-reporting module to help you figure out your tax liability. The rule-of-thumb with portfolio-management software is that the more details it tracks, the better.

Since most personal investors can use a portfolio manager even when they don’t have any use for an analysis package, the portfolio-management segment of the market is the most crowded.

Three popular stand-alone portfolio managers are Disk-Count Software's Portfolio Manager 1.0, Dow Jones Market Manager Plus, and Smith Micro Software's Stock Portfolio System. Portfolio Manager 1.0 is targeted at the first-time buyer or less active investor. Dow Jones and Smith are fighting for the more sophisticated investor.

Portfolio Manager 1.0 offers its documentation on disk. You can print it out or refer to the on-line version. The documentation, like the program, is simple.

The software provides basic portfolio-management functions, such as recording the purchase or sale of a security, projected dividend income, a tax table that displays investment-related taxable income, and an auto-updating feature using Dow Jones News/Retrieval or Warner Financial Services.

Portfolio Manager 1.0 is oriented more toward the plain and simple equity investor. The program can also track bonds, options, mutual funds, and treasury notes, but the odds are that if you’re heavily into these types of investments, you’ll want a different package. But for $35 retail, the program is a bargain and the best one to start with.

Dow Jones Market Manager Plus offers the next level of sophistication. Truly a full portfolio-management system, Market Manager Plus is capable of tracking up to 256 distinct portfolios. The program tracks stocks, options, mutual funds, bonds, treasury issues, and cash. The system generates a full suite of reports that will probably satisfy all personal investors, as well as a number of professional ones. It includes a tickler system for reminding you of when dividend and interest is due, and as you would expect, provides a seamless link into other Dow Jones News/Retrieval functions.

Market Manager Plus offers a few simple graphic analyses of your portfolio, including percent of holdings by security, yields, a security cross-reference by annualized gain or loss, and a realized gain/loss. The software makes very good use of the Mac interface and is easy to use. It’s a Dow Jones product backed by strong customer service.

Fighting for top of the line in the stand-alone portfolio-management system market is Smith Micro's venerable Stock Portfolio System, which handles all the securities that Portfolio Manager 1.0 and Market Manager Plus do, as well as money markets and certificates of deposit.

But Stock Portfolio System distinguishes itself from Dow Jones by offering a larger suite of tabular reports. These are current portfolio status, capital account status, profit and loss, dividend income, interest income/expense, transaction audit journal, capital account transaction statement, 30-day advance notice of dividends or interest due and expiring options, tax year profit and loss, and individual-security status. In addition, the software provides excellent margin-handling capabilities.
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The Wall Street Investor's main window highlights the software's broad range of functions.

Having reached the Mac via the Apple II and the IBM PC, Smith Micro's package has a long heritage. Its use of the Mac's interface, however, is only adequate, which reflects its past history. Nonetheless, it is still a full-featured, powerful, well-documented system that has excellent reporting capabilities. And when you buy it, you also get two free hours on both Dow Jones and The Source. Unlike the Dow Jones package, you have your choice of on-line services.

Aside from Smith Micro and Market Manager, another option is to use the integrated portfolio-management system that comes with Wall Street Investor. This portfolio manager is the equal of both of the others. It offers the same features as well as an automatic link to execute buy and sell transactions via Fidelity Investors Express on-line trading system. Wall Street Investor is the only Mac software system that can do this, and it has the advantage of being integrated with a powerful technical-analysis system and the only fundamental-analysis module on the market.

THE WHITE KNIGHT
The clear winner in the Mac investment-software market is Wall Street Investor. The software offers the best or equal functionality at a price that is only marginally higher than its dedicated competitors. The package affords an excellent Mac interface, and a depth of functionality and integration that can be offered only when technical, fundamental, and portfolio-management functions are offered in the same package by the same vendor.

The other systems we've looked at all offer something to different investors. Portfolio Manager 1.0 is a starter kit, Stock Portfolio System and Market Manager Plus are for the advanced trader who doesn't want to do analysis, and the Market Analyzer is for the intermediate technician. Wall Street Watcher is definitely a talisman for serious technicians, but whether its additional studies make it preferable to Wall Street Investor depends on whether you're a Wiler or Williams convert. For our money, Wall Street Investor wins hands down.

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FUTURES

The competition for your investment software dollars will get more intense over the next few years. Major quotation vendors such as Quotron are already offering Mac systems for their professional customers, and sooner or later they are bound to downscale their systems for the personal market.

Other software vendors will continue to come and go in this segment. Unlike spreadsheets, where to be successful you have to best a brand leader like Microsoft, the investment-software market is still wide open. Just as in the stock market, there will be a number of future winners, and just as many— if not more—losers.

KEN LANDIS HAS WRITTEN ABOUT INVESTMENT SOFTWARE IN MORE THAN TEN NATIONAL COMPUTER AND MONEY-MANAGEMENT MAGAZINES SINCE 1981 AND HAS PUBLISHED MORE THAN 150 ARTICLES ON USING A COMPUTER AS AN INVESTMENT TOOL.

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Managing Your Money is a handy financial tool. Use it to take care of your money, and one day your money will take care of you.

Just about everyone with enough money to have a bank account has heard of Andrew Tobias—or at least seen his writings. He's one of the best, most sensible commentators on the financial scene. On the whole, his advice is good and easily assimilated. Plus he's a nice guy.

Several years ago, he collaborated on the design of the best-selling, original (IBM) version of Andrew Tobias' Managing Your Money. Now, he's collaborated with the same group of programmers and publisher to produce this Macintosh version.

This new version of Managing Your Money is not a simple port of any of the earlier versions. It's entirely new, built from the ground up for the Macintosh, and it shows it. The environment is slick and quite intuitive. And it's very graphical. Not only can you manipulate the program in the graphics-oriented manner in which all true Mac programs work but you can also graph just about anything.

The huge, nearly overwhelming set of features is simultaneously the program's greatest strength and its biggest drawback. For while I can do just about anything in my financial life within the confines of Managing Your Money, I'd do with less if I could do it better and more quickly.

The integration is powerful. Whenever you see a field (usually some number) outlined with a dotted line, you can double-click inside the lines, and you'll immediately be shown how the number in question was calculated. In the tax worksheets, this feature is implemented by small arrows. Either way, it's great. Charting and reporting are based on the same data, so at the bottom of screens you'll frequently find a row of icons that allow you to choose the text report or graph you want to see. And, if a dialog box or screen has a Command-P in its title, that means you can get a WYSIWYG printout by pressing Command-P.

FUNDAMENTALS
Managing Your Money is friendly with both MultiFinder and the Mac II, although there's no support for color. Still, Mac II users will benefit from the larger screen.

The program requires 1 megabyte of RAM (in spite of a section in the manual that implies it will run on a machine with 512K RAM — the section is a leftover that refers to version 1.0). Managing Your Money also likes a hard disk, but you can run it (barely) from two 800K floppies, as long as your data files don’t become excessively large. It's not copy-protected, which is vitally important for any financial package. The very last thing you want is to have your financial data locked up because of a lost key disk or some quirk in a copy-protection scheme.

Managing Your Money is surprisingly fast on 68000-based machines like the Plus and SE, although it will make you wait every now and then. Running it from floppies slows it down appreciably. However, running it on Mac IIs or accelerated SEs is a sheer pleasure. It takes full advantage of all added computational power.

Before you get started, you'll run into one of the errors in the Managing Your Money manual. The manual tells you to enter your name and serial number (which is printed on the disk) into a dialog box. When you click OK, you're supposed to enter the program directly. However, you'll actually be returned to the desktop. Nothing is amiss, other than the manual. Just relaunch the program, and all will work as it should.

Most of the testing for this review was done on an SE with 4 megabytes of...
RAM, a Jasmine DD50 hard-disk drive, and a Radius 25-megahertz Accelerator (with 68881). Performance was outstanding, as expected. Tests were also run on all other supported machines, and performance seemed surprisingly good (to me, not to the programmers, I'm sure).

The manual emphasizes the need for saving your work frequently. There's also a Revert to Save command (in the File menu) that instantly takes you back to the most recently saved version of your files. That avoids having to close the files (and sometimes will be the only way you can close them, if you've run into memory problems).

Managing Your Money reacts gracefully if it runs into a memory problem. Indeed, it won't start if you don't have 20K of free storage space available. If memory problems do occur, you may be able to consolidate your accounts to gain working space. Details that are removed by the consolidations can be saved to an external file, so you don't lose them. The publishers claim the average set of user files takes about 250K of disk space. That seems fairly accurate.

The Managing Your Money manual also strongly suggests backing up your data set to a floppy disk (other than the one you're using, if you're working from a floppy) at the conclusion of each session. That's an excellent idea. In fact, Managing Your Money would be much improved if it offered an option to take you through backup automatically.

Managing Your Money comes with some sample checks and order blanks so that you can purchase more of them. The checks are not cheap (exact prices depend on quantities and other details) but are necessary if you plan to use Managing Your Money and your printer to create checks. The prices are in line with similar checks for other programs (such as Quicken).

THE DETAILS

When you start Managing Your Money, it displays a HyperCard-like control screen (it's even called the Home Card). Move into the program by clicking on the icon boxes, selecting commands from the menus, or using keyboard equivalents. The light bulb icon toward the bottom left is not documented. When clicked on, it pops up financial aphorisms, apparently a different one for each day.

The first place to go after launching Managing Your Money is the Remind
"Here in the KPMG Peat Marwick Denver office we use the Apple Macintosh™ on virtually all of our audit engagements, regardless of the type of microcomputer our clients use. So connectivity is a key issue for us. And in that regard, DaynaFILE™ is a key product.

Let me give you one example.

We just completed an audit of a client who leases all kinds of business equipment. They have a general ledger of over 6,000 accounts which was downloaded from their mainframe into Lotus 1-2-3™. The trick was to get those accounts into Excel® on the Mac. We used to do it the old fashioned way—by hand.

This time, we took a Mac SE™ and a DaynaFILE on site and transferred the Lotus files directly into Excel in a matter of minutes, and from there into our Financial Statement program. The whole thing took just 4 hours. To get this far last year it took us 40 hours.

That's a full week's work we saved ourselves. And our client. That's 36 hours we could spend on more productive audit tasks.

"We use DaynaFILE in similar situations all the time."

If you're serious about Macintosh and MS-DOS connectivity like Peat Marwick, connect with DaynaFILE. For information call (801) 531-0203.
The Control Panel Mouse settings are the culprits here, but only to a degree. I have them set pretty much the way I like them everywhere else. Here they work a bit differently.

Let's continue our features tour by looking at the Net Worth menu. When you first use the program, that's where you actually start. You need a net worth (even a negative one) before you can do anything else. Here's where you set up your accounts. You can use the program's presets or set up your own according to any scheme you want. Groups of accounts can be linked so they show up both individually and as part of a subtotal. The subtotals are called aggregates, and they show up italicized in reports so you won't confuse them with the actual accounts. The Reorder Assets & Liabilities command is where you create your aggregates.

The Money menu is next. This is where most users (other than the heavy-duty investors) will spend most of their time. And most of the time you'll be working with the top command, Spend, Receive or Transfer Money. That's where you do your personal accounting. You write your checks here, log in receipts, and record cash disbursements. This is the menu that improved most in version 2.0. There was some awkwardness using this command (it was actually four separate commands) in version 1.0, but the new dialog boxes are vastly improved and make the whole program much easier to use.

That said, it's important to remember that what we have here is double-entry accounting. Each plus must be offset by a minus (or minuses) of equal value somewhere else. The world is balanced. And while this method of accounting is common (nearly pervasive) in the business world, it's rarely the way people keep their checkbooks. Double-entry accounting takes a while to get used to.

Recurring transactions (like your paycheck) are handled by the basic Spend, Receive, and Transfer command. That's a better way of handling things than the separate Universal Transactions command in version 1.0. This is very nicely implemented, and, in fact, is the best way of handling recurring transactions in any personal finance program.

The View & Edit Transactions is the easiest entry port to Managing Your Money's powerful reporting facilities, but it also allows you to modify previous entries. The ability to modify past work freely is handy when you make or discover an error, but it also makes Managing Your Money unsuitable for small-business accounting. Business accounting transactions should not be editable. Errors should...
be corrected by offsetting entries, and an audit trail of all changes should be maintained. If you're just keeping a personal set of books, that's not so important, but in spite of what the ads and the manual say, don't consider Managing Your Money for a small business's books. (Quicken has the same failing.)

Reconcile Accounts does a summing of all accounts and lets you know whether your pluses equal your minuses. If not, it's up to you to fix them by either finding the error or creating an adjustment entry. A nice option here would have been something similar to Quicken's ability to accept a small discrepancy and make an automatic adjustment.

The last five items relate to the creation and maintenance of budgets. You can easily make use of Managing Your Money's excellent built-in graphing here. Cash Forecasting is based on your budget and is designed to avoid the situation where you say: "I'm rich, but I'm out of money!" A feature not mentioned in the manual but noted in the Help system is the Shoebox report. This report, one of my favorites, lists all expenditures for any user-specified period organized and subtotalied by tax and budget categories (that's my style of accounting!).

The Tax menu has only one choice, Taxes are calculated on worksheets, like the one for Schedule C shown here. Managing Your Money makes extensive use of pop-up menus. The one popped up here shows the other tax worksheet reports available.

Tax Estimator, but it's a doozy. The tax estimator is based on your budget and actual expenses. It makes its predictions based on your figures and what it knows about the tax laws. The annual update contains a module on next year's tax rules.

The estimator is organized on three levels and makes extensive use of pop-up menus. The top level is Form 1040. From that form (via pop-up) you can select forms A, B, C, D, E, F, and SE. That's the second level. The small arrows take you to the third level, the worksheets, which sum to specific lines of the higher-level forms. The Tax Estimator doesn't print tax forms nor does it have templates that allow printing to actual blank forms.

You can also do "what if" planning by typing in any values you want. Updating the form will show you what effect your values have.

**FUTURES PLANNING**

The Invest menu is where you keep records of your investments and update and analyze those records. The various commands here will set up automatic reminders of several kinds. You can be reminded of dividend due dates, bond or CD maturities, and option expiration dates. A running tally of gains and losses is also kept. The only nonintuitive part of the whole procedure is the initial setup. You don't do it with any of the Invest commands, but with the Create or Edit Assets & Liabilities command on the Net Worth menu.

This, with the exception of the reminders, is low-level stuff, but it works well and is a handy way to keep your portfolio ordered. Just don't expect to do any analysis much more intensive than simple graphs. For technical stock analysis, you'll need one of the heavy-duty analysis programs like Wall Street Investor, a $695 integrated analysis program from Pro Plus Software (2830 E. Brown Road, Mesa, AZ 85203; (602) 461-3296). [For more on investment software, see Ken Landis' article elsewhere in this issue. — Ed.]

The portfolio manager will handle splits, mergers, shorts, margins, and most other possibilities. And the chapter of the manual devoted to this menu is packed unusually full of good advice (presented in the manual's normal scattershot fashion).

The Plan menu is a cute bunch of
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THE PAPER TRAIL

Managing Your Money isn't the only personal finance program out there. It certainly has more features than any of its competitors, but it also has a higher price tag.

If your financial management and planning requirements don't warrant all the features of Managing Your Money, consider the full-featured MacMoney 3.02, which lists for $119.95 and is published by Survivor Software (11222 La Cienega Blvd., Suite 450, Inglewood, CA 90304; (213) 410-9527); and Quicken, a checkbook register (single-entry) program, which lists for $49.95, published by Intuit (540 University Ave., Palo Alto, CA 94301; (800) 624-8742 or in California, (800) 468-8481). Both are very highly rated.
All tax programs should look and print like this one.

Better yet, all tax programs should think like this one.

MacInTax Federal for the Apple Macintosh.

Simply put, MacInTax whisks you through stacks of receipts and W-2's by allowing you to enter data directly into 72 IRS forms, schedules, worksheets and statements displayed on-screen in identical IRS format. The program totals all entered amounts, automatically makes all tax calculations, and instantly links data to and from individual forms, schedules, worksheets and statements.

It even checks your input and helps you prevent illogical, inconsistent or incomplete entries.

The complete IRS instruction booklet is stored on a line-by-line basis.

What's more MacInTax lets you easily import text files from a variety of outside spreadsheet, database and accounting programs.

When you're ready to sign and send your completed return, the program prints forms and schedules identical to the official IRS versions (complete with your data) onto blank paper using your supported laser or dot-matrix printer. Of course, all printed forms are fully IRS-approved.

One look and it's easy to see why, each year, users give this program their highest rating.

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The highly capable drawing and painting application gets bigger and better.

Canvas Stretches

In the best of all possible worlds, we'd no doubt have a single application that encompassed everything from accounting to Zork. In a slightly less than perfect world, we'd at least have a program that allowed us to paint and draw with equal facility. It will come as no news that neither of these is the kind of world we live in. Still, until the day comes along when we'll be able to import, edit, draw, paint, and manipulate graphics from within a single package, we have Canvas 2.0, a powerful, full-color object-oriented drawing program with significant painting power. The new Canvas is a mega-upgrade from Canvas 1.0, with a collection of features that should prove attractive to a broad range of users in fields from the graphic arts to computer-aided design (CAD). And the switch from drawing commands to painting commands and back — the prickliest part of version 1.0 — has been elegantly smoothed out in the new edition.

In fact, the multifaceted nature of Canvas 2.0 makes it difficult to assess. The $299 price tag alone puts its competition at a distinct disadvantage. But since Deneba Software, the program's developer, is clearly aiming for the same market as MacDraw II, we decided to take that as a basis of comparison. Here's what Canvas looks like when stretched out.

THE WORK SPACE
Full color work in Canvas 2.0 will call for a Mac II, but a monochrome Mac will do for most other projects. However you work, though, size shouldn't be a problem; your work area can be up to 9.3-x-9.3 feet. And your preference options include precise manipulation of dimensions (fractions or decimal, from one to four decimal places), and the coordinate system (where 0 degrees is straight up and angles increase clockwise, or where 0 degrees is on the horizontal axis and angles increase counterclockwise). Wisely, Canvas lets you specify the amount of vertical and horizontal page...
Canvas Stretches

overlap when printing multipage drawings, so you can cleanly match the segments of your picture. That's more flexibility than in MacDraw II.

You may draw on any number of layers in a document. The layers are like transparent glass trays, offering a way to manage large numbers of objects easily: All objects drawn in a given layer can be edited and restacked with respect to each other, without affecting objects in other layers. A Layer Manager lets you create, name, re-stack, and delete layers, as well as designate each layer as visible, grayed, or temporarily overridden by some color. Layers can be activated through the Layout menu or through the Layer Monitor status indicator at the bottom of the window, and can be printed or saved independently. Selected objects in an active layer can be sent to any other layer. MacDraw II also works with layers, but doesn't offer the option of graying or using color to override a layer. It does, however, let you edit the objects of multiple layers simultaneously, which Canvas 2.0 does not permit.

A squad of "managers" allows you to customize and control rulers, alignment, objects, text, and arrows. The Ruler Manager, for example, has settings for six different rulers, with adjustable units (inches, picas, points, or centimeters), number of minor divisions (from 0 to 32), scale (such as 1 inch equals 1 foot), and even adjustable symbols (",", in., ft., cm., and so on). The rulers are on the top and left edges of the drawing, and you can drag their zero points wherever you like. Dragging on the appropriate ruler creates a horizontal or vertical guideline that you can position anywhere in your layout. Similarly, Option-dragging "peels away" a floating copy of a ruler. Both guidelines and rulers are non-printing objects, and you can drag away as many copies as you need. The guidelines can act as magnetic alignment tools (such as grid steps); you can hide or show them all with one command. Not a bad idea. MacDraw II's rulers are also adjustable, but don't include guides or peel-away rulers.

In addition to the rulers, there are Grid and Snap to Grid commands.

Unlike MacDraw II's grid size, which comes directly from the ruler divisions, Canvas has a Grid Manager that lets you set grid divisions from 1 to ½ inch in a dozen steps, and choose independent x- and y-axis snapping. This gives you a lot more control than MacDraw II does. Canvas 2.0 also provides some key tools from the CAD world — auto-dimension lines, perimeter and area calculation and display. (Once displayed, however, the calculations become pure text, and won't change as you change the object's dimensions.) The auto-dimensions and other precision features don't make this a substitute for a dedicated drafting tool, but they come close enough for less complex jobs.

LOOK AT IT THIS WAY
Canvas 2.0 lets you assign a name to a view of any chosen area of a document and then put that name into a menu so that you can quickly return to the particular view at any time. MacDraw II shares this feature. Canvas offers two methods for zooming in and out of an image from 3.25 percent to 3,200 percent — a magnifying glass that zooms in gradual steps, and a pop-out chooser that instantly reaches any of the 32 magnification or reduction levels. MacDraw II zooms to the same extremes but with only ten levels in between. Canvas gives you the option of viewing and editing an image in QuickDraw or PostScript modes that let you see an on-screen approximation of what you'll be getting from your output device. QuickDraw mode shows what an ImageWriter or non-PostScript laser printer would print, and PostScript mode shows what you

For technical illustration and other projects requiring measurement and precision, Canvas 2.0 offers nonprinting guidelines, peel-away rulers, auto-dimensioning lines and arcs — and does some tricky math for you.

Canvas 2.0's automatic tracing facility does a fast and respectable job of drawing an object to follow the contours of a bit map. Shown here is the difference between two tracing options.
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can expect from a LaserWriter, Linotron, or other PostScript device. One last mode, Wireframe, displays all objects without fills or colors, bordered with 1-point lines at any magnification, much like in Illustrator 88's normal editing mode. A Wireframe view redraws at about twice the speed of the other modes. MacDraw II displays only in QuickDraw mode.

Canvas is also ahead of the game in the variety of file formats it can handle. It can read and write MacPaint files, PICT, PICT2, or tag image file format (TIFF) files, with a "read only" option. It can directly read files from the old MacDraw. MacDraw II opens only its own file format and PICT, and while it can import, rotate, and scale bit maps, it can't edit them since it lacks anything comparable to Canvas 2.0's painting abilities.

**DRAWING ON YOUR RESOURCES**

Canvas 2.0 gives you the standard tool icons for drawing the mandatory basic lines and shapes, plus a new tool for continuous multipoint Bezier curves — the mainstay of Illustrator and FreeHand. The version of Canvas 2.0 we had for review didn't yet offer Beziers with all the sophistication provided by Illustrator and FreeHand, but a free upgrade, available by the time you read this, will handle Beziers much like the Big Two do it. Tool icons with hidden options or subtleties are identifiable by their thick edges, and Option-clicking on them will pop out related menus. The Bezier, freehand, and polygon tools, for instance, each have a pop-out menu for adding, deleting, or selecting control points.

For one or more objects, you can select a background color and foreground color (each from a palette of 256), a pen shape (a rectangle of variable height and width), and a fill pattern from one of three palettes or from a graduated bar of increasing gray density. Selecting a pen pattern offers the same options as fills. You can also select from five different line-end styles — plain, arrow at start, arrow at end, arrow on both ends, and a fifth choice that makes auto-dimensional lines or arcs that have their length or degree-span permanently attached and displayed at the middle of their span. The values change as the line or arc is changed.

Canvas 2.0 can show you a great deal about any object you select, and, more importantly, it lets you change its attributes and (within limits) its basic nature. Furthermore, if you select a group of objects, you'll see just the group's combined dimensions and the number of objects in the group. You'll also have the option of converting the group to a bit map. The Bitmap option lets you convert a drawn object into a bit map of a specific bit density between 72 and 2,540 dots per inch (dpp). When you select a single object, you can see and change the object's type (text, oval, rectangle, polygon, and so forth), its bit-map density, fill pattern, background color, foreground color, pen shape, width, pattern, numerical size and position, and its ink mode. This last option covers the eight kinds of effects that can be produced when two graphics overlap. None of this is available in MacDraw II.

**COLOR CONTRAST**

Canvas 2.0 recognizes the specific Mac and the color mode you're using and gives you an appropriate color selection — up to 256 colors on a Mac II. On a Mac Plus or SE, or Mac II in two-color mode, your choice is limited to the eight QuickDraw colors — red, green, blue, cyan, yellow, magenta, black, and white. Canvas can import and correctly display color or grayscale items such as scanned images, colored bit maps, and objects. When printing color documents on a LaserWriter, Canvas throws a curve: Instead of printing the gray equivalent of...
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a color (like a black-and-white photo) Canvas prints light colors and light grays as pure white, and dark colors and dark grays as pure black. But it offers an alternative. On your request, Canvas can create a halftone (dithered bit map) rendition of a colored object by changing its color to an appropriate shade of gray. You can customize the appearance of the resultant bit map by choosing from 15 halftone matrices or dither patterns. On a color printer, such as the Tektronix 4693D, Canvas prints all colors faithfully with no conversions necessary. MacDraw II displays only the basic eight QuickDraw colors, and it prints all color as high-contrast black and white on the LaserWriter. Even on a 4693D, MacDraw II prints only in the basic eight QuickDraw colors. MacDraw II, however, analyzes a file as you try to print it and, if the file contains color, offers the option of printing color separations with registration marks. Canvas 2.0 doesn't have a separation facility.

WHEN IT'S TIME FOR A CHANGE
You can edit an object by selecting it and using the menus or Command-key equivalents, or, if you want to begin reshaping it, you can simply double-click on it. As a power touch, you can open or cut off parts of polygons or Bezier curves by snipping them at their vertices or anchor points. You can also combine two open polygons or Beziers into one object by joining their loose ends with a "gluing" tool. Special effects for objects, bit maps, or groups of objects include flipping, 1-point and 2-point perspective (to give an illusion of depth), skewing and distorting, and rotating in 1-degree increments or by dragging. Transformed objects can be returned to their original shape and orientation with a single command. MacDraw II lacks the object-cutting and gluing facilities and can't skew, distort, apply perspective, or automatically return transformed objects to their original shapes.

Canvas 2.0 lets you operate on text with the same variety of options and facility that you have with objects. You can mix any font, size, style, and color in a single text block, as well as rotate, skew, and distort text. Rotated text prints perfectly smooth. Skewed or distorted text, however, looks and prints like a jagged bit map, even on a LaserWriter. Unfortunately, special-effect text can't be edited as text unless you restore it to its original form. MacDraw II lets you edit rotated text directly and additionally supports full (newspaper-style) text justification.

MANAGEMENT TRAINING
Canvas, like American business, is full of managers. These managers are available through the tool palette and from the Edit menu. A Custom Pen Manager sets the height and width of the pen in 100 preset combinations of whole points, plus ten savable customizable sizes and one nonsavable custom size. The pen size ranges from 127 to \( \frac{1}{256} \) points. An Arrowhead Manager lets you choose or modify any of the seven basic types of arrows. MacDraw II has comparable arrow and line-width control, and also has an editor for creating your own styles of dashed lines.

The Canvas Pattern Manager lets you activate one of three available fill pattern palettes. You can edit any existing pattern or create new patterns, saving them in the empty third palette. The Color Manager handles the colors and color palettes — creating, modifying, saving to disk, loading from disk, picking new colors from the 16.7-million-color wheel, blending and contrasting, lightening, darkening, and almost infinitely fine-tuning. The color editor lets you see your color in CMY (cyan, magenta, yellow), RGB (red, green, blue), HSL (hue, saturation, lu-
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Canvas Stretches

Canvas Stretches

minance), HSV (hue, saturation, value), or YIQ (not an acronym) values. To assist, a bundle of sample color palettes comes with the program.

Color artists will want to know that Canvas behaves differently from other programs in handling color. In some programs, if you alter the color palette after you've assigned colors to your objects, the color of the existing art also changes. In Canvas 2.0, once you've assigned a color, it sticks. Thus, you can change palettes and edit colors all you want, without side effects. This independence from the color palette means that you can actually use more than 256 colors in your documents. MacDraw II offers colors only in the pattern editor, and only gives you the eight QuickDraw colors.

Other managers give you different options. The Alignment Manager gives you the option of aligning objects by centers, individual sides, logical combinations of sides, or to a line that you draw. MacDraw II scores points on Canvas here. It offers more alignment options, a graphic image to demonstrate what your alignment choices will mean in action, and the ability to “distribute” select objects along an axis. Canvas, however, fights right back with a Scaling Manager that can resize an object by ratio or percentage. You can resize proportionally or disproportionately, and optionally scale the object's line width — valuable if you do a lot of scaling. MacDraw II has no numerical scaling ability.

You can handle simple duplication of an object in Canvas 2.0 by pressing Command-D, by menu, or by Option-dragging an object. Heavier-duty duplication is directed by a (guess what?) Duplication Manager. This lets you set the number of copies, as well as the vertical and horizontal offset, resizing factor, and rotation, for each successive copy. You can also choose beginning and ending patterns, PostScript gray-scale levels (from 0 to 100 percent), and palette colors for the duplication process. This feature lets you create color or gray-scale gradients, and you can choose to distribute the duplicates along a line that you draw. MacDraw II has no comparable effect.

PAINT JOB

The painting tools within Canvas 2.0 reside in the same palette as the drawing tools. You can use dedicated icons for switching between drawing mode and painting mode, but you can also change modes by choosing a mode-specific tool and using it anywhere you please. If you use the brush (a paint-only tool) in a region that has no existing paint area, Canvas will create one automatically and will adjust the size of the area to the size of your entire first stroke. Also, when you cre-
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ate a new area for painting, or select an existing paint zone, you can specify or change the bit density (from 72 to 2,540 dpi). Any time you resume painting in that area, you're automatically painting at that resolution.

As talented as Canvas is, a given paint item can contain only two of 16.7 million colors — the ink color and the "paper" color. But this can't really be considered a lapse since Canvas makes no claim to be PixelPaint. The paint function is available primarily to allow you to edit imported TIFF files; the program's publishers prefer to think of it as a bit-map editor.

You can layer paintings and objects of various colors (as you would in Illustrator) to achieve a desired multicolored effect. Each of your paintings is treated as a floating mini-easel that can be moved and restacked like any other object. Its background can be perfectly clear, so you can build a single image with many painted layers.

There's an airbrush or "spray can" icon and an accompanying Brush Manager to set the pattern shape and flow rate. The standard (editable) brush, paint can, pencil (with its own zoom ability), and eraser are all there and work predictably. You can crop bit maps by hand to any degree, or automatically trim off excess white space by invoking the Crop command. To ice the cake, the Autotrace feature creates an editable smooth or sharp-cornered polygon to follow the inner and outer contours of any selected bit map or bit-map section.

HOLY MACRO!

Canvas 2.0's MacrObjects facility provides for simple construction and access to object libraries, allowing you to create easily reusable objects to customize your work environment for specific tasks such as electrical or construction design. To create a macro you select a draw or paint object, or a group, and then officially dub it a macro by naming it in the Macro menu. Its name, along with a small icon of the object, will then appear in the Macro menu of your current document. To use a macro, you select it from the Macro menu and then click somewhere on your document to create automatically an exact-size copy of the original. You can change its size by simply dragging.

Macro sets can be named and saved and used independently of the document in which they were created. MacDraw II also uses object libraries, and lets you save or access library objects by name from a dialog box that displays a large-size preview.

CANVAS CAN

Canvas 2.0 also comes as a less powerful, but very capable desk accessory.
At this writing, the DA is included as part of the program package. The DA version, over 400K, runs well on a 1-megabyte Mac.

To sum things up, Canvas 2.0 has all the best of its original iteration, plus greater depth and some powerful and welcome new features. It is stiff competition for MacDraw II, and in several comparable areas it’s stronger. In other respects the two programs come out about even, but even in areas where Canvas falls a little behind, it’s catching up fast. At this writing, Deneba is adding enhancements — and not just little ones. Based on what we’ve seen of a beta version of the next release, they’re going for the gold.

Overall, Canvas 2.0 is a better value, and would be even if the two programs were priced identically. Canvas’ painting talents — impressive for a draw program — and its companion DA definitely tip the scales in its favor. As a free upgrade to version 1.0, who can argue? Even for the full price, Canvas 2.0 could be the single graphics program to fit most illustration needs.

PHILLIP ROBINSON WRITES BOOKS AND ARTICLES ABOUT COMPUTER GRAPHICS ON MACS, PCS, AND WORKSTATIONS. HE IS AN EDITOR FOR THE ARCHITECT’S PC NEWSLETTER.

MACUSER RATING

Canvas 2.0

Follows Mac Interface:

Printed Documentation:

On-Screen Help:

Performance:

Support:

Consumer Value:

Comments: Richly endowed new version of a popular drawing/painting program. New features include full Bezier curves, auto-tracing of bit maps, full support of 16.7 million colors, perspective and skew commands, and a simplified interface.

Best Feature: Combination of complete drawing tools set with ability to edit high-resolution bit maps.

Worst Feature: Transformation of distorted text into bit maps.


PHILLIP ROBINSON WRITES BOOKS AND ARTICLES ABOUT COMPUTER GRAPHICS ON MACS, PCS, AND WORKSTATIONS. HE IS AN EDITOR FOR THE ARCHITECT’S PC NEWSLETTER.

MACUSER RATING

Canvas 2.0

Follows Mac Interface: ★★★★★

Printed Documentation: ★★★★★

On-Screen Help: ★★★★★

Performance: ★★★★★

Support: ★★★★★

Consumer Value: ★★★★★

Comments: Richly endowed new version of a popular drawing/painting program. New features include full Bezier curves, auto-tracing of bit maps, full support of 16.7 million colors, perspective and skew commands, and a simplified interface.

Best Feature: Combination of complete drawing tools set with ability to edit high-resolution bit maps.

Worst Feature: Transformation of distorted text into bit maps.

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Fitted Sheets

In the war for the survival of the fittest spreadsheets, the next generation begins to challenge Excel in graphics, presentation, and programming capabilities.

By Clay Andres and the MacUser Labs Staff
Spreadsheet Comparison

Before there was a Macintosh or even a PC, VisiCalc roamed a numeric world of two worksheet dimensions — the x,y-axes — apparent master of all it surveyed. But that's just another dinosaur story. As with other species, VisiCalc's extinction was aided and abetted by the arrival of two formidable predators: Lotus 1-2-3 and Microsoft Excel. Since then, aeons have passed in computer time, and other Darwinian tales are in the making. Lotus 1-2-3 is already a dinosaur (even though it's not extinct), since Excel has surpassed it on many counts. On the Macintosh side, Excel's reign has continued for quite some time. But predators can become victims, just as successive species can perish because of an inability to adapt to changing conditions. Neither Lotus 1-2-3 nor Excel has seen a major upgrade since its introduction, though both companies are promising imminent changes.

The fact is, the spreadsheet has evolved beyond simple row-and-column tables and is fast becoming something rich and strange. State-of-the-art Macintosh spreadsheets can now variously offer database management, graphics, presentation capabilities for desktop publishing, and macros for automating repetitive processes. Macros themselves have burgeoned into full-fledged programming languages. With Full Impact from Ashton-Tate (the No. 3 software company) and Wingz from Informix Software, you get more powerful presentation capabilities than with Excel and a higher level macro language. In fact, Wingz's language is not based on macros at all but is a compiled language on which the interface is built.

It's nonetheless important to put things into perspective and to cut through the hype. While Full Impact is being marketed as a spreadsheet for desktop publishing, it has none of the layout tools necessary for precise placement of elements on a page. The same is true for Wingz. For DTP you have to turn to Ragtime 2 from Cricket Software. Ragtime 2 does desktop publishing of spreadsheets the way Mac users expect it should be done, and its forms-creation capabilities have made it very popular in Europe, where the program was written. For that matter, TrapEase from Access Technology — a true power user's spreadsheet — also has some superior presentation features going for it, though the program takes some getting used to.

But not everyone wants a spreadsheet that can walk the DTP dog. A power-laden program can be its own worst enemy if it's difficult to learn or use. This has been one of the chief complaints about Excel, which spawned numerous training courses and texts.

People who need a spreadsheet only for keeping simple budgets or presenting expense statements may want to consider MacCalc from Bravo Technologies. MacCalc has no graphics capabilities, but it offers good performance and a low price. It also ran faster than Excel in most of our tests.

Then there's your non-power user with multiple needs, such as word processing, spreadsheet, and database. How about a program that addresses those needs? Microsoft Works is aimed at this market. It includes four easy-to-use integrated applications — spreadsheet, word processor, database, and communications — plus a drawing palette. Works is convenient and economical, but it's easy to outgrow any one of its applications.

As in any crowded software field, users should do their own targeting when buying a spreadsheet. You don't need a Clydesdale to cross the street. We at MacUser Labs will help you define what you need by examining seven spreadsheet programs for the Mac and comparing them to Lotus 1-2-3.

SPREADSHEET BASICS

VisiCalc laid down the common denominators. A spreadsheet must, at the very least, have horizontal and vertical arithmetic, usually expressed as rows and columns. It should allow formula entry into any cell, so that new data can be created anywhere on the spreadsheet. And it should provide dynamic cell linkage, so that formula cells automatically update when a referenced cell changes. These three basic abilities allow spreadsheets to manipulate large amounts of data and to test or analyze the results. From there, a rich overlay of features stretches the spreadsheet paradigm past the point of recognition.

Data entry, editing, and navigation: Six of the seven programs we tested use the same method of data entry: numbered rows and lettered columns with a matrix of thousands of blank cells extending out far past the screen. (TrapEase, the exception, uses blocks instead.) This data-entry method is somewhat misleading. While companies boast about the number of cells in their worksheets, what they fail to tell you is that most of the cells can't be filled with data.

The only spreadsheets we could fill were MacCalc, which has a relatively small spreadsheet (125 columns by 999 rows) and Full Impact (256 columns by 2,048 rows, using virtual memory, the strategy of using disk space as a memory buffer when RAM is full). Excel — which
can use only 1 megabyte of memory, regardless of how much RAM is in your Mac — had the smallest maximum size of the seven Mac spreadsheets we tested (on a 1-megabyte SE, 256 columns by 204 rows, with 213 cells in the 205th row). Under almost all conditions, Full Impact's virtual memory is fast and efficient. However, you need lots of disk space, and under certain conditions (such as large databases, sorts, or copies on a machine with 1 megabyte of RAM), the program will page between memory and disk for hours. This is called thrashing.

Typically, spreadsheets let you type text, numbers, and formulas into the appropriate cells to build a model. Cells can then be selected and edited within the formula bar at the top of the spreadsheet. Ragtime 2 is the only spreadsheet that has a cursor in the cells themselves in addition to the formula bar. And why not? Indirect editing is a holdover from VisiCalc and the PC. All Macintosh programs should be able to edit data directly on the page.

Selecting ranges of cells is also a standard spreadsheet feature. In addition, Excel, Full Impact, and Wingz have island selection. This enables you to select a noncontiguous range of cells by using the Command key to extend the range. Wingz and Excel can select whole rows and columns concurrently using this technique.

For moving around, Full Impact and Wingz also have navigation arrows: You click an arrow, and the screen cursor moves to the next or last active cell in that direction. To speed up moving around, all of the programs have Go To commands except MacCalc, which has Search by Text or Value commands. In addition, Full Impact lets you type a cell reference or range name into the location indicator, and it will go to that selection. Wingz has a Go menu with the most complete Find command of any spreadsheet — it will find cell types in addition to cells and text. It also has a Select command that can select all cells of a particular type or select a cell's dependent or precedent cells. This is a valuable auditing tool.

Full Impact enhances the interface with icon bars that allow you to click on an icon to execute a command, rather than locating it in the pull-down menus. There are three bars of 14 icons that can be customized for your personal use. If you're typing data and using the keyboard, the icons are not that useful. If you're editing, entering formulas, or creating graphics, however, your hand is probably already on the mouse and the icon bars are quick and convenient to use.

Trapeze fits the three basic requirements of a spreadsheet but throws away the row-and-column model. Instead, you create blocks and place them on a blank page. Each contains cells into which you can enter data. You can always reshape the cells within the block, add or delete cells, and rearrange blocks on the page. Numeric blocks in Trapeze can contain as many as 32,000 by 32,000 cells, but there is no way to reference the individual cells by column and row numbers. Instead, you reference entire blocks by name and index. Titles and labels must be entered as separate blocks, since you can't mix text and numbers, since you can't mix text and numbers. Trapeze worksheets are built of many smaller blocks linked by formulas.

The advantage of Trapeze's blocks is that they impose a certain orderliness that can be very helpful when you're creating large or complex models. Different elements exist as distinct, named blocks that make the underlying logic clear and auditing easier. The disadvantage is that you can't simply start entering data and changing the format as you go. Trapeze worksheets require a certain amount of planning.

Data formats: Data for all the spreadsheets we tested can be displayed in various formats, including text, fixed, float, scientific, logical, date, and time (although MacCalc has no time format). All seven of these programs can control the number of decimal places and the way in which negative numbers are displayed. They all can also add commas and dollar signs to numbers automatically.

Excel has the ability to define custom data formats and add them to the menu. This makes it easy to display interna-

![Anatomy of a Spreadsheet](image)

While no one product looks quite like this spreadsheet amalgam, this illustration defines many of the handy features available on Mac spreadsheets.
Excel creates three separate, linked files for a spreadsheet (top left), chart (right), and macro (bottom). This Excel application converts surveyors' readings into a site plan. Notice the custom data format on the spreadsheet (N29E, for example), which is unique to Excel.

Excel 1.5

Calculations: As far as spreadsheet calculation speed goes, none of the Mac programs on an SE was as fast as Lotus 1-2-3 on a Compaq 286 (see "How the Spreadsheets Were Tested"). Excel and a beta version of Wingz were faster than 1-2-3 on a Mac II but not on the most important test, which tested the speed of arithmetic operations that make up the bulk of spreadsheet calculations.

Among the Mac programs, MacCalc showed the fastest arithmetic recalculation speed on an SE, while the beta version of Wingz showed the fastest time on a 4-megabyte Mac II. Wingz also had the best overall speed on the Mac II. Ragtime 2 was conspicuous as the slowest program overall on either computer. Only Excel, Full Impact, and Trapeze could handle a large (15,000-cell) spreadsheet when limited to 1 megabyte of memory.

Remember that a purchasing decision should not be based on speed alone. The way you do spreadsheet tasks is also very important, and much time can be spent in setting up calculations. When you build a formula, each program will recognize the difference between text and numeric data, and typing an equal sign (=) puts the program into Equation mode. With Full Impact, though, you don't always need to type the equal sign, because the program automatically recognizes any of its built-in functions as being part of an equation. That's a simple example, but it's the kind of shortcut you should look for in any program you evaluate.

Typically, you type in numbers, operators, or cell or range references, or you use built-in functions to create equations. All of the programs allow you to choose built-in functions from the menu and paste them into the formula bar. Wingz pastes variable names along with the function as a reminder. Trapeze has submenus for built-in functions, operators, and block names.

All spreadsheets adjust equations automatically when you move or copy equations or add or delete rows and columns. In cases where equations contain fixed cell locations, the references can be made absolute so that the equation doesn't change when copied to a new location. Built-in functions are extremely useful. For example, it is much easier to type...
MacCalc 1.2

It's possible to format the data in MacCalc to make an attractive presentation. In this sample, you have variable row heights and different font sizes. You can also assign notes to any cell, indicated for future reference by a small black box in the upper-left corner of the cell.

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=SUM(A1:A100) than to select each cell and type a plus sign (+) each time. Also, most of us don’t know or remember the formulas for calculating compound interests or computing mortgage payments. All the programs have built-in mathematical, statistical, logical, trigonometric, financial, and spreadsheet-manipulation functions. In addition, all the spreadsheets except Works have date functions, and Excel, Trapene, Full Impact, and Wingz have database functions.

Excel’s Paste Function command lists all 131 functions alphabetically, which makes finding the right one difficult (though typing the first character or two will put you in the range that you want). Full Impact, Wingz, and Trapene use hierarchical menus so that functions are subdivided by type. Wingz has 146 defined functions (with an additional 159 HyperScript functions), while MacCalc has the fewest with 51. Excel has the ability to write custom functions and add them to the menu list. Full Impact function macros are displayed in the macro menu (see “Macros” section of this report).

In Ragtime 2, each cell can contain a second formula that affects the action of the first. If the second evaluates to true, then the main formula is calculated; otherwise, the cell value remains unchanged. Entering a value into the cell will not overwrite the second formula. This feature makes it possible to replace one value with another (for example, to substitute low, medium, high for 1, 2, 3).

Arrays and matrices: Data analysis does not always proceed in simple cell-and-range fashion. It is often helpful to have functions that can act on a group of cells simultaneously while keeping their spatial arrangement intact. Trapene, Wingz, and Excel allow you to do arithmetic on entire tables, which are called matrices (an array is a single row or column.) You can multiply or add two matrices together, getting another matrix as a result (matrix arithmetic). Statistical functions like regression analysis and frequency distribution require matrix inputs. You can also solve systems of simultaneous equations using Wingz’s NSOLVE function or Trapene’s GAUSS function. Excel comes with an example of how to build a macro to solve systems of simultaneous equations using Gaussian elimination.

Trapene’s table blocks all functions as arrays, while in Wingz and Excel the arrays must be specifically defined. Because Trapene’s functions all use matrix arithmetic, this program can adjust block size automatically. For instance, Trapene has an Amortize function that can be entered into a single-celled block. When the function is evaluated, the resulting block expands to a four-column amortization schedule with as many rows as there are payments. Change the length of the loan, and the table auto-sizes to re-
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Designed by Tim Lundeen, one of the principal developers of Microsoft Works.

Please circle 176 on reader service card.
A Mac Magna Charta: How to Build a Chart

Creating charts is one of the more common spreadsheet tasks. Take a look at how the five charting spreadsheets go about it.

Charts in Full Impact and Wingz, the two newest programs, are the most similar. Both have graphic layers that can draw objects, including chart objects, over the spreadsheet. Trapeze has a chart block type. This has the effect of appearing similar to Full Impact and Wingz, but it is not at all like a graphic object. Excel's charts exist as separate documents linked to the spreadsheet by reference, while Works' charts are part of the spreadsheet document but are displayed in a separate window.

In all the programs except Works, you select the data and execute a Chart command, and a default chart is created. Works has a Chart command that opens a dialog box. You fill in the appropriate information, including the data ranges. This means you must know the coordinates of the data range before you choose the Chart command, because the dialog box will most likely obscure the information. Click OK and the chart appears in a new window. To modify a Works chart or to see the effect of data changes, you must go through the dialog box again, since you cannot edit the chart directly.

Full Impact is the easiest to use. Select the data range and click on a chart icon or choose a chart type from the Chart Gallery command. A chart pops up on the spreadsheet and can be moved or sized anywhere on the spreadsheet. The screen scrolls automatically when enlarging a chart past the edge of the screen.

To customize a Full Impact chart, you can modify all chart elements using the Get Chart Info command in the File menu. It's not the most logical place for the command, but it is very convenient to set all of the chart attributes from a single dialog box. You can also fill in the text and type in titles directly on the chart. You can drag the legend to position it anywhere along the graphic boundary of the chart. To explode a section of a pie chart, you simply pull it out with the mouse. You can use island selection for charting noncontiguous data, but labels must be adjacent to the data for Full Impact to find them.

Trapeze is similarly easy, but you have to write a chart formula — for example, Piechart(chartrange) — to create a chart block, though it's very easy to alter the chart parameters. Double-clicking on the chart block brings up a dialog box for modifying the various chart elements, obviating the need to hunt through the menus to find the right command.

To create a Wingz chart, you first select the data, click on the chart tool, and drag a box where you want the chart to be. The chart appears in the box, but unfortunately, the box can't be bigger than the screen. In the beta version we saw, the screen doesn't scroll to accommodate charts larger than the screen, so you must enlarge them by manually scrolling the screen and then resizing the chart. This is not very Mac-like. Getting charts placed and sized can take several steps. We hope that this will be corrected in the final release.

The method of modifying charts and chart elements in the beta version of Wingz was cumbersome for anything except the simplest plots. You can select any of the chart elements (legends, axes, series) and then modify them using the appropriate chart command. It can take many trips to the menu bar to get a chart just right. All ranges must be designated on the spreadsheet and set from the Graph menu — this includes titles, headings, and footnotes. Series labels must be part of the data range, so you often have to copy pieces of the spreadsheet to a new range to assemble all the chart pieces in the proper order. There is no way to edit or type on the charts directly.

Moving and sizing a chart with Wingz, Full Impact, or Trapeze can be done anywhere on the page, and when data is updated, the charts update simultaneously.

Excel's chart documents are created by choosing the File New command and choosing Chart as the new document type. A new window opens with the selected data charted. Excel automatically creates a chart formula, which is similar to a Trapeze formula without the chart function name. Formulas make it possible to chart data from different spreadsheets in a single Excel chart. When an Excel chart window is active, you get a different set of menus with commands to customize the appearance of the chart. You can change chart types; format axes, borders, tick marks, legends, and text; attach text; draw arrows; select patterns; custom the plot; and explode wedges of a pie chart.

You can edit the Series formula as you would any function — directly in the formula bar by typing, or dynamically on the linked spreadsheet by making selections. You can also change the order of the axes titles, legend, or data series, or you can add or delete the series.

Clay Andres

THE INTEGRATED WORLD

Lotus 1-2-3's lasting contribution to spreadsheet standards was the integration of charts, database functions, and macros with the spreadsheet. Lotus engineered the strategy because it was difficult to share data with other applications in the old PC days. Sharing data on a Mac has always been easier than on a PC, but 1-2-3's combination has turned out to be useful for Mac spreadsheets too. In addition, some Mac programs add desktop-publishing functions. MacCalc is the only program we tested that includes no integrated applications; it is a stand-alone spreadsheet.

Charts: Not only is it easier to look at charts than at numbers but also hidden patterns or trends become obvious when plotted appropriately. Of the seven programs tested, only MacCalc and Ragtime 2 have no charting capabilities (see sidebar, "A Mac Magna Charta: How to Build a Chart").

Full Impact charts are the easiest to create, while the Wingz interface was a bit klutzy in the beta version we saw. Modifying a Wingz chart took many steps because editing and typing directly on the chart was not possible. Excel has some on-chart editing, but it is not as smoothly implemented as in Full Impact.

Excel creates separate chart files that are linked to the worksheet by the Series formulas just as two spreadsheets would be linked. Full Impact and Wingz have chart icons that, when selected, paste a chart directly on the spreadsheet grid. Trapeze's charts are also on the same page as the spreadsheet, but they're created with functions for each chart type. These functions create chart blocks.

It takes longer to define a chart with Trapeze's chart blocks, but the chart formulas give an accurate description of the resulting plot that is easy to edit or audit. There are ten chart types, including a polar-projection chart and a contour-shading chart, and there is an example on the Trapeze program disk that combines the Scatterchart function with the Matrix function to produce a 3-D transformation plot.

Full Impact allows you to designate up
Using Charts Wisely

Spreadsheet chart types include pie, bar, and 3-D charts, among others. Pie charts typically show percentages of a whole and add up to 100 percent. Segments can be exploded from the pie for emphasis. In our pie chart example, engine sales from 1930 to 1970 are graphed, and the percentage of total sales is given for each engine. To show this information broken down by decades would require four pie charts of increasing size to indicate an expanding total number of engines sold. A more convenient way to display the information might be to use a stacked bar chart, as in our second example. Instead of percentages, the actual quantities are graphed. Totals for a decade are given by reading the top of the bar graduated from the y-baseline, but individual segments are not read from the baseline. To figure out a specific segment’s quantity, you must subtract the segment from the bar to obtain the difference. The 3-D chart, our third example, handles this problem by separating the quantity of each engine sold from the total. Each engine is given its own bar, and the figure for that engine is read from the y-coordinate (the baseline). Three-dimensional charts have a tendency to obscure data, but skewing the perspective can help alleviate this problem.

Scatter charts typically plot one value against another, as in our price/performance scatter chart. Values can be plotted over time as well. In our example, engines of higher performance tend toward the right, while the cheaper engines tend toward the bottom. Those in the right-hand corner at the bottom give you the best “bang for the buck.” In a scatter chart, the more points there are, the more you need a “best fit” line to judge above-average and below-average price/performance. This problem is compounded in more complex charts, such as those that require a best-fit curve. Unfortunately, none of the spreadsheets we tested will give you a best-fit line or curve, though some do give you scatter charts. To create the scatter chart shown here, you could use a program like Cricket Graph, or one of the statistical analysis packages mentioned in this report (see sidebar, “Different Sheets On-Line”). — Michael Miley
Spreadsheet Comparison

Like other page-layout programs, Ragtime 2 has tools that enable you to precisely control the placement of elements on the page.

Even though the spreadsheet dimensions in Ragtime 2 are relatively small, you can link multiple spreadsheets in a single document. Within the spreadsheet frame, there is full typographic control of individual cells and characters. This is the same control that you get from Ragtime’s integrated word processor and that you expect (but don’t always get) from all Macintosh programs.

Additionally, Ragtime 2 can create what it calls “tear-off forms.” Essentially, documents saved as forms can be opened and modified without changing the original form. This makes it possible for an art department to create a form, put it on a file server, and let the company’s users fill it out.

Trapeze’s blocks have the same layout flexibility as Ragtime 2’s frames, but Trapeze lacks rulers and guide lines for precision placement of blocks on the page. Trapeze block types include text, numeric, database, chart, picture, and graphics, but the graphics blocks do not have the flexibility of the MacDraw-like tools in other programs. You can format text by character within text blocks and by cell within database blocks, but other block types can have only a single format definition. Lastly, blocks can be made transparent, so that elements can be built

**Different Sheets On-Line**

When is a spreadsheet not a spreadsheet? When it’s a statistics package, data-acquisition software, a database-management system, or other data-analysis package. Developers have adopted the well-known row-and-column user interface to get numbers into programs that do other things altogether.

Abacus Concepts of Berkeley, Calif., is currently working on what appears to be a major upgrade to Statview II, its top-of-the-line color statistical analysis and graphics package. According to company officials, version 2.0 (due to ship in late spring) has about 25 percent more features than version 1.03.

Statview II uses the spreadsheet format to enter data, perform statistical analysis, and produce color charts. It has more statistical functions and charts than a spreadsheet but includes common features such as data links to charts. It also contains some nice drawing and page-layout tools to customize charts.

Abacus says the key new features will make Statview more powerful than a spreadsheet. Among these are the formula capabilities, such as built-in conditional IF/THEN statements. Another spreadsheet-like feature will be the ability to add functions, much as other programs add macros. But unlike a spreadsheet macro, the new Statview feature is more complex and is actually a compiled language, as is Wingz. In fact, both Wingz and version 2.0 of Statview II blur the boundary between what is and isn’t a spreadsheet package.

The new version of Statview will add more database-management features, such as data partitioning, to a list that already includes sorting. A new Do It command allows for batch processing of parts of your data. Graphics enhancements include multiple views of data sets and the ability to create graphic templates.

To keep the price down for those who don’t need every feature, Abacus will offer some of the new features in the form of add-on modules.

On another data front is Parameter Manager Plus, from Rebus Development Corp. of Santa Clara, Calif. This is a powerful data-analysis tool used in data acquisition and statistical process control applications, such as monitoring temperature or studying the stock market.

Parameter Manager Plus’ strength is that it enables you to organize a jumbled mess of numbers gathered from test equipment or on-line information services into a database structure that makes sense. The spreadsheet-like worksheet is used to enter or import data, or you can collect data real-time with the program’s RS-232 module, pmtALK.

Imported data automatically forms a date- or time-stamped database that is set up in a spreadsheet-like format. Each column of the worksheet contains one type of data, and each row contains values at a point in time. Analysis of the data can then be automated. Your options include ten statistical and other functions, production of a variety of charts and graphs, prediction of trends, and report and presentation generation. You can also attach MacDraw documents to files as reference figures for the on-line user or as inclusions in a report.

The Statistical Process Control capability lets you know whether a process is statistically in or out of control by the use of standard control charts. Other analysis functions produce histograms, trend and forecast plots; statistics charts of median, average, standard deviation, and the like; a chart that compresses time and presents highs and lows like a newspaper’s stock market chart; and a correlation chart indicating coefficients and covariances.

A Calculated Parameter defines a measured parameter in your database as a function of other measured data and puts it into a formula. This feature finds the best curve (and its equation) for your plot of parameter versus parameter: you choose the equation type (such as exponential, linear, and so on), and one curve for each type is plotted. A Forecast command predicts when a value in a graph will exceed a certain level or give you the values at a certain time in the future, based on a best-fit curve.

Another would-be spreadsheet is Panorama, “the database that thinks it’s a spreadsheet,” from ProVUE Development Corp. of Huntington Beach, Calif. The program’s strong points are its spreadsheet-like row-and-column display, data analysis, and the creation of business charts. Data entry is semiautomatic with a feature called Clairvoyance: Panorama guesses what you are entering from the first few letters entered in the field. Clairvoyance is especially helpful for repetitive data-entry tasks.

Users can also design color forms using a variety of MacDraw-like drawing tools. In addition, Panorama gives you outlining features, allowing you to expand or contract outlines to various levels of detail. And pictures can be imported into a field, or a Flash Art gallery of pictures and names can be created. Instead of pasting art into each record, this memory-saving device lets you type in the name of the picture to have it displayed.

Finally, Panorama also features macros, password protection, and use of the Mac II’s 68881 math coprocessor. — John Rizzo
### Table 1: Spreadsheet Features Compared

<table>
<thead>
<tr>
<th>Features</th>
<th>Excel</th>
<th>Full Impact</th>
<th>MacCalc</th>
<th>Ragtime 2</th>
<th>Trapoze</th>
<th>Works</th>
<th>Lotus 1-2-3**</th>
<th>Wingz beta</th>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
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</table>

* However, you can create icons to execute macros and dialog boxes.
* This applies when a 24-bit monitor and video card are used.
* This is true of blocks but not of cells within blocks.
* Wingz also has 159 built-in HyperScript functions.
* Wingz includes a complete programming language.
* This applies only in Word Processor mode.
* Lotus 1-2-3, Release 2.01, was tested on a Compaq 286 with 640K RAM.

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| **A P R I L 1 9 8 9 M A C U S E R 1 5 9** |
up in layers. This is especially useful for customizing charts.

Full Impact and Wingz have charts and graphics that exist in a layer separate from the spreadsheet. Like Trapeze's blocks, this makes it possible to juxtapose or layer data and graphics. The drawing palettes include familiar line, rectangle, and circle tools, and there are menu commands with dialog boxes to set line and fill attributes. In fact, integrating all applications into the same page is a logical and powerful development. It gives these two programs a big advantage over Excel, which has no drawing tools and can't display charts with data except in separate windows. Unfortunately, neither Full Impact nor Wingz has realized the full potential of this capability.

Although both Full Impact and Wingz can format text at the cell level, which should satisfy some needs for fancy formatting, neither can format every character. In addition, like Trapeze, neither Full Impact nor Wingz has any of the tools necessary to precisely place elements on a page, such as rulers and grids oriented to the page rather than the worksheet. Full Impact has a Page Preview command, but it allows you to place only headers and footers. Adding the element of the printed page to these two programs would add an extra dimension to their programs' capabilities.

Both Wingz and Works have drawing palettes that include tools similar to those of MacDraw. You can draw, fill, and edit structured drawings that exist as a layer above the spreadsheet. Works' palette is available in all four of its applications. Excel, Full Impact, Ragtime 2, Trapeze, Wingz, and Works can all reduce and enlarge the spreadsheet, which makes it easier to view a multi-element spreadsheet on a small screen. Full Impact can actually save different views of the same spreadsheet. For instance, you could define views of several parts of the spreadsheet and choose a predefined view instead of scrolling all the way to the corners of rows and columns.

Database management: Spreadsheets are a natural tool for creating databases: Each row is a new record and each column is a different field. When using a spreadsheet as a database, you can store large amounts of information as discrete entities. Then, using the spreadsheet database functions, you can summarize the information on different fields or select records based on various conditions.

For testing, we set up a database of 2,000 records and 10 fields on a 1-megabyte Macintosh SE. Excel was the best performer on the SE. Full Impact and Wingz could not run the test database on the SE. On a 4-megabyte Mac II, however, Wingz was clearly the top performer.

To create and use a database, Excel,
The Data Basin: How to Build a Database

Of the seven programs tested, only MacCalc and Ragtime 2 have no database capabilities. Here are five ways to create a database from your spreadsheet.

Excel and Full Impact use the same method for specifying a database: named ranges (the range is the set of data you want to work with). With Excel you select the range of data plus field names and execute the Set Database command. (A field is a category of data, such as Customers, Price, or Telephone Number.) This names the range Database, and any database commands look for this named range. (There are several templates available to make Excel databases easier to use.)

With Full Impact, any named range can be a database. This means you can have multiple databases in a single spreadsheet. It also means there are fewer commands to clutter the menu bars. To specify selection criteria, you copy the database's field names to a second range. In Excel, you use the Set Criteria command to name the range. Full Impact can use any named range, with a slight difference: The field names are not part of the database or criteria ranges. Instead, Full Impact looks to the row above or to the left of the designated ranges for field names. The criteria range can contain one or multiple criteria, and they can be matching (city= "Palo Alto") or comparison criteria (population< 100,000). Note that field names are part of the selection criteria. It is possible to use wild-card characters in text fields and to join criteria with ands and ors.

Excel has commands to Find, Extract, and Delete. By contrast, Full Impact has only an Extract command. To extract records in Full Impact, you need to copy the field name to yet a third range, but it need not be named or a set. With the extract range selected, you execute the Extract command, and records matching the criteria are copied to the new range.

Wingz's database looks similar to that of Excel or Full Impact but works a little differently. There are no named ranges. You use Set commands to specify the database and criteria ranges. As in Excel, there can be only one of each, but because there is no named range, it is impossible to know what range has been set in previous sessions. You inevitably end up setting the ranges again just to make sure.

Again like Excel, Wingz has Find, Extract, and Delete commands. However, the criteria are set up as formulas using the cell reference of the first row of the database: (= A2 = "Palo Alto"). This will evaluate to true or false and display a 1 or a 0. It is logical but less intuitive.

If you're ambitious, you could completely rewrite Wingz database commands using HyperScript. You might even be able to sell your scripts.

Works' database is really a separate application, but Works' integration makes it easy to cut a spreadsheet database into the application. Cut data from the spreadsheet to the Clipboard. Open a database document and paste data from the Clipboard to the database. Works' database is similar to other stand-alone files — not at all like spreadsheet databases.

Trapeze has a database block type with special properties. You can mix data types, number or text, and you can change formats within the block. Trapeze automatically assumes the first row to be field names and adds them to the list of names in the menu.

Any Trapeze function can be used on a database block to create a new block. So instead of designating a criteria range, you create a table block with a formula that uses the database block as one of its arguments. This is essentially the same as an extract in other programs. Trapeze also has a number of block-manipulation functions that can be used to rearrange database blocks.

Blocks turn out to be more flexible as databases than the range methods used in other spreadsheet programs. It is easy to add or delete records, and you don't have to worry about corrupting your database by inserting or deleting a row or column in the wrong place.

— Clay Andres
First QMS gave you PostScript printing in color. Now it's certified by Pantone, Inc.

The QMS ColorScript™ 100. The world's first color PostScript printer. Now more affordable.

When the QMS ColorScript 100 was introduced, it gave desktop publishers, graphic artists and designers what they had been waiting for—color printing for Adobe PostScript® applications. Now, Pantone, Inc. has certified that our printer is PANTONE™ Color Capable.

QMS and Pantone developed process color combinations for the ColorScript 100 which very closely simulate all colors in the PANTONE MATCHING SYSTEM 747XR, except for metallics and fluorescents. So the color you want is the color you get.

Even commercial printing proofs and in-house color separations can be produced with your QMS ColorScript 100. For both...
flat and four-color process printing. For a fraction of the time and cost of conventional methods.

The printer has the advantage of a 68020-based Atlas controller running at 16 MHz, so you can see your results faster. You can print an 8½"x11" page in just under one minute. An 11"x17" page in just under two. And the quality is excellent. The ColorScript 100 uses a thermal transfer process that produces true 300x300-dot-per-inch resolution.

New Model 20—more affordable and upgradable

The original ColorScript 100 is the Model 30, with 8 megabytes of memory, a 20-MB hard disk built in, and the ability to print up to 11"x17" pages.

The new QMS ColorScript 100 Model 20 is more affordable. It has 4 MB of memory and the ability to handle letter-size (8½"x11")/A4-size paper. It provides the same high-quality output as the Model 30, and can be fully upgraded to a Model 30 when your needs expand.

Compatibility is built in

Both models of the ColorScript 100 connect with Macintosh®, IBM®, Compaq® and other compatible PC’s, along with minicomputers, workstations and mainframes. So your whole network can output in beautiful, accurate color. Using any of dozens of color-compatible applications.

The ColorScript 100 is yet another solution from QMS. Solutions that have made us a leader in imaging technology.

For more information on the QMS ColorScript 100, including a list of compatible software and information on financing, call 1-800-631-2692, ext. 223.
Full Impact, and Wingz use similar techniques. You define ranges on the worksheet to be the database, the criteria range, and if needed, the destination range for extracted records. Excel and Full Impact use named ranges, and Excel simply reserves the names database and criteria for databases. Full Impact's database command lets you supply any named range as the database or set the criteria that make it possible to have multiple databases in a single document. Wingz has Set commands that designate the database ranges without naming them. Unfortunately, there is no way to show what ranges have been previously set, so you end up just setting them again.

To find or extract records in spreadsheet databases, you must define certain criteria. These criteria can be comparison values, like a name or letter (wild-card characters can be used), or logical formulas that must evaluate to true or false (such as salary + commission ≥ 30,000). Generally speaking, the Find command highlights those records within the database that match the criteria, the Extract command copies records to the destination range, and the Delete command removes matching records from the database. (By contrast, Full Impact has only an Extract command.) You can also derive various statistics based on the database using built-in functions.

Trapeze has a database block rather than a defined range. The advantage is that the block size can change without requiring you to redefine the database range. However, there are no database commands, only functions, so any selection or rearrangement of the data results in the creation of a new block. Instead of defining criteria and destination ranges, Trapeze uses database functions to create new blocks from the database.

Works is the only other program with a database, but it is a separate application, not part of the spreadsheet. Spreadsheet and database windows can be open simultaneously, but there are no dynamic links. Data must be moved between applications manually. Works' database is a full-fledged filer with data-entry windows and report-defining functions.

Sorting is usually considered an integral part of database management, and all seven programs tested include a Sort command. Excel, MacCalc, Ragtime 2, Trapeze, and Works can all sort up or down on three different key fields. Full Impact has unlimited sorting controlled from a dialog box that lists all fields and allows you to designate sort order and precedence. Wingz uses Set commands that require you to pull down the menu to set the sort range and each key field, and to perform the sort. You can have unlimited key fields, but as with the database commands, there is no way to show previous selections.

**Macros:** Most of these spreadsheet programs are sufficiently powerful and general enough to be used for many vertical applications like accounting, property management, or inventory. These are applications that have well-defined procedures for maintaining accurate records and for automating routines.

Excel, Full Impact, Wingz, and Works can record lengthy and repetitive tasks and play them back automatically. It's like writing your own commands. These custom commands are generally referred to as macros, although Wingz uses the term scripts.

In these programs, you can also write function macros that return a value. They work just like built-in functions. In Excel, almost any formula or series of formulas can be turned into a function macro by clicking the function button when you name the macro worksheet. Thereafter, anytime you use the name of an open function macro, it executes the specified formulas. Full Impact function macros are called from a cell by appending a number sign (#) to the macro name.

Trapeze comes with several examples on disk of macros created with third-party software: Apple's MacroMaker, Tempo II from Affinity Microsystems (Boulder, Colo.), and QuicKeys from CE Software (West Des Moines, Iowa). These programs can be used with most Mac applications. They are useful for automating functions but lack specialized features for spreadsheet programming.

Works' macros are created by turning on the macro recorder. Then any action, mouse click, keyboard action, or command selection is recorded in that macro file. Turn off the recorder, name the macro, and anytime you execute the macro, the same actions will be repeated on the screen. You are not limited to the spreadsheet either. You could write a macro to cut data from a spreadsheet and paste it into a word-processing document. This

---

**How the Spreadsheets Were Tested**

Our benchmarks were created with the help of the developers of the seven spreadsheets we tested. Each test was conducted on a 1-megabyte SE and a 4-megabyte Mac II, both with standard internal Apple hard drives. The tests were also conducted on spreadsheets of two sizes: 10 columns by 200 rows and 10 columns by 1,500 rows. The tests were run three times, and the results were averaged.

The Simple Recalc test is the most important, as it reflects the most common task of a spreadsheet user. The column A in each spreadsheet was created by entering 1.23 in the first cell, adding 1.1 to each successive cell down the column. The spreadsheet was set up in this way, we changed the number in cell A1 to 3.21 and measured the time it took to recalculate. In the Minimum Recalc test, we changed cell A150 by typing in the number 3.21 and measured the time it took to recalculate. The significance here is that the spreadsheet is recalculating a small area, which we call minimum recalculation. Spreadsheets that do not employ minimum recalculation must recalculate the entire spreadsheet whenever any changes are made on even a small portion.

In the Complex Recalc test, we created column A as before and performed the following math operations on each successive column: square root, modulus, sine, exponential, Boolean, logarithmic, standard deviation, an amortization schedule, and a date function. After we set up this test data, we changed cell A1 to 3.21 and timed how long it took for the spreadsheet to recalculate using the complex math functions. (For a complete description of the benchmark tests, contact Andrew Eisner at the MacUser Labs.)

— John Rizzo
### Table 2: Benchmark Test Results (in seconds)

#### SE TEST RESULTS
1-Mb SE, 20-Mb hard disk

<table>
<thead>
<tr>
<th>Excel</th>
<th>Full Impact</th>
<th>MacCalc</th>
<th>Ragtime 2</th>
<th>Trapaze</th>
<th>Werks</th>
<th>Lotus 1-2-3*</th>
<th>Wingz beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max size (cells)</td>
<td>52,437 (256 C x 204 R + 213)</td>
<td>524,288 (256 C x 2,048 R)</td>
<td>9,025 (125 C x 77 R)</td>
<td>23,387 (279 C x 101 R)</td>
<td>17,523 (99 C x 177 R)</td>
<td>22,092 (255 C x 86 R + 76)</td>
<td>13,060 (256 C x 64 R)</td>
</tr>
<tr>
<td>Simple recalc</td>
<td>6.0/34.0</td>
<td>7.2/30.9</td>
<td>4.5/8</td>
<td>61.3/23.1</td>
<td>6.4/23.1</td>
<td>3.8/18.5</td>
<td>1.6/12.5</td>
</tr>
<tr>
<td>Minimum recalc</td>
<td>2.1/11.5</td>
<td>5.3/36.4</td>
<td>6.1/15</td>
<td>61.3/23.1</td>
<td>not defined</td>
<td>6.9/22.1</td>
<td>2.0/10.4</td>
</tr>
<tr>
<td>Complex recalc</td>
<td>16.4/108.2</td>
<td>15.7/110.6</td>
<td>16.3/15</td>
<td>118.1/25.1</td>
<td>37.5/250.1</td>
<td>37.4/14.1</td>
<td>1.4/14.1</td>
</tr>
<tr>
<td>Screen scroll</td>
<td>35.4/273.6</td>
<td>34.5/273.0</td>
<td>33.4/15</td>
<td>22.0/55</td>
<td>55.4/437.4</td>
<td>22.9/250.7</td>
<td>20.6/33.4</td>
</tr>
<tr>
<td>Insert column</td>
<td>17.9/110.2</td>
<td>23.8/180.0</td>
<td>5.0/15</td>
<td>76.2/25</td>
<td>no columns</td>
<td>29.5/15</td>
<td>1.8/24.5</td>
</tr>
</tbody>
</table>

**Database**

| Import | 574.2 | 3 hours + | 480.8 | 100.9 |
| Search | 2.1 | - | - | - |
| Sort | 29.9 | - | 1,239.7 | - |
| Add | 1.9 | - | 2.6 | - |
| Delete | 2.1 | - | 2.6 | - |
| Extract | 39.0 | 29.9 | - | - |

**Graphics**

| Convert bar to pie | 16.4 | 22.3 | 10.1 | - |

#### MAC II TEST RESULTS
4-Mb Mac II, 40-Mb hard disk, Apple color monitor

<table>
<thead>
<tr>
<th>Excel</th>
<th>Full Impact</th>
<th>MacCalc</th>
<th>Ragtime 2</th>
<th>Trapaze</th>
<th>Werks</th>
<th>Lotus 1-2-3*</th>
<th>Wingz beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum size (cells)</td>
<td>54,589 (256 C x 213 R + 61)</td>
<td>524,288 (256 C x 2,048 R)</td>
<td>124,875 (256 C x 999 R)</td>
<td>64,009 (256 C x 253 R)</td>
<td>230,550 (256 C x 2350 R)</td>
<td>201,357 (256 C x 786 R + 141)</td>
<td>252,572 (256 C x 987 R)</td>
</tr>
<tr>
<td>Simple recalc</td>
<td>3.2/11.5</td>
<td>3.6/13.8</td>
<td>2.3/4</td>
<td>18.5/144.5</td>
<td>2.5/40.9</td>
<td>3.9/16.2</td>
<td>1.9/5.7</td>
</tr>
<tr>
<td>Minimum recalc</td>
<td>1.9/10.0</td>
<td>2.0/10.2</td>
<td>2.7/4</td>
<td>17.9/144.1</td>
<td>not defined</td>
<td>2.9/15.5</td>
<td>2.7/12.3</td>
</tr>
<tr>
<td>Complex recalc</td>
<td>4.4/19.9</td>
<td>4.6/15.4</td>
<td>6.1/15</td>
<td>28.6/201.4</td>
<td>6.7/33.6</td>
<td>7.9/45.2</td>
<td>2.3/6.7</td>
</tr>
<tr>
<td>Screen scroll</td>
<td>46.7/287.3</td>
<td>42.0/202.6</td>
<td>39.0/15</td>
<td>13.2/8</td>
<td>48.3/373.8</td>
<td>28.3/203.1</td>
<td>37.8/280.6</td>
</tr>
<tr>
<td>Insert column</td>
<td>6.2/25.3</td>
<td>7.8/35.8</td>
<td>3.1/5</td>
<td>19.8/15</td>
<td>no columns</td>
<td>5.3/32.4</td>
<td>3.6/16.4</td>
</tr>
</tbody>
</table>

**Database**

| Import | 194.1 | 100.9 | 336.8 | 21.4 | 18.8 |
| Search | 1.1 | - | - | - | - |
| Sort | 11.8 | 28.1 | 344.6 | 8.5 | - |
| Add | under 1 | 11.3 | 1.4 | 1.4 | - |
| Delete | under 1 | 11.4 | 1.9 | 1.7 | - |
| Extract | 15.2 | 3.8 | - | - | - |

**Graphics**

| Convert bar to pie | 8.8 | 11.86 | 5.9 | - |

\( C = \) column, \( R = \) row

* Lotus 1-2-3, Release 2.01, was tested on a Compaq 286 with 640K RAM.

* 10 fields and 2,000 records.

* Not enough memory was available to run the test database.

* To create a 1,500-row spreadsheet in Ragtime, we had to link worksheets together, which prevented us from scrolling or inserting a column.
Spreadsheet Comparison

Wingz (beta)

Wingz is the only program with 3-D chart types. You can adjust the angle of the projection to suit the data and to prevent hiding data points. Wingz is also the only program to support the Mac's full color palette of 16.7 million colors.

Informix Software, Inc.
16811 College Blvd.
Lenexa, KS 66219
(913) 492-3800
$399

way you could automatically update a regular weekly report by updating the data and invoking the macro. But there is no way to control the execution of macros by adding program loops or subroutines. Works has no macro language and no way to edit macros once they are created.

If you record a macro in Excel, Full Impact, or Wingz, it actually creates a document with your command steps translated into a macro language. Excel macro documents exist separately from spreadsheet documents and can therefore be used with any spreadsheet. Full Impact macros can be designated as global or local. Local macros are saved as part of the spreadsheet with which they were created, while global macros are saved in a special Full Impact Setting file and are available to any spreadsheet.

Excel macro documents look like spreadsheets — rows and columns of cells — and each macro command is in a different cell. There are commands to control branching and looping or to stop for user input. Excel's most powerful feature is the ability to write macros that customize the menu and create genuine Macintosh dialog boxes. This makes it possible to write custom applications with their own look rather than the look typical of Excel.

Part of the reason that Excel is able to dominate the spreadsheet market (and the same is true of 1-2-3 on the PC side) is that many third-party applications have been written using Excel's powerful macro capabilities. With a copy of Excel, you can easily and inexpensively buy income tax templates, structural analysis tools, or any number of specialized and otherwise costly applications.

Excel's macros, though capable, do not provide an elegant programming environment. Full Impact, on the other hand, has stepped out of the prison of rows and columns to create a Pascal or C-like language called Full Talk, complete with a modern editing window. You can assign variable names instead of using the range names that Excel requires, and Full Talk follows structured programming standards.

Full Impact macros open into a special, word processing-like window that pretty-prints the macro automatically. (Pretty-printing indents the macro commands according to the structure of the program and makes them much easier to write and debug.) There is also a command that checks the syntax of macros by finding and flagging incorrectly typed lines.

Since Full Impact includes drawing commands, you can control the screen's appearance with macros. You can modify the menu bar, but you can create icons for macros and execute them from the icon bar. Full Impact can't create or modify Macintosh resources but can simulate the effect of buttons and dialog boxes.

Strictly speaking, even though Wingz appears to, it does not have macros. Instead, Wingz's HyperScript language is the basis of the entire application to which custom scripts can be added. Wingz comes with two files called WZScript and DG, which are the scripts that contain all the menu commands and dialog boxes. This is nonstandard Macintosh programming, but it is an innovation that could prove to be extremely powerful.

Since Wingz's user interface is built on HyperScript, and since Scripts are entirely modifiable by the user, you can edit the built-in Scripts and modify the Wingz user interface to make it look any way you want it to. Wingz technical support claims that you can make it look just like Excel or even 1-2-3. More practically, you could change all of the clumsy Set commands to dialog boxes. You can make Wingz applications that look and act just like Apple's HyperCard.

Scripts can be executed from the Script menu, can be added to the menus, or tied to a button on the spreadsheet and executed by clicking on the appropriate cell. These are not standard Macintosh resources, and as a result, dialog boxes look different from what you're used to. But this kind of innovative programming is exciting. There is still a need for a better Script editor, but HyperScript is a very powerful tool.

IN THE BALANCE SHEET

For many users, it is important to be able to import and export data to and from other programs. All of these programs can translate different data formats (see Table 1, "Spreadsheet Features Compared"), although Trapeze's unique block structure makes it the least capable in this area. As part of their challenge to Excel, Full Impact and Wingz should be able to read the Excel file format directly. Unfortunately, that's Microsoft's proprietary information, and it has not yet been
successfully reverse-engineered.

In the balance, what spreadsheet you ultimately go with will depend on your needs. People who need to perform diverse tasks on a random basis may want to go with Works for rough-and-ready integration. But for the occasional or basic user, MacCalc is also a good choice. The user interface is straightforward and easy to learn, and it includes some formatting capabilities for creating attractive output. It is also faster than Excel for most of the operations we tested.

Ragtime 2 and Trapeze have an extra layer of structure to get through that is confusing at first. Ragtime's frames can obscure the actual spreadsheet, but once you become familiar with them, they work quite naturally. Ragtime is worth considering for desktop publishing. If Cricket could improve the program's slow performance, Ragtime could see a wider acceptance in this country.

Trapeze’s blocks are unique, but it’s the most difficult spreadsheet to learn. The current version comes with a newly written tutorial, but it still takes some time to be up and running — perhaps even longer for experienced spreadsheet users who have much to unlearn first.
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Claris CAD can reduce the huge number of two-dimensional drawings it takes to get a plane off the ground. But it makes them a lot easier to do.

Claris CAD supports ANSI Y14.5 and other drawing standards. So those who design parts can share with those who design wholes.

Accurately drawing graceful curves like these becomes a simple matter of point and click.

Claris CAD can help you design everything from electronic schematics to the box they come in.

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With the ability to draw in layers, you can hide essential details like wiring and plumbing just a click beneath an elegant exterior.

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Claris CAD makes it easier to sell your inspirations. Plot your plans, concept sketches, schematics and working drawings exactly as you see them, turn them into slides or overheads, or cut and paste them into proposals and reports.

Keeping the vision in your revisions is easy. Because you don't have to redraw from scratch.

Claris CAD integrates with other CAD software via optional IGES and DXF conversion programs. You can move them to larger CAD/CAM systems for 3-D modeling and prototyping.

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Introducing Claris CAD.
Blocks give Trapeze unique power, but this program is strictly for those who know how to use that power.

Users who like to incorporate databases in their spreadsheets will like Wingz's superior speed on a Mac II. Trapeze and Full Impact also have good database features, but Excel is still best at handling large databases on Macs with 1 megabyte of RAM. Excel also has powerful macros for the average user, though programmers may want to look at the higher-level languages of Full Impact and Wingz.

Who's the winner in the spreadsheet battle for survival? If Full Impact cleans up its memory management or Wingz streamlines some of its overly complicated methods of operation, you'll see some serious species wars with Excel.

What's really happening, though, is the diversification of the spreadsheet world, where ultimately no single species will conquer every other. And that's good news. In a food-chain simulation, when the sharks eat up all the tunas, they've made a meal of their own extinction.

CLAY ANDRES IS A FREE-LANCE WRITER AND PRESIDENT OF TERSE, A MACINTOSH CONSULTING AND DEVELOPMENT COMPANY IN PALO ALTO, CALIF.

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Tester's Choice

There are seven good spreadsheet programs for the Macintosh. Here are the reasons to choose one over the other and all of them over Lotus 1-2-3:

**Excel 1.5:** Like 1-2-3, once the innovator, fast, and popular, with a new version promised for this spring. Its user interface is a little nonstandard and difficult to learn, and the program lacks good presentation tools. Most of Excel's features have been improved upon by other programs, but no single program is far ahead of Excel in total. Excel's macro language is the only one that can create true Macintosh dialog boxes, and it's the only program with custom data formats. Version 2 will have better character formatting, but charts will still be separate documents, which requires an extra program to make a final presentation.

Excel is still a powerful program and a safe, conservative choice for all purposes except presentations, where it is surpassed by Ragtime 2. Full Impact, and Wingz.

**Full Impact 1.0:** Not as fast as Excel but with a much smoother user interface that includes customizable icon bars. It has a drawing layer over the spreadsheet that can include charts and fully formatted text. Full Impact uses virtual memory, which allows it to fill up its entire range of cells. However, it can use a large amount of disk space in the process, and saved files are approximately ten times bigger than with other programs. Full Impact's macro language, Full Talk, is by far the nicest to use. It lacks the ability to customize Macintosh resources, but it does everything else with ease and grace.

Full Impact provides the best tools for third-party developers. And if it weren't for its poor memory management, Full Impact would be the first choice for new spreadsheet buyers, since it is full-featured and powerful and can produce good presentations. But disk thrashing is a problem, and file sizes are large.

**MacCalc 1.2:** A spreadsheet for those who need a spreadsheet but nothing but a spreadsheet. MacCalc has no integrated applications but offers plenty of function in a simple program. It performs well, is easy to learn, and can make nice presentations of numbers.

MacCalc is the least expensive, and it's best for those with infrequent or very basic spreadsheet needs.

**Ragtime 2:** The only package-processing program with an integrated spreadsheet. Ragtime 2 is great at generating presentations, reports, and forms. The spreadsheet was much slower than the others we tested, so even though it is capable of complex and lengthy calculations, you may not want to wait. However, Ragtime 2 is the only program with the tools to position elements precisely on the page, format every character in every cell of the spreadsheet, and even kern text. There is no integrated charting, but Ragtime 2 can export data and import pictures from a charting program.

Ragtime 2 is the only program that can claim true desktop-presentation-quality output. Besides Wingz, Ragtime 2 has the best color support, but it needs better throughput in the spreadsheet.

**Trapeze 2.1:** The first spreadsheet program to integrate all elements on a single page. It's also unique among spreadsheets in method and design. Trapeze uses blocks instead of the standard rows and columns. Though difficult to learn, this program is powerful. It is the only program with autosizing: Instead of blocks remaining a fixed size like the range of a spreadsheet, they can grow or shrink to reflect changing results. Trapeze is fast on a Mac II but of only average speed on an SE.

Trapeze is best for power users with inherently complex models that require great precision, or with ongoing projects that require teamwork, frequent updates, or regular modifications. Because you proceed by naming each block you create, it's easy to go back at a later date and understand the structure you've created.

**Wingz beta:** Like Full Impact it has a drawing layer over the spreadsheet. Wingz is the only program with 3-D charts. The user interface was nonstandard and sometimes awkward in the beta version we saw, but it's completely modifiable. Wingz is built entirely on its own scripting language, HyperScript. Instead of writing macros, you add or modify scripts. If you don't like the Sort commands, change them. This flexibility makes Wingz potentially the most powerful program for creating vertical applications.

Wingz has good presentation features and is the only spreadsheet to support 16.7 million colors (24-bit). Wingz will be best for those who have the time and inclination to program their own custom environment. Otherwise, it will need to come with a choice of user scripts to help the masses and broaden its appeal.

**Works 2.0:** A spreadsheet integrated with word-processing, database manager, and communications applications. Works is capable of doing many things, but each module seems purposely crippled so as not to steal market share from Microsoft's more expensive programs. Still, it performs well in all tests and, because of its integrated applications, can be used in almost any situation.

Works is best for unsophisticated Macintosh users with multiple needs, though it is easy to outgrow any of Works' applications.

**Lotus 1-2-3 (tested on a Compaq 286):** Once an innovator, now a dinosaur. It's very fast and very popular but has been surpassed on all fronts for power, flexibility, and utility. Version 3 is promised for this spring with many new features, but 1-2-3 on the PC will still be a character-based (rather than graphic-based) program. Not much is known about Lotus' plans for 1-2-3 on the Mac except that they are working on it. Lotus 1-2-3 is not a good choice for anyone.
Use Reports to Organize and Print HyperCard Data.

Don't let HyperCard limit you to just printing cards and stacks, columns and rows. Get Reports, the Complete Report Generator for HyperCard. With Reports, you can select whatever you want from your HyperCard data, then print it any way you want: reports and phone lists, invoices and checks, mailing labels, Rolodex® cards, summaries and much, much more. Organize and analyze information in thousands of ways, with 5 levels of sorts and breaks, 8 selection criteria, totals, subtotals, averages and other detail summaries. Design printouts with pizzazz, using a custom layout editor with flexible formatting, variable fonts and character styles. Plus graphics—paste in pictures from your HyperCard stacks, scrapbooks, or other applications, or use the built-in drawing tools.

Advanced Features
Card selection criteria includes <, >, =, <>, contains, excludes, and more.
Sort on text, numbers, and dates.
Print multiple reports from one stack or one report from multiple stacks.
Chain reports for unattended printing.
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- Factory-trained technicians in our Technical Department can assist you with trouble-free installation and setup of your hard drive.
- Helpful Customer Service Representatives provide service after the sale.
- All products include a One Year Warranty and our 30-day “Worry-Free” Guarantee.

INTERNAL KITS FOR SE & II

<table>
<thead>
<tr>
<th>Drive Type</th>
<th>Speed</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Mb MiniScribe</td>
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INTERNAL KITS FOR MAC II ONLY

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<td>160Mb MiniScribe</td>
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<tr>
<td>340Mb MiniScribe</td>
<td>16ms</td>
<td>$1955</td>
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</tbody>
</table>

These complete internal drive kits include the drive, UniMac™ formatting & partitioning software, hardware mounting kit, all necessary cabling, and How-To manual.

EXTERNAL DRIVES FOR MACINTOSH PLUS, SE & II

<table>
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<th>Drive Type</th>
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<tr>
<td>340Mb MiniScribe</td>
<td>16ms</td>
<td>$2075</td>
</tr>
</tbody>
</table>

External drives include drive, UniMac™ external case, power supply, cabling, formatting & partitioning software.

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By John Rizzo
and the
MacUser
Labs Staff

Some computer products are exciting in concept but disappointing in use. But there is one so vital to the core of business activity that no company can survive without it. In fact, the entire electronics industry is based on this single commodity. What are we talking about? Bubblewrap. Here at MacUser Labs, we've tested all varieties of this valuable material to find which type stands up best. This lab report will attempt to unwrap the myth and help you find the bubblewrap solution to fit your needs.

You'll find there are small bubbles, big bubbles, double bubbles too — black bubbles, pink bubbles, even ones with missing pops.

THE SPECS
Bubblewrap — or bubblepack, as it is termed by industry insiders — comes in two basic formats: big bubbles and little bubbles. The standard specs (IEEE-3.14159265 and ANSI 123LETsROCK) are 1.25-inch diameter for big and 0.375-inch diameter for small. Be sure your bubbles conform before making a purchasing decision.

THE HISTORY OF IT ALL
The humble beginnings of bubblepack date to the turn of the century, when a Swiss patent-office clerk, Albert Eyesty, discovered he could get away with popping inch-sized balloons at his desk. He also found that popping full-sized balloons woke up his boss in the next office. The new miniature balloons weren't as loud, but there were more of them. "It's all relative," he would say. This led to the development of bubble mechanics in the 1920s, a highly complex system based on group theory and tensor analysis. Eyesty never completely accepted bubble mechanics — or the five-mouse rating that leading magazines of the era conferred upon the theory, leading to his oft-quoted remark that "God does not bestow mice."

World War II spawned new applications of bubble mechanics, leading to the splitting of the bubble atom and ultimately the B-bomb. Bomb production, however, came to a standstill when it was discovered that, although it produced an impressive noise, the bomb inflicted no damage whatsoever. As one contractor explained, "When we go to sell our bomb, the first question we'll be asked will not be 'Is it very loud?'" (Recently, however, there has been a resurgence of inter-
Bubblewrap Comparison

The Pop index for big bubbles was much greater, with rates of 34.2 percent and 41.1 percent. If you are dropping large objects onto your bubblewrap, small bubbles are clearly the best for you. Yes, the equipment tends to fare better when dropped on big bubblewrap, but it leaves you with fewer bubbles remaining to pop by hand, which is of more critical importance.

The sound of popping bubbles was, as expected, greater for big bubbles (see Figure 1). But remember, the quieter small bubbles may be better adapted for your particular environment. The 3-D chart in Figure 2 summarizes the SLAC tests. Additional tests will be delayed until the melted plastic can be completely removed from the accelerator.

There was little performance difference between brands, so by all means, get the cheapest one. In fact, I have an uncle who can get it for you wholesale.

Figure 1: In terms of sound levels, big bubbles scored higher than small bubbles. While there are more bubbles per sheet of small bubblewrap, the total impact is no match for big bubbles. However, the Metallica concert charted even higher than the big bubbles, reaching No. 1 on last week's Billboard ratings.

Figure 2: In this chart, the major axis indicates the performance of the big bubbles. The minor axis represents small-bubble performance. As you can see, more of the small bubbles remained intact after the accelerator tests, having avoided the tip of the Transamerica building.

The benchmarks

We selected the most popular brands to test. For the first test we set up an 8-megabyte Mac IIx (23 pounds) with an 8-bit color video board (0.7 pound), a 150-megabyte hard disk (14 pounds), and an Ethernet card (1 pound), running System version 6.02 under MultiFinder (no extra weight). We then arranged to test the Macintosh on a level surface 6 feet above the bubblewrap sample lying on a concrete floor, and dropped the Mac onto the bubblewrap. The percentage of burst bubbles was then calculated for each sample.

This was repeated with a 21-inch large-screen color monitor and a full-page monochrome monitor. Fortunately, many of the bubblewrap packages we received came with monitors, so we had an adequate supply for our tests.

Our next test measured the acoustic output when the bubblewrap waveform is collapsed, or "popped." This is perhaps the most important benchmark to consider when making a bubble-buying decision, since it directly measures the most commonly used function of the product. Of course, small bubbles don't make as loud a noise as big bubbles, but there are more pops per cubic foot (ppcf) with small bubbles. This is an understandable trade-off, and the choice is left to the informed consumer.

Our final test was the most ambitious. To ascertain whether the manufacturers use up or down quarks in their materials, we brought several bubblewrap specimens to the Stanford Linear Accelerator Center (SLAC) in Palo Alto, Calif. There, a beam of high-energy electrons in a vacuum was pumped up with microwaves for a distance of two miles and smashed into the center of a bubble. Results were analyzed using standard bubble-chamber techniques.

The results

Overall, small bubbles did better on the Drop test, with an average of 23.8 percent broken bubbles for the Mac II and 31.3 percent when dropping large-screen monitors (the rate was the same for monochrome and color). This higher bubble-casualty rate was due to the angular shape of the monitors and the shards of glass that tended to inflict more severe damage to the bubbles upon impact.

John Rizzo is MacUser Labs' Chief Bubble Scientist and a frequent contributor to the International Journal of Quantum Packaging. The author offers his apologies to the physicists and bubbleheads at the Stanford Linear Accelerator Center.
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That’s how PC Magazine sizes up the MAC-101. While MacWEEK calls it “the most important accelerator you can buy for a Macintosh.”
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PRODUCT

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<th>Presentation Graphics</th>
<th>Desktop Publishing</th>
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See why, in Apple monitors, one brand is visibly better.

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What happens when you import the same illustration into different programs? For the answer, turn to "Graphic Examples," the follow-up to last month's tutorial on graphics formats. Desktop Reviews covers FontSizer, Interleaf Publisher 3.5, and DTP Advisor. Next month, desktop-publishing gurus Tony Bove and Cheryl Rhodes will offer some expert advice on how to handle complex graphics in page-layout programs.

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Desktop Reviews 181

Graphic Examples 189

If you have a few tricks of the trade to share, send them to DTP, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404.

BETWEEN THE LINES

Tracing Forms

Intelligent auto-tracing has arrived, in the form of Adobe's Streamline. This impressive new program can auto-trace both scanned and bit-map-painted black-and-white images. It traces everything within a selected image, installing a minimal number of points along Bezier curves, which makes editing easier. Streamline also decides what to fill with black and what to leave white, so the finished product resembles line art. Most tracings can be used unretouched, exactly as created. Priced at $395, Streamline is available from Adobe Systems at 1585 Charleston Road, P.O. Box 7900, Mountain View, CA 94039; (415) 961-4400.

The Fine Print

Hell Graphic Systems has introduced ScriptMaster, a PostScript-compatible interpreter that can transfer Encapsulated PostScript Format (EPSF) files from desktop-publishing systems to Hell's Chromacom family of electronic color prepress systems. Hell is the last of the big three in the high-end color prepress market to provide such an interface; Scitex and Crosfield announced similar interfaces last year. Buoyed by the success of Studio/8, Electronic Arts has introduced Studio/I, a black-and-white version of the popular color paint program...Clip Art of the Month: Adobe Collector's Edition II ($225) contains over 400 EPSF fill patterns and textures, including many standard architectural, mapmaking, and surveying designs that are editable in Illustrator 88...URW's entire font library — more than 2,000 faces in all — could be available as downloadable PostScript fonts by late 1989, if the Font Company has its way. This new firm, based in Phoenix, has licensed the URW library and is marketing the fonts in packages of four for $149. The company is also selling the fonts as EPSF outlines, which are editable in Illustrator 88 and FreeHand. Contact the Font Company at 4101 E. Larkspur Drive, Phoenix, AZ 85032; (602) 996-6606.

Salvatore Parascondolo

Auto-tracing reaches new heights with Adobe Streamline. At top is a 72-dots-per-inch bit-mapped image from Dubl-Click's MacTut clip-art collection. Below is Streamline's unretouched rendition of it, including automatic filling of black areas. By setting preferences, you can increase or decrease the level of captured detail.

1989, if the Font Company has its way. This new firm, based in Phoenix, has licensed the URW library and is marketing the fonts in packages of four for $149. The company is also selling the fonts as EPSF outlines, which are editable in Illustrator 88 and FreeHand. Contact the Font Company at 4101 E. Larkspur Drive, Phoenix, AZ 85032; (602) 996-6606.

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Salvatore Parascondolo
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This is a complete communications package:
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If you’ve ever used a headline or drop cap larger than 24 points, you’re probably familiar with the limitations of the Mac’s screen fonts. Since 24 points is the maximum size available for most Mac fonts, the computer builds larger letters by scaling up the available sizes. Jagged, distorted characters and poor spacing result. This lack of WYSIWYG can make the bottom word is in 72-point Eurostile as scaled by the Font/DA Mover. Besides creating new screen fonts, FontSizer can help clean up your font menu. Many font menus are cluttered by style variations — the font names preceded by B, I, and BI — of your downloadable fonts. FontSizer will delete the style variations after checking to be sure that the same font is available under the font family name. Although each font name must be manually selected and deleted, you can quickly clean up cluttered menus with this feature.

FontSizer is a simple program with a short, complete, and well-written manual. Because it performs a useful function well, FontSizer is sure to find a place on every serious desktop publisher’s list of essential software.

Steven Bobker
**Interleaf Publisher 3.5**

When Interleaf Publisher was released last year, it was expected to be the ultimate page-layout and document-processing program in both price ($2,495) and performance. Unfortunately, this Macintosh incarnation of a popular workstation program was severely handicapped by an unorthodox Mac interface, poor font management, and other minor shortcomings (see "A New Leaf," May '88). Interleaf’s makers have addressed some of these problems in the recently released version 3.5. Regrettably, several of the so-called improvements will serve only to throw its failings into greater relief.

Although Interleaf Publisher superficially resembles, and has often been compared to, such DTP workhorses as PageMaker and Ready.Set.Go!, it’s really a different beast. Interleaf’s emphasis is on the entire document, not the page; on raw processing power — including automatic generation of indexes and tables of contents; CAD-like drawing capabilities; anchored graphics; spell-checking; and multiuser support. Best of all, it sports incredible speed. You can reformat a 400-page document from a one-column layout to four columns in a matter of seconds. Try doing that in PageMaker. You’d need...well, we’re talking Methuselah here.

Interleaf 3.5 still requires a Mac II with at least 5 megabytes of RAM and a hard disk, but only 9 megabytes of free disk space (instead of 14) are now required. The program and related files are compressed onto eleven 800K disks. After installation, which takes 15 to 20 minutes, you must delete all previously installed Courier fonts from your System file and replace them with substitutes included in the Interleaf package. This substitution is necessary because Interleaf’s technicians detected FOND resource-management problems in the way Apple’s Font/DA Mover deals with the original Courier fonts.

The new release supports both MultiFinder and multiple monitors. Interleaf’s world is still black-and-white, however — a major omission in a high-end program when all of its less pricey competitors have jumped on the color bandwagon. In addition, Interleaf officially supports only Apple keyboards. If you depend on the Datadesk or Ehman keyboards, be forewarned; Interleaf doesn’t guarantee compatibility. I had problems using Datadesk’s MAC-101 extended keyboard while testing version 3.5.

Interleaf still balks at kerning, but font management has opened up somewhat. The program now supports Apple’s Font Manager, allowing you to use any PostScript font installed in your System. (Previously, only Interleaf’s font manager and fonts could be used.) But there are two restrictions that highlight Interleaf’s font shortcomings.

First, fonts not resident in the printer’s ROM — such as Garamond, Franklin Gothic, or any font created with Fontographer — must be downloaded with a utility like Adobe’s Downloader. Interleaf will not automatically download the fonts when you choose Print. Second, version 3.5 remaps the keyboard, as did its predecessor, so that part of Adobe’s standard character set (all accented letters, for example) is inaccessible. Interleaf 3.5’s ability to use downloadable fonts is indeed an improvement over 3.0’s, but its halfhearted adoption of Apple’s Font Manager is about as helpful as placing a Band-Aid over a gaping flesh wound.

Fortunately, you can now create superscripts and subscripts, and you’re now longer restricted to 13 point sizes. You can now enter any point size from 3 to 150, and Interleaf will create a scaled screen font and temporarily add the point size to the Font Size submenu until shutdown.

Another new feature converts text strings (text created in a graphic frame with the command Control-O) into outline fonts that can be rotated, sized, stretched, or filled. Previously such display type had to be cut and pasted into Interleaf from supplied clip-art documents, one painful letter at a time. Now you can convert text into either Bitstream Serif or Sans Serif. This feature does not convert, let’s say, Palatino into an outline form of Palatino. All typefaces — Times, Helvetica, Gulliard, and so on — can be converted only into one of the two Bitstream outline fonts. Interleaf 3.5’s treatment of graphics

---

**Interleaf Publisher**

*List Price: $2,495*

*Published by: Interleaf, Inc., 10 Canal Park, Cambridge, MA 02141. (617) 577-9800.*

*Version: 3.5*

*Requires: Mac II, 5 megabytes of RAM, hard disk, PostScript printer.*

*Compatibility: MultiFinder friendly.*

*Application Size: 198K for main program; 8.5 megabytes (484 files) for complete installation.*

*Copy Protection: None*
The long-awaited version 3.5 of Interleaf Publisher has yet to correct its awkward interface with Adobe's PostScript fonts. The right screen reveals the best that S2,495 Interleaf can do with accented letters. MacPaint 2.0 ($126) shows the right stuff in the left screen.

remains essentially the same with one exception. When PICT files are imported, the software now creates a standard object-oriented graphic rather than a diagram (Interleaf's proprietary graphic format). This PICT graphic can be sized and moved but not edited. It can also be converted into an editable diagram.

The new release can convert documents into Printerleaf files, making it easier to share files with Interleaf users on other computers. Formerly, documents had to be transferred in ASCII format. Interleaf developed Printerleaf, its page-description language, with an eye on the PC View station.

Interleaf's Help function remains sub-standard compared with those of many other Mac applications. For a complex program whose gargantuan manuals span hundreds of pages, the 30-odd entries of the on-screen Help window simply don't cut the mustard. On the other hand, Interleaf's technical support continues to shine.

Interleaf 3.5's added features are definite improvements, and it's still the most powerful program of its kind on the Mac. Yet although Interleaf may be watered, for Mac aficionados it's still drooping.

Gregory Wason

**DTP Advisor**

A successful desktop publisher must understand the world of printed communication. But mastering things like design and typography is of little use if you don't know how to make assignments, specify paper, and control delivery dates. If you're a budding publisher who needs some guidance in these areas, Broderbund's DTP Advisor could be just what you need.

DTP Advisor is an interactive set of HyperCard stacks that covers project planning and management, design, typography, art production, and printing. It answers questions ranging from "When should you use extra leading?" to "What are hiccys, and what do they tell you about a printer?" The program is essentially two applications in one. First, it's a tutorial on the mechanics and management of publishing. Second, it helps you manage publishing projects with tracking forms and a database.

The tutorial is well designed and comprehensive. Most screens have multiple layers of information that are accessed by clicking on the graphics or text. Clicking on keywords (indicated by asterisks) brings up definitions from an extensive glossary. Clicking on graphics produces an explanation or, in some cases, an animated sequence that illustrates a concept like kerning or offset printing. Indeed, there are so many hidden goodies that DTP Advisor resembles a computerized treasure hunt.

The project-management portion of DTP Advisor contains eight printable forms for defining and scheduling projects, estimating costs, making free-lance assignments, and listing type and print specs. There's even a sketch pad with Paint-like tools for planning layouts. A database lets you store details on writers, photographers, artists, printers, or other vendors. This information is cross-referenced and serves as fodder for the forms, into which it can be automatically inserted.

DTP Advisor is beautifully designed, both in appearance and programming. Since everything is linked, you can hop from the tutorial on typography to the glossary for a definition or to the type specification form to record information for your next project. Moving to the project-management form, you can have the program search the database for a printer that suits your needs. If you forget what a term means, you can search the glossary or tutorial for it or add it to the glossary for future reference.

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DTP Advisor walks you through all phases of publishing from planning to printing. Clicking on this graphic produces an animated sequence with accompanying text that illustrates the operation of an offset press. Clicking on the word "emulsion," indicated by an asterisk (*), brings up its definition from the glossary.

Reading a book would be easier on the eyes than all the screen text, and you wouldn't have to flip back and forth between programs whenever you needed to know something. Even the forms and database have little practical value, serving mainly as checklists for beginners. You can't compare projects or costs on-screen or export the information to a spreadsheet program. Besides, many businesses have their own forms already. The database is basically another electronic Rolodex — and there are plenty of those already, including HyperCard itself.

DTP Advisor also has some annoying qualities, including chimes that sound as you move from card to card (fortunately, they can be turned off). All the bite-sized chunks of information can be bewildering and tend to trivialize the subject, and the program's complexity is sometimes disorienting, making it easy to forget where you are and how to find what you want. There are also minor bugs, including disappearing text on the database program check-full of useful information for the publishing neophyte. As might be expected, DTP Advisor is a heavyweight, tipping the scales at nearly 1.1 megabytes for its five stacks. By contrast, the manual is lean and mean, a mere 50 pages of instruction and helpful hints.

Unfortunately, most users would probably be served just as well (and more cheaply) by a good book on the subject. Reading a book would be easier on the eyes than all the screen text, and you wouldn't have to flip back and forth between programs whenever you needed...
The forms provided with DTP Advisor help you keep track of publishing projects. You can fill in this form to estimate costs and then print the results, or you can return to the tutorial for more advice on estimating procedures.

DTP Advisor

List Price: $79.95
Published by: Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101; (800) 527-6263 or (415) 492-3200.
Version: 1.0
Requires: 1 megabyte RAM; two 800K drives or hard disk (recommended); HyperCard 1.2 or later (included).
Compatibility: Mac II and MultiFinder friendly.
Application Size: 1,090K (five stacks)
Copy Protection: None

Many designers and publishers who have used DTP Advisor have been impressed by its ease of use, which allows you to organize and maintain publishing projects. The forms provided with DTP Advisor help you keep track of publishing projects. You can fill in this form to estimate costs and then print the results, or you can return to the tutorial for more advice on estimating procedures.

Still, DTP Advisor could be a useful companion for the novice publisher, although its claim of providing “a Ph.D. in DTP” is a bit farfetched. Even a seasoned publisher might learn a thing or two, and the interactive visuals are something a book can’t offer. If nothing else, the program is a brilliant example of HyperCard programming.

Paul M. Williams and Aileen Abernathy

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What's black and white and color and gray and jagged and smooth? The same graphic imported into different applications!

Part 2 of a two-part article.

Last month, we discussed the two basic kinds of Macintosh graphics and the formats in which they're stored ("Putting It Graphically," March '89).

Now let's see how some popular applications handle object and bit-mapped graphics when they're saved as paint, PICT, PICT2, or Encapsulated PostScript Format (EPSF) files. User manuals and simple import/export charts don't always convey the subtlety and variety of the results you get when you mix and match. To fill in those blanks, we selected some appropriate applications, offered them the electronic equivalent of ethnic foods, and observed their reactions. The test candidates included both PostScript- and QuickDraw-based drawing programs, color painting applications, gray-scale retouching programs, and three page-layout packages — combinations of which you're likely to use if you're reading this section.

Ins and Outs
First a word about exporting and importing. Applications have different ways of letting you choose the conversion from native format to some generic one. On the simple side, Save or Save As lets you check the preferred format in the naming dialog box. Then there's Export, Save as Other, and assorted other flavors, with extra spice added by dialog boxes. Read your manuals carefully so you can use the right options and know what formats you're really saving.

Be equally careful when you import. FreeHand and Illustrator can either Open or Place a document. Opening generally means accessing the specified file for full-scale editing. Placing is a more limited form of import. It puts a copy of the imported graphic into an already-open document and permits only large-scale changes such as resizing or shearing. Page-layout programs are placers and offer only resizing, cropping, and gray-scale or color adjustment. Not all applications use a Place command to mean place. Some use Get Picture or another simple phrase. We'll use Place in this article.

By Salvatore Parascandolo
Quibbles and Bits

You’ve probably memorized the difference between bit maps and objects, especially if you read last month’s article. But there’s more. From time to time, you’ll be importing bit maps that need to be resized or rotated. For those occasions, keep in mind that there are two ways to rotate bit maps: as whole objects and by rearranging their bits.

Bit maps are essentially mosaics made from tiny colored or black-and-white tiles. Rotating bit maps in bit-map programs like MacPaint and PixelPaint entails rearranging the tiles that compose the image so that the image looks rotated. Unless it’s done in perfect 90-degree steps, rotation generally wreaks havoc on the graphic, producing unwanted effects like shattered patterns, crumblily lines, and jaggies. A bit map handled as an object undergoes less trauma, because object-oriented applications like FreeHand and MacDraw II don’t move individual tiles. They treat the image as if it were cemented onto a slab and simply rotate the whole slab.

There’s also a difference when resizing bit maps. If you shrink a graphic in a bit-map application, its component tiles remain the same size, but some of them are thrown away — they’re simply squeezed out of the picture. If you were to reenlarge that same graphic to its original size (not with Undo but by stretching it), those vanished tiles wouldn’t come back. Instead, the remaining tiles would grow to fill the larger area, and you’d get the dreaded jaggies. By contrast, shrinking a bit map as an object does shrink its component tiles, so none are ever thrown away. If you shrink an object and then enlarge it to its original size, all the detail will still be there. Thus, if you need to rotate or resize a bit map destined for a page-layout program, first import it to an object-oriented application, modify it there, and then place it in your layout.

Testing, Testing

For these tests, I used a 2-megabyte Mac II with 256-color capability, System 6.0.2, and currently shipping versions of graphics and page-layout software. The printers were a LaserWriter IINTX for black-and-white PostScript output and a Tektronix 4693D for Color QuickDraw output. (Regrettably, our color PostScript printer was sick right up until deadline and could not participate.)

This apparently simple project turned out to be a complicated affair, starting with choosing the applications for producing the generic-format graphics. Some applications, when they export files in PICT or another generic format, will logically (and sometimes illogically) omit image attributes. For example, programs that let you draw with Bezier curves, such as Canvas 2.0, will convert them to QuickDraw curves when they’re exported. MacDraw II strips all color from its PICT saves, giving you patterns instead (food for an entire article in itself).

Ultimately, the generic-format files were prepared with several applications. I used FreeHand 2.0 and Illustrator 88 to produce EPSF object-oriented graphics; Canvas 2.0 and MacDraw II to create PICT documents; Digital Darkroom to generate paint, gray-scale PICT2, TIFF, and EPSF bit maps; LaserPaint Color II for color TIFF, and Studio/8 and PixelPaint for color PICT2 bit maps. Several graphics of the same type, each produced by a different application, were imported into each tested program. The results have been condensed into a chart that highlights how each application imported, displayed, manipulated, and printed the various graphic types and formats.

(For additional insights into color printing, see “Here’s Looking at Hue” in our October ’88 issue. Also check out “Moving Pictures,” which discusses...
DESKTOP FEATURE

On-screen, these images displayed rich colors and cool grays. Also, these PICT2 files go totally high-contrast when PageMaker 3.01 sends them to the LaserWriter. On the Tektronix 48930, however, they print very close to what's on-screen.

When FreeHand 2.0 imports this MacDrawn tiara, it misses a few points — actually all of them. Smooth move.

Would you trust this image to print well? Can you even tell what it is? It's FreeHand 2.0's display of the Tower of Pisa, imported as 1-bit TIFF. It prints perfectly.

exchanging files among applications and systems, in the September '88 issue.)

If your collection of applications and hardware is slightly or entirely different from ours, invest time in carrying out your own tests and develop a chart similar to the one in this article. Better to take the time now than 15 minutes before some really dead deadline. Once developed, the chart will be easy to update as you get new applications and upgrades. It will save you far more than the time it took to produce. In my case, this chart owes me about four years.

Chart Terms

In general, OK means that a graphic imports, displays, or prints as one would expect. When that's not the case, what's corrupted or lost in the process is noted. Losables include patterns, gray tones, gradients, colors, curves, object-oriented nature, and high resolution.

Displays OK — The imported graphic looks on-screen as it did in the application that created it.

Displays as changed — Displays with whatever changes are noted in the related comments. If a comment says "converts to gray-scale bit map," that's what you'll see on-screen.

Edits fully — The importing application can perform any of its native-format editing operations on the imported graphic. If it's an object-oriented application, it can edit the image as a resolution-independent object, including ungroup, refill, reset line weights, etc. If it's a paint program, it can make pixel-level changes to the imported image. If it's a PostScript application, it can edit the object's Bezier curves.

Scale as object, Scale as bit map — How the importing program scales (resizes) the graphic.

Prints OK — What you expect from an output device is what you get. On the LaserWriter, grays print as grays, and colors print as grays of varying intensities. On the Tektronix color printer, colors print much as they appear on-screen. In the case of EPSF, you may see a coarse bit map on-screen, but if the printed result is a high-resolution graphic, then it prints OK.

Prints color or high-contrast black and white — On the Tektronix color printer, the image comes out in the expected colors, but on the LaserWriter, gray scale or color prints as pure blacks and whites, depending on the brightness of the areas of color or gray.

Prints as changed — Prints with whatever changes are noted in the related comments. If a comment says "converts to 72-dpi bit map," then "Prints as changed" means that the printed output will look like a low-resolution, black-and-white bit map.
See our May issue to find out which new Macintosh products won the Eddys—the industry's most prestigious award. Ceremonies will be held April 17th in New York. Read all about it in our special issue. It could be a very rewarding experience.
**Importin' Information**

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<td>displays OK</td>
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</tr>
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<td>Digital Darkroom 1.0</td>
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<td>conv to gray-scale bit map, displays OK</td>
<td>conv to gray-scale bit map, displays OK</td>
</tr>
<tr>
<td>DrawBridge 1.0</td>
<td>displays OK</td>
<td>displays OK</td>
<td>conv to gray-scale bit map, displays OK</td>
</tr>
<tr>
<td>Freestand 2.0</td>
<td>displays OK</td>
<td>displays OK</td>
<td>conv to gray-scale bit map, displays OK</td>
</tr>
<tr>
<td>Illustrator 88.1.5</td>
<td>displays as grayed template</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td>ImageStudio 1.5</td>
<td>conv to gray-scale bit map, displays OK</td>
<td>conv to gray-scale bit map, displays OK</td>
<td>conv to gray-scale bit map, displays OK</td>
</tr>
<tr>
<td>LaserPaint Color II</td>
<td>displays OK</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td>MacDraw II 1.0</td>
<td>displays OK</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td>PageMaker 3.01</td>
<td>displays OK</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td>PixelPaint 1.0</td>
<td>conv to 72 dpi, displays OK</td>
<td>conv to 72 dpi, displays OK</td>
<td>conv to 72 dpi, displays OK</td>
</tr>
<tr>
<td>QuarkXPress 2.0A</td>
<td>displays OK</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td>Ready.Set.Go 4.5</td>
<td>displays OK</td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
</tbody>
</table>

**ABBREVIATIONS:**

- b/w — black and white
- c/b — contrast and brightness
- conv — converts
- hi — high
- LW — LaserWriter INTX
- OD — QuickDraw
- res — resolution
- 46930 — Tektronix 4693D Color QuickDraw Printer
<table>
<thead>
<tr>
<th>PICT2 object</th>
<th>Gray-scale TIFF</th>
<th>1-bit TIFF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>displays OK, can conv to hi-res b/w dithered bit map</strong></td>
<td>displays as hi-res bit map dithered rotates and edits fully as bit map prints hi-res bit map dithered</td>
<td>displays as hi-res dithered bit map rotates and edits fully as bit map prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>edits fully, as object or as bit map</strong></td>
<td>edits as bit map prints as changed</td>
<td>conv to gray scale, displays grays edits fully prints grays</td>
</tr>
<tr>
<td><strong>prints colors, b/w dither, or hi-contrast b/w</strong></td>
<td>displays OK edits fully prints OK</td>
<td>displays OK, can convert to gray scale, displays grays edits fully prints grays</td>
</tr>
<tr>
<td><strong>conv to gray-scale bit map, displays grays</strong></td>
<td>displays OK edits fully prints OK</td>
<td>conv to gray scale, displays grays edits fully prints grays</td>
</tr>
<tr>
<td><strong>prints as changed</strong></td>
<td>displays OK edits fully prints OK</td>
<td>conv to gray scale, displays grays edits fully prints grays</td>
</tr>
<tr>
<td><strong>conv colors to 8 DD colors, displays as changed</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>edits fully, puts rects around text blocks</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>prints as changed</strong></td>
<td>displays OK, can convert to own object</td>
<td>displays OK, can convert to own object</td>
</tr>
<tr>
<td><strong>smooths sharp polygons, scale/rotate/shear</strong></td>
<td>displays OK scale/rotate/shear as object, can adjust c/b</td>
<td>displays OK, can convert to own object, prints as changed</td>
</tr>
<tr>
<td><strong>prints OK</strong></td>
<td>prints OK</td>
<td>prints OK</td>
</tr>
<tr>
<td><strong>Imports via DrawOver as om object, displays OK</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>text converts variably depending, on original format</strong></td>
<td>prints OK</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>conv to gray-scale bit map, displays grays</strong></td>
<td>displays grays edits fully prints OK</td>
<td>conv to gray scale, displays grays edits fully prints grays</td>
</tr>
<tr>
<td><strong>prints as changed</strong></td>
<td>displays OK, can convert to gray scale, displays grays edits fully prints grays</td>
<td>conv to gray scale, displays grays</td>
</tr>
<tr>
<td><strong>some patterns conv to grays, displays as changed</strong></td>
<td>displays OK scale as object, edits fully prints OK</td>
<td>conv to gray scale, displays grays scale as object, edits fully prints grays</td>
</tr>
<tr>
<td><strong>edits fully</strong></td>
<td>displays OK, can convert to gray scale, displays grays edits fully prints grays</td>
<td>displays OK, can convert to gray scale, displays grays</td>
</tr>
<tr>
<td><strong>no 4800D support, on LW prints as changed</strong></td>
<td>displays OK, can convert to gray scale, displays grays</td>
<td>displays OK, can convert to gray scale, displays grays</td>
</tr>
<tr>
<td><strong>conv colors to 8 DD colors, displays as changed</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>edits fully</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>prints in 8 colors or hi-contrast b/w</strong></td>
<td>not supported</td>
<td>not supported</td>
</tr>
<tr>
<td><strong>displays colors, conv some grays to patterns</strong></td>
<td>displays OK scale as object, crop, can adjust c/b prints OK</td>
<td>displays faint dotty image scale as object, crop, invert prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>scale, crop</strong></td>
<td>displays OK scale as object, prints OK</td>
<td>displays faint dotty image scale as object, crop, invert prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>prints color or hi-contrast b/w</strong></td>
<td>displays OK, can convert to gray scale, displays grays</td>
<td>displays faint dotty image scale as object, crop, invert prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>displays OK, can convert to 72-dpi bit map</strong></td>
<td>conv to 72-dpi gray-scale bit map, displays as changed edits fully prints as changed</td>
<td>displays 4X enlarged at 72 dpi edits fully prints as changed</td>
</tr>
<tr>
<td><strong>prints as changed</strong></td>
<td>conv to 72-dpi gray-scale bit map, displays as changed edits fully prints as changed</td>
<td>displays 4X enlarged at 72 dpi</td>
</tr>
<tr>
<td><strong>conv to 72-dpi bit map, some colors change</strong></td>
<td>conv to 72-dpi bit map, displays as changed edits fully prints as changed</td>
<td>conv to 72-dpi bit map, displays as changed</td>
</tr>
<tr>
<td><strong>prints as changed</strong></td>
<td>displays OK, some TIFFs don’t import scale as object, crop prints OK</td>
<td>conv to 72-dpi bit map, displays as changed</td>
</tr>
<tr>
<td><strong>some grays change to patterns, displays as changed</strong></td>
<td>displays OK, some TIFFs don’t import scale as object, crop prints OK</td>
<td>conv to 72-dpi bit map, displays as changed</td>
</tr>
<tr>
<td><strong>scale, crop</strong></td>
<td>displays OK, some TIFFs don’t import scale as object, crop prints OK</td>
<td>conv to 72-dpi bit map, displays as changed</td>
</tr>
<tr>
<td><strong>prints color or hi-contrast b/w</strong></td>
<td>displays OK</td>
<td>displays OK</td>
</tr>
<tr>
<td><strong>displays OK</strong></td>
<td>displays halftone patterns scale as object, crop prints OK</td>
<td>displays faint dotty image scale as object, crop, invert prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>scale, crop</strong></td>
<td>displays OK</td>
<td>displays faint dotty image scale as object, crop, invert prints hi-res dithered bit map</td>
</tr>
<tr>
<td><strong>prints OK</strong></td>
<td>prints OK</td>
<td>prints OK</td>
</tr>
</tbody>
</table>
**APPLICATION**  | **COLOR TIFF** | **EPSF (NON-ILLUSTRATOR)** | **EPSF (ILLUSTRATOR 1.1)**
---|---|---|---
Canvas 2.0  | not supported | not supported | not supported
Digital Darkroom 1.0  | not supported | not supported | not supported
Drawing Table 1.0  | not supported | displays only b/w preview | displays only b/w preview
Drawing Table 1.0  | | scale/rotate | scale/rotate
Drawing Table 1.0  | | prints b/w bit map on 46930, on LW prints OK | prints b/w bit map on 46930, on LW prints OK
FreeHand 2.0  | not supported | displays b/w or color preview | can Place or Open, displays OK
FreeHand 2.0  | | scale/rotate/shear | Place; rotate/scale/shear; Open: edit fully
FreeHand 2.0  | | prints OK | prints OK
Illustrator 88 1.6  | not supported | displays only b/w preview | displays OK; opens as own file
Illustrator 88 1.6  | | scale/rotate/shear | edits fully, preserves templates & colors
Illustrator 88 1.6  | | prints b/w bit map on 46930, on LW prints OK | prints b/w bit map on 46930, on LW prints OK
ImageStudio 1.5  | not supported | not supported | not supported
LaserPaint Color II  | opens most OK, crashes worse; displays OK | displays b/w or color preview | displays b/w preview
LaserPaint Color II  | | scale as object, edits fully | scale
LaserPaint Color II  | | no 46930 support, prints solarized on LW | no 46930 support, on LW prints OK
MacDraw II 1.0  | not supported | not supported | not supported
PageMaker 3.01  | not supported | displays b/w or color preview | displays b/w preview
PageMaker 3.01  | | scale, crop | scale, crop
PageMaker 3.01  | | prints OK | prints OK
PixelPaint 1.0  | not supported | displays color or b/w preview, conv to 72-dpi bit map | displays b/w preview, conv to 72-dpi bit map
PixelPaint 1.0  | | edits fully as bit map | edits fully as bit map
PixelPaint 1.0  | | prints as changed | prints as changed
Studio/8 1.0  | opens most OK, displays OK | not supported | not supported
Studio/8 1.0  | | edits fully | edits fully
Studio/8 1.0  | | prints OK | prints OK
QuarkXPress 2.0A  | opens most OK, displays OK | displays b/w or color preview | displays b/w preview
QuarkXPress 2.0A  | | scale, crop | scale, crop
QuarkXPress 2.0A  | | prints OK | prints OK
Ready, Set, Go 4.5  | opens most OK, displays banded colors | displays b/w or color preview | displays b/w preview
Ready, Set, Go 4.5  | | scale as object, crop | scale, crop
Ready, Set, Go 4.5  | | prints banded colors; on LW prints OK | prints OK

**ABBREVIATIONS:**

b/w — black and white  c/b — contrast and brightness  conv — converts  hi — high  LW — LaserWriter 11NXT  OD — QuickDraw  rects — rectangles  res — resolution 46930 — Tektronix 46930 Color QuickDraw Printer
Kurta gives you an absolute alternative.

There are "relative" pointing devices—the mouse. And then there are "absolute" input devices—Kurta IS/ADB™ Input Systems.

Unlike a mouse that makes you always start wherever you left off last, and makes you push it to the next position, the Kurta IS/ADB's are exact devices. When you move to the top of the tablet surface, the screen cursor moves to the top of the screen. The pointing device and the screen cursor are in direct 'absolute' relationship. So your hand and eye coordination is intuitively correct and more natural. This "absolute positioning" makes it possible to correctly accomplish freehand drawing and tracing. Get your work done absolutely faster and more comfortably.

A total "Input System" with programmable menu-strips. Kurta IS/ADB's give you a built-in "menu-strips" featuring 11 to 23 function keys. They can be loaded with time-saving, sophisticated macro commands or with simple keyboard shortcuts you create with Apple® Computer's new MacroMaker®. Kurta also gives you the option to put the macros in your hand. Because our IS/PENWORKS® for Macintosh® ADB lets you load the macros and shortcuts on 4-button or 12-button cursor keys. To execute a command, simply quick click on the function key or cursor key instead of going up and pulling down from the menu bar. Fast action, no window flashing.

Built-in software gives you automatic ADB drive. Only Kurta ships a software interface driver in every package that makes more than 98% of all software Kurta-compatible. Kurta's IS/PENWORKS drivers for the Macintosh and serial ports feature Kurta's exclusive "dynamic scaling" to miniaturize/maximize the active area—whether you are enhancing CAD applications on AutoCAD® or VersaCAD® or others, working with desktop publishing packages, or creating graphic designs.

A time to compare, a time to act.
The Kurta IS/ADB Input System is only available from Kurta authorized dealers. Call for the one nearest you. No obligation. No alternative. Call now.

1-800-44-KURTA

A Lifetime Warranty

It only looks like a tablet.

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Cordless cursors and pens with no equal. Kurta offers the only cordless 4-button cursor and only cordless 3-switch pen. There are six Kurta pointing devices in all, including the new Kurta 12-button cursor for maximum application control with instant touch.

Built-in software gives you automatic ADB drive. Only Kurta ships a software interface driver in every package that makes more than 98% of all software Kurta-compatible. Kurta's IS/PENWORKS drivers for the Macintosh and serial ports feature Kurta's exclusive "dynamic scaling" to miniaturize/maximize the active area—whether you are enhancing CAD applications on AutoCAD® or VersaCAD® or others, working with desktop publishing packages, or creating graphic designs.

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1-800-44-KURTA

A Lifetime Warranty

It only looks like a tablet.
Stop the presses.

DirectPrint™
is here: $3495*

You have to see it to believe it.
Fast, efficient, and crystal clear: The DirectPrint non-impact page printer uses liquid crystal shutter technology to produce stunning results at an amazingly low price.

Covering both ends of the spectrum, DirectPrint gives you deep velvet blacks on graphic images as well as sharp readable text with clearly visible fine lines.

To stay ahead you have to run faster.
And we do. Depending on the document, our four-MIPS RISC processor (backed by 3 megabytes of RAM) averages speeds five times faster than the competition. Without sacrificing precision quality:

DirectPrint is PostScript®-compatible, giving you unlimited versatility in creating and manipulating text and graphics.

They do it with mirrors.
We don’t.

Electro-photography with a liquid crystal shutter array enables the DirectPrint to produce exceptional resolution at 300 dots per inch.

Since we do not use rotating mirrors and lenses we don’t suffer from scanning distortion. You can expect consistent quality from the middle of the page to the edges.

And with fewer mechanical parts than conventional laser printers, the DirectPrint offers greater reliability.

We won’t weigh you down.
We wouldn’t call it a portable, but at 35 pounds the DirectPrint is light enough to move easily. And with a price of only $3495, chances are your office is exactly where you will want to move it.

Worldwide doorstep delivery is just a phone call away.
It’s easy to order a DirectPrint page printer. We welcome your MasterCard, Visa, and American Express. Dial 1-800-347-3228 in the U.S., 415-282-1111 worldwide.

Our knowledgeable sales staff is on duty Monday through Friday from 8am to 6pm (Pacific Standard Time).

The proof is in the printing.
Please circle 45 on reader service card.

Jasmine Technologies, Inc. 1740 Army Street, San Francisco, CA 94124
Phone: 415-282-1111 Worldwide. 1-800-347-3228 in U.S. Fax: 415-648-1625

*100 watt model only. 220 volt model slightly higher. © 1989 Jasmine Technologies, Inc. DirectPrint is a trademark of Jasmine Technologies. PostScript is a registered trademark of Adobe Systems, Inc.
STEPPING OUT II

The DA Stepping Out II is a screen extender that allows the creation of large virtual screens on the Mac. Although most people can readily see the benefit of this (particularly for the 9-inch screen of the Plus and SE), there is another benefit for those who would rather use a larger monitor while developing applications for the smaller, standard screens.

Stepping Out II also functions quite effectively as a screen shrinker. Creating a small screen size is simple. First, call up Stepping Out II from your Control Panel. Click New and enter the pixel count for the screen size you want (512 pixels wide by 342 high for the Mac SE). Then, enter a name for your screen definition (such as "Mac SE Screen") and click Save. Finally, highlight the name of your new screen setup and putting them on the same square as any other piece.

TIM EVANS
DANA POINT, CALIF.

IMAGEWRITER LQ

There is yet another better and easier solution than Edward E. Sharp's for extending the life of LQ ribbons (in the October '88 issue).

On the left side of the LQ (where the controls are), there is a small switch. When this switch is depressed, the printer knows that a one-color (black) ribbon is loaded. The black ribbons have a tab protruding that should depress this switch. Color ribbons do not have this tab. Make sure that the tab is depressing the switch. Then most of the ribbon surface will be used for printing.

MICHAEL J. LATIMER
OWEN SOUND, ONTARIO, CANADA

VIRUS PROTECTION

Here's a very simple and effective way to protect programs on your hard disk from virus infection. While in the Finder, do a Get Info on each of the programs on your disk and click in the Locked box at the upper-right corner of the window (see Figure 1). This usually protects the selected file from accidental deletion, but it also guards it against virus contamination, since it prevents new resources from being written to the application.

Don't forget to protect mini-applications like Font/DA Handler. SEBASTIAN KEMPGEN
KONSTANZ, WEST GERMANY

REALIZING THAT I, TOO, AM not perfect, I almost passed up buying the Ehman board. But the QuicKeys DA included with the hardware won me over. Using QuicKeys, you can reassign keystrokes so that the backslash key (/) and the Delete key switch roles. You can even pry off the respective key caps and switch their positions on the keyboard. And there's a moral to this tip. You should never remain passively content with the hardware or the software you purchase. There are almost always workarounds.

MATT KNOWLES
SAN JOSE, CALIF.

STRATEGIC CONQUEST PLUS

If you feel the need to cheat every now and then when playing Strategic Conquest Plus against your Mac, here are a few hints.

Don't limit fighters to two attacks per round. By using the Move Later command after each attack, you can attack on each move. This works for all water pieces as well. You can also protect fighters from attack by leaving them in an empty enemy city.

For carriers/battleships, use Move Later successively from the day after you put one of these pieces into port for repairs until the piece regains full strength.

On bombers, start building them on day 30 to get a blast radius of 1. For a blast radius of 2, start on day 65. You can hide bombers by putting them on the same square as any other piece.

TIM EVANS
DANA POINT, CALIF.

A P R I L 1 9 8 9 M A C U S E R 1 9 9

Figure 1: By locking applications with the Get Info box, you can prevent corruption from viruses and other nasties. It's a simple vaccine that doesn't cost a cent.
If you’re concerned that $399 is too little to pay for the new Ehman 20 MB Hard Drive, we’ll give you 30 days to change your mind.

The Ehman 20 MB Hard Drive is vivid proof that you don’t always get what you pay for...sometimes you get more. At just $399 the Ehman drive is significantly less than the leading 20 MB drives on the market. But please don’t judge us by our price.

True value is based on performance and price, and the Ehman drive really hums. It is built upon Seagate technology for optimal speed and reliability. And while it includes all the usual utility software and necessary cables, it may be what’s not included that you’ll appreciate the most...noise. In fact the Ehman drive provides virtually noiseless performance.

You may be wondering how we can provide so much for so little. The simple answer is excellent engineering and an obsession with efficiency. Ehman has been a leading OEM manufacturer of Macintosh peripherals since 1985. We know how to design better Macintosh peripherals. And we keep the overhead low and the margins thin so we can provide our customers with the very best values.

In case you’re still not convinced we’ll give you 30 days to return your purchase with no questions asked. In addition we back our products with a two-year warranty, compared to as little as 90 days for some manufacturers. Ehman drives are compatible with the Mac Plus, "Mac SE," and the Mac II and come in a variety of sizes. Larger drives are available at equally attractive prices. So call 1-800-257-1666 today or order by FAX at 307-789-4656 for the best value in Macintosh peripherals. Ehman calling hours are 9:00 A.M. - 9:00 P.M., EST Monday - Saturday.

Ehman Engineering, Inc.
Peripherals Designed for Value

Please circle 131 on reader service card.
click Set. If you have enough memory reserved for the new screen (and assuming that Stepping Out II is active), the change takes place immediately. Otherwise, you will first need to reboot.

Once all this is accomplished, you can easily switch from one screen size to the other by simply turning Stepping Out II on or off from the Control Panel.

DAVID H. LOVETT
DUBUQUE, IOWA

MACWRITE 5.0

When you open a previously saved MacWrite document, you can zip off to the insertion point saved at the same time as the document by pressing Enter from the numeric keypad.

The original manual of MacWrite, when it was still distributed by Apple, documented this fact. Unfortunately, the new, inferior manual from Claris omits this potentially useful maneuver.

BRUCE LANGSTROM
BILOXI, MISS.

WORD 3.02

Want to swap the positions of two adjacent paragraphs quickly, without using multiple executions of Cut, Copy, and Paste?

Highlight the paragraphs and check the alphanumerics position of the first word in each paragraph. Then use the Sort command (Word will sort in ascending order) or Shift-Sort (descending order) according to the alphanumerics (see Figure 2).

With a little forethought, you can figure out how to move two paragraphs around a third paragraph that separates them.

You can also install markers at the heads of as many paragraphs as you wish to rearrange. Use Sort and remove the markers when you're finished. The variations of Sort are endless once you get the hang of this useful and underused tool.

BILL GENERAL
BELMONT, CALIF.

If you have received the Microsoft Word Bonus Disk, you may have noticed that the new DA WordFinder Thesaurus only works with Word or the Finder—it only functions if the information in the About... box of the active application says "About Microsoft Word...", "About MS Word...", "About Word...", "About Finder...", or "About DAS...".

Using ResEdit, you can customize WordFinder to work with any application that has a MENU resource. First, open ResEdit and then open the desired application. Open the application's MENU resource and open MENU ID=1. Change the first menu item to "About Word..." (with three periods!) and save your changes (see Figure 3). WordFinder can now provide you its riches in the modified program.

MIKE GLEASON, JR.
OMAHA, NEB.

Microsoft Word 3.02 has a little-known ASCII code search-and-replace capability that can come in handy when using Word to edit and reformat text files created on an IBM PC or PC clone. To find a particular ASCII code within a Word document, type a caret (Shift-6) followed by the decimal value of the ASCII code in the Find What dialog box. Here's how to use this feature to fix a typical PC text file imported into the Mac environment (always work on a backup copy of the file you wish to convert):

1. Select Change from the Search Menu (Command-I).
2. Replace the double carriage-return / line-feed
Put a Seagate drive at the core of your computer

If you’re one of the millions of people who have adopted computers with an SCSI interface, then you should be one of the millions who can use a drive from Seagate, the world’s largest manufacturer of SCSI disc drives. These drives come in a wide variety of sizes, capacities and access times, making them ideal for every application.

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>Model</th>
<th>Capacity</th>
<th>Access Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5&quot; HH</td>
<td>ST125N</td>
<td>21 MB</td>
<td>&lt;30 msec</td>
</tr>
<tr>
<td></td>
<td>ST138N</td>
<td>32 MB</td>
<td>&lt;30 msec</td>
</tr>
<tr>
<td></td>
<td>ST157N</td>
<td>48 MB</td>
<td>&lt;30 msec</td>
</tr>
<tr>
<td></td>
<td>ST177N</td>
<td>69 MB</td>
<td>&lt;30 msec</td>
</tr>
<tr>
<td></td>
<td>ST1098N</td>
<td>83 MB</td>
<td>&lt;30 msec</td>
</tr>
<tr>
<td>5.25&quot; HH</td>
<td>ST225N</td>
<td>21 MB</td>
<td>65 msec</td>
</tr>
<tr>
<td></td>
<td>ST251N</td>
<td>43 MB</td>
<td>25 msec</td>
</tr>
<tr>
<td></td>
<td>ST277N</td>
<td>64 MB</td>
<td>25 msec</td>
</tr>
<tr>
<td></td>
<td>ST290N</td>
<td>84 MB</td>
<td>25 msec</td>
</tr>
</tbody>
</table>

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(CR/LF) pairs at the end of each PC text paragraph with a special Mac character as follows. Click the I-beam to the left of the first character in the file. In the Find What box, type "13'10"13'10 (13 is the decimal value of the ASCII carriage-return code; 10 is the decimal value of an ASCII line feed).

3. In the Change To box, type Option-8 for a bullet (•) or another special Mac character not used in the file. Click Start Search or Change All to make the changes.

5. Now, replace the CR/LF codes at the end of each line within paragraphs with a space: With your insertion point at the top of the document enter "13'10" in the Find What box; in the Change To box, type one space; and then click Start Search or Change All. In the Change To box, type Option-9 for a tab (used to mark the end of a Word text file paragraph).

To print a long document in Word with page numbers (a long document being one that is composed of several Word files), the Microsoft Word manual prescribes that you go through a series of time-consuming steps. One particularly annoying step is having to repaginate each part of the document, find out what its last page number is, and then set up the next file so that it starts with the next page number.

A way around this problem is to choose Page Setup for each file and type the file name of the next file as the manual directs. Then, with the exception of the first file of the set of files that make up the document, blank out the Start Page Numbers At box. That is, leave a 1 in Start Page Numbers At box for the first file and erase the 1 in that box for the other files. Now, reopen the first file of the document and tell the computer to print. The whole document (the concatenated series of files) will print out properly paginated without the inconvenience of having to repaginate each file individually.

This method works only if you begin printing with the first file of the series. If you print a file that appears in the middle or end of the set of files that make up the document, it just won't work.

MEL C. LABRADOR
PRESIDIO OF MONTEREY
CALIF.

L A S E R W R I T E R

Envelopes frequently jam when going through a LaserWriter because they are too stiff to bend around the mechanism of the paper path.

The low-tech solution is extraordinarily simple and takes about two seconds. Before printing, break the spine of the envelope. Run the flap edge of the envelope between your thumb and forefinger, bending it at about a 45-degree angle as it passes through. Do this twice, bending once in each direction so that the envelope ends up flat. [Avoid paper cuts entirely by folding the flap over backwards. — Ed.]

For an even better pass through the printer, break the stiffness along both long edges. This makes the envelope more flexible and the likelihood of jamming is substantially reduced.

ABBY TRUDEAU
CUMBERLAND, MAINE

W O R D

A problem with Word's outlining capabilities is that there is no Hide Outline command. Often, one wants to compose in an outline, but most headings must be left out of the finished product. You could delete the outline headings manually, but this can be very time consuming in a long document and can also hinder future document revision.

The solution is to use Define Styles to create a style sheet on which all outline styles are based. You could call this "base style." Its style would be the same as Normal Text. Again, using Define Styles, each of the subsequent outline styles should be defined as being based on this Normal style by entering that name in the Based On box. Now, any changes made to the definition of the base style will automatically be made to all outline styles.

When you have finished composition and want to hide the outline, choose Define Styles and add Hidden Text to the style definition. All outline heads will vanish (unless you select Show Hidden Text). When you print, make sure Print Hidden Text is not checked.

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A Word From Our President

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Mitch Marshall, President & Founder

M.M. Inc., a rapidly expanding company, is comprised of extremely talented and dynamic people. Over the next 3 years, sales are projected to triple due to our accurate foresight concerning our customers' needs. To maintain this present level of growth we rely on you — our new employees, to provide us with the insight, and direction to meet the constant challenges of our business.

—Mitch Marshall

Our History

Back in 1968, in a small garage outside Bakersfield, California, Marshall Manufacturing was formed. Mitch Marshall perceived a growing market demand for electronic component boards for the burgeoning electronics and computer fields. His perception proved right on target. Marshall Manufacturing, Inc., began production with a 10-man staff of 12. Today, with plants throughout North America and Europe, M.M. Inc. is the leader in providing hardware for the computer industry. As sales continue to grow, we will reach (cont. pg.6)

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Circle 32 for dealer information.
Circle 35 for product information.
This month the BBC brings HyperCard and ecology together, we have a review on hold, and from a reader come “handlers” that are useful in creating stacks.

Get organized with Focal Point II, find tools for developers in Card Tricks, and see a selection of foreign-language programs in Flash Cards.

NewsLinks

Ecology in Action

Until very recently, multimedia meant demos to me. All that I had seen were neat, sometimes spectacular, and essentially impractical showpieces.

The British Broadcasting Corporation (BBC) changed my opinion in a hurry. Its London-based Interactive Television Group has produced a stunning teaching tool called EcoDisc. It consists of a HyperCard control stack and a 12-inch LaserDisc (which they call an LV-ROM) containing the graphic and audio information.

EcoDisc lets users explore a section of the English coast that’s rich in flora and fauna. Users select the part of the area they wish to explore, and if the area is not easily accessible to humans (like under water), they can use video cameras.

The wildlife on the land is a bit too shy and elusive for human-operated video cameras, so to check them out, you use HyperCard to set up simulated remote cameras wherever you want. You’ll see whatever these cameras catch, often only a front or tail of a quick-moving creature. If the glimpse isn’t enough for you to identify the animal, the ID function will (with input from you) flash photos of what it might be. (ID also works for plants, trees, and fish.)

And what of the future? You can make choices about each of the components of the area and then hear commentary and see charts showing what effect your proposals will have on the ecological balance over the next 25 years (in 5-year intervals).

Unfortunately, you’re not going to be able to buy EcoDisc on this side of the Atlantic soon. That’s because the standards that British TV and LaserDisc players use are not compatible with American standards. The BBC is considering an American version, but it’s not a high priority. The British version costs £159 (about $300). Other disks about volcanoes and the English countryside are expected to be available shortly.

EcoDisc was originally created for

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"If your preference is for lean, no frills software, you may find that this program wins out over more elaborately packed rivals."  
*Macintosh Today*  
June 22, 1989 / p. 26

"This program is so good that if it's the first one you try, I can almost guarantee you it will be the only one you test."  
*Computer Output* column  
Dakota Times (Toronto)

"My favorite all-around accounting program is CheckMark Software’s MultiLedger/Payroll set. It was the simplest and most logical program I examined that provided a reasonably full set of accounting capabilities. Its price/performance ratio represents an excellent value."  
*Macworld*  
September 1988 / p. 169

---

the BBC Acorn computer. Conversion to the Mac was basically a matter of creating the control stack. It took only four weeks start to finish.

EcoDisc was the star of the Apple booth at last November’s MacUser UK Show. And it may show up at an Apple booth here. If it does, it is certainly worth taking a good look at.

---

**Hold That Review**

We were about to review 101 Scripts and Buttons for HyperCard, by Macropac International (now owned by Individual Software), when we learned of a threatened lawsuit involving the stack. According to Robertson Reed Smith, Macropac used parts of his public-domain stack, Stack Starter, a collection of HyperCard routines, without his written permission. And Macropac, in a rights statement, gave permission for up to 10 percent of the program to be used “in any commercial non-competing HyperCard product without permission and without the need for any royalties or fees” (with the exception of Apple’s ResCopy). In giving end users this right, Macropac violated Smith’s copyright.

We contacted Michael Lunsford, vice president of Individual Software, who stated that the problem had “totally gone away.” According to Lunsford, the material belonging to Smith has been removed from the package.

Smith confirmed that his routines have been removed from 101 Scripts and Buttons, but he is also asking that Individual Software place an ad in all the magazines in which it previously advertised, to let people know that a mistake was made and that the Stack Starter scripts are copyrighted and should not have been included.

This situation, as one of the first legal battles over stack copyrights, bears watching. We’d all like to know where the law stands on the issue — how much others’ scripts and buttons can be used without copyright infringement.

In our view the matter is still unsettled, and until it is, our review is on hold.

— Laura Johnson
Commanding Tips

When you are creating HyperCard stacks, the Message Box is a very powerful tool for entering HyperTalk commands during development and debugging. It is very common to enter a number of similar and repetitive commands interactively. Unfortunately, the Message Box is only one line in length, and commands are overwritten when new ones are entered or when information is returned to the Message Box. You can spend an excessive amount of time retyping commands. The following handlers, when installed in the Home Stack script, record and maintain a list of each HyperTalk command typed in the Message Box. You can scan through all previously entered commands and select or modify any command without any retyping. As commands are recorded, they are sequentially numbered, beginning with #1. As commands are recalled, the command number is displayed with the command for one second before disappearing. This helps you keep track of your position in the list of previously entered commands. The following keyboard shortcuts may help you recall commands: Pressing Option-Down Arrow recalls the last command entered; pressing Option-Left Arrow "steps back" and recalls previously entered commands; pressing Option-Right Arrow "steps forward" and recalls previously entered commands; pressing Option-Up Arrow recalls the first command entered; and pressing Return executes the displayed command. When you want to clear out the command list, just enter "clear" in the Message Box.

```hyperTalk
on returnKey
    global cmds, nlin, cptr
    put msg & return after cmds
    add 1 to nlin
    put nlin into cptr
    pass returnKey
end returnKey

on arrowKey key
    global cmds, nlin, cptr
    if the optionKey is up then pass arrowKey
    if key="left" and cptr<1 then subtract 1 from cptr
    else
        if key="right" and cptr<nlin then add 1 to cptr
        else
            if key=up then put 1 into cptr
            else
                if key=down then put nlin into cptr
                end if
            end if
        end if
    put "#" & cptr & ";" & line cptr of cmds into msg
    wait 1 seconds
    put line cptr of cmds into msg
end arrowKey

on clear
    global cmds, nlin, cptr
    put msg & return after cmds
    put 1 into nlin
    put 1 into cptr
    put "The command list has been cleared!" wait 1 seconds
    put cmds
end clear
```

(Thanks to reader Ellis Z. Gabovitch of Lynnfield, Mass., for this tip.)
Focal Point II

Focal Point II is a major upgrade of Focal Point, one of the first commercial HyperCard programs released after HyperCard’s introduction in August ’87. Both versions were written by Danny Goodman, author of The Complete HyperCard Handbook.

We reviewed the original Focal Point in March ’88 and found it an excellent organizational tool that naturally extended HyperCard’s unique ability to link applications and information. However, Focal Point’s complexity made it difficult to learn, some necessary links were missing, and it had minimal ability to create hard-copy output.

Focal Point II overcomes our hard-copy concerns by offering 60 printing formats ranging from full-size sheets of paper to popular DayTimer-style listings. In addition, Focal Point II can export data over a cable to two electronic displays: a wristwatchlike device called the WristMac and a handheld computer, the Psion Organizer.

Our other concerns about Focal Point’s lack of a few linkages have also been addressed. Goodman has added many more links, including a to-do list that automatically carries over uncompleted items from the previous day. All in all, he’s written over 50 specific enhancements. Unfortunately, this drive toward more and more capabilities has increased the difficulty of learning Focal Point II and made it mandatory to read large portions of its 335-page manual.

As the clearly written manual reveals, Focal Point will do a lot. Its 16 original modules handle appointments and to-do lists, create telephone directories, log calls, record time and materials billings, begin draft letters, take notes, calculate expenses, create projects, and search for any recorded information using HyperCard’s amazingly fast Find function.

In addition, Focal Point II has two major new modules: a built-in electronic-mail system, and a Task Manager for assigning and tracking complicated projects. Most impressive is Focal Point II’s integral mail system, which creates, sends, and receives memos. This E-mail system can be used in conjunction with Focal Point II’s new Task Manager to define and assign project tasks and subtasks. These tasks and status reports can be sent electronically to and received from others.

Access to any one of these 18 modules is very convenient. Any 16 of them can be reached by a click on their icons, which the user arranges in two vertical strips on either side of the module’s cards. All modules are also available through a pull-down menu.

On the other hand, I found Focal Point II more geared to the independent contractor than the staff employee. The automobile expense module didn’t let me note the reason for my travel — it only left me space for entering a client or project. Of course, I could add my own field because Focal Point II’s new Task Manager to define and assign project tasks and subtasks.

If you want to replace your multitude of electronic and physical storage places with a few instantly searchable stacks, try Focal Point II. It’s a solid, second-generation HyperCard product that creates an information home base.

— Gil Davis

Focal Point II has its own electronic message system that works with TOPS or AppleShare LANs.

A module in Focal Point II called Task Manager helps define and assign projects, tasks, and subtasks.

Focal Point II

List Price: $199.95
Published by: TENpointO, 3885 Bohannon Drive, Menlo Park, CA 94025; (415) 329-0500.
Version: 1.0
Requires: 1 megabyte, hard disk, HyperCard 1.2.1 or later.
Compatibility: MultiFinder friendly with at least 2 megabytes.
Application Size: 1 megabyte with minimal configuration.
Copy Protection: None

208 MACUSER APRIL 1989
How to speed up your accounting cycle

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MacUser September 1988

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Please circle 1 on reader service card.
Although there may be more than one way to skin a cat, you only get one try per cat. Programming differs, at least in this respect, from cat-skinning. When you program in HyperTalk, the language Apple built into HyperCard, you can try out several ways of solving a problem, and sometimes it's educational to do just that, as this month's HyperTalk programming example shows.

The English language portion of this month's sermon, the 12th Card Trick, skins quite a different cat. I have tried, over the past year, to provide some useful tools for developing HyperCard stacks, but I have also tried to present topics in an order that made the column a kind of course in HyperTalk programming. Since it is sometimes hard to see the feline for the fur, this month I am reviewing the columns to date, revealing what logic there is behind the sequence of topics, and at the same time fixing some bugs.

It is my prejudice (although you may use it without royalty fees) that one should learn to read a programming language a little before learning to write it. A less contentious belief—that reading others' code will make you a better programmer—is in the public domain. HyperCard is a reader's language; you can read the HyperTalk code in others' stacks. The trick is finding the code. The first Card Tricks column, back in May '88, addressed this problem. The Stack Analyzer pulled together all the scripts and other pertinent information about a stack and displayed it in a field. It did its job reasonably well and found its way onto several on-line services and into the BMUG catalog. But as published it had some limitations. It couldn't handle stacks whose scripts totalled more than 30,000 characters, it sometimes got confused by stack names not enclosed in quotation marks, and it failed to clear two fields. (The fix for the last was published in the September '88 issue, and consists of adding the lines *

When you program in HyperTalk, you can try out several ways of solving a problem.

BY MICHAEL SWAIN

theScripts and put empty into analysis near the top of the mouseUp handler. Eric Alderman's Script Report, available on many on-line services, approaches the problem differently, with a different set of strengths and weaknesses, and gets around the 30,000-character limit.

My second desideratum for learning to write code (after some code to read) is some good writing, editing, and debugging tools. The next three columns were about writing, editing, and debugging scripts. In June I talked about the process of writing, both of code and of prose, and presented four approaches to invoking the script editor with an edit button. The code for that column was made obsolete by version 1.2 of HyperCard; the text, I hope, still has some value. In July I shared a simple Script Formatter that I wrote in order to ensure that my code would fit in a vertical two-thirds page in MacUser, and August's column was a Profiler, a debugging tool that I now regret publishing: it was too complex for tutorial purposes. (Around the time these came out, TENpointO released the most important text-output product for HyperCard to date: Reports. Although I held it to high standards in my Quick Click in the August '88 issue, Reports was then, and remains today, one of the most powerful stack-development tools and is nearly essential for HyperCard report generation.)

Once you've learned to read and write and debug HyperTalk code, you can begin to think about quality, and that starts with thinking about the user interface. September's column was an exploration of the HyperCard user interface. I offered some new HyperCard gestures for users to make, both my gestures and readers', and discussed Apple's advice to interface builders.

When you begin to like your creations and have developed a few tools you think enough of to reuse, you need a pegboard on which to hang them. I presented a Programmer's Pegboard in the October and November issues, for organizing the resources, buttons, and scripts that you reuse. Many readers pointed out that I failed to include the Home stack script that lets you invoke the Pegboard. You'll find it with this month's code.

The rest of the year was an exploration of various programming techniques and applications. The theme for MacUser's December issue was artificial intelligence, and I looked forward to the opportunity to make use of my graduate school training. Unfortunately, all the techniques I learned as AI in 1979 are mundane programming methods today, so, observing that nothing looks as intelligent as serendipity, I wrote a Random Sentence Generator. It took another month to wrap up the amusing little toy. The biggest problem with it, as one reader pointed out, was that it tended to clutter up the screen with fields.

Read Before You Write

This column was an exploration of various program-
The January '89 column included a HyperText trick that allowed jumping from field to field, but the real trick was to hide fields when not using them, which I did in January.

February took a longer ramble in the fields, as I showed a way of implementing virtual fields that could hold megabytes of data. They would have been useful in the Stack Analyzer. Although my virtual fields do work, they are fragile and best viewed as a scripting example.

At the beginning of this series and at the beginning of this month's column, I emphasized the importance of reading others' code. One good reason to read code is to find algorithms - techniques for solving common problems. The best algorithms are not in stacks, though - at least not yet. But even if HyperTalk is your only programming language, you may be able to follow algorithms described in programming books and magazines. I came across a good algorithm for fractal graphics in The Science of Fractal Images by M.F. Barnsley, R.L. Devaney, B.B. Mandelbrot, H.O. Peitgen, D. Saupe, and R.F. Voss (New York: Springer-Verlag, 1988), and implemented it as March's Shrubbery script. Fractal graphics have made it to the silver screen to build worlds in science-fiction films. This particular algorithm is ideal for designing shrubbery.

That's the cat's cadaver. Read others' code, write and debug your own, concentrate on quality, organize your tools, play around, steal, I mean borrow. This month's programming offering includes another borrowed algorithm. (It's borrowed in three senses: I got it from Jim Blinn, who got it from J. E. Bresenham, its author, and I am borrowing my own implementation from my book, Dr. Dobb's Essential HyperTalk Handbook, (Redwood City, Calif.: M&T Books, 1988). The script shows three ways to draw a circle: implementing all three of these algorithms and timing them is an enlightening exercise.

--- Home stack script for Programmer's Pegboard
--- Released to the public domain
--- by Mike Swaine, January 1989.

On pb
Global pbTargetStack
Put the long name of this stack into pbTargetStack
Push card
Go to stack "PegBoard"
Answer "Interrupt?" with "Yes" or "No"
If it is "Yes" then exit to HyperCard
Pop card
End pb

--- Three ways to draw a circle
--- Released to the public domain
--- by Mike Swaine, January 1989.

--- Drawing a circle with the oval tool.
On mouseUp
Global fgColor, bgColor, colors
Put the seconds into secStart
Put 256 into H
Put 171 into V
Set centered to true
Choose oval tool
"Our business was going through the roof, but our old accounting system was holding us down.

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Color item random(8) of colors, "white"
Drag from H, V to H+150, V+150
with optionKey
Choose browse tool
Put the seconds - secStart & & "seconds"
End mouseUp

-- Drawing a circle with trig functions.
On mouseUp
Global fgColor, bgColor, colors
Put the seconds into secStart
Put 256 into H
Put 171 into V
Choose brush tool
Color item random(8) of colors, "white"
Repeat with D = 1 to 360
   Put D*2*pi/360 into R
   Put 150*cos (R) into Hdelta
   Put 150*sin (R) into Vdelta
   Click at round(H+Hdelta), round(V+Vdelta)
End repeat
Choose browse tool
Put the seconds - secStart & & "seconds"
End mouseUp

-- Drawing a circle with Bresenham's algorithm.
On mouseUp
Global fgColor, bgColor, colors
Put the seconds into secStart
Put 256 into H
Put 171 into V
Choose brush tool
Put 0 into ix
Put 150 into iy
Put 0 into ie
Color item random(8) of colors, "white"
Repeat while ix <= iy
   If ie < 0
      Put ie + iy + iy - 1 into ie
      Subtract 1 from iy
      End if
   Put ie - ix - ix - 1 into ie
   Add 1 to ix
   Click at H+ix, V+iy
   Click at H-ix, V+iy
   Click at H+ix, V-iy
   Click at H-ix, V-iy
   Click at H+iy, V+ix
   Click at H-iy, V+ix
   Click at H+iy, V-ix
   Click at H-iy, V-ix
End repeat
Choose browse tool
Put the seconds - secStart & & "seconds"
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**Mac screens**

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Since Flash Cards premiered in our December '87 issue, we have shown you an intriguing variety of HyperCard stacks — some homegrown and some of the commercial variety. This month's selection of Flash Cards includes a group of foreign-language stacks; some are suitable for the beginner, others are for those who have studied a foreign language in the past.

HyperGlot Software recently introduced ten stacks in Russian, German, Spanish, and French that are primarily designed for students or those who have some knowledge of a particular language. The series includes verb tutor stacks and extensive vocabulary drills. Chinese Exercises 19A, geared for students of Chinese, is based on exercises developed by Professor Madeline Chu of the Department of Asian Language and Literature at the University of Massachusetts at Amherst. Two linguists at Harvard and Cornell universities developed The Lexical Engineer, a reference tool for anyone interested in Japanese. Speed Spanish, created by the West Coast School of Memory Training, uses six strategies to help you learn to communicate in Spanish in most situations. Finally, expand your vocabulary in Spanish or French with FlashCard Spanish and FlashCard French by Barbara Fitch Cobb. If you're interested in learning a language, are a current student, or need a refresher course, one of these HyperCard language stacks may be the answer for you.

You can find the shareware and freeware stacks on bulletin boards and the commercial stacks at your local software emporium. If you create a stack that you think others will be interested in, send it to Flash Cards, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't promise to show your stack and we can't return your disk, but we might make you famous.
Ease into the action with Verbal Tutors for Russian, German, French, and Spanish. Each stack contains 200 sentences to drill you on verb usage. HyperGlot's HyperText capabilities allow you to check verb conjugation, see sentence translation, and review references on the rules for usage for each sentence. The German, Spanish, and French Verb Tutors each have 20 verbs; the Russian Verbal Aspect has 40. Each sells for $29.95.

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No Need for Rushin

To get an idea of what the Russian language is like, begin with Introduction to Russian. You can learn the Russian alphabet or how to read and pronounce words and sentences. This set of three disks sells for $39.95. When you feel you’re ready to move on, expand your vocabulary with the Russian Noun Tutor. It drills over 300 noun forms and includes a reference section for the noun declensions. It’s priced at $29.95. Contact HyperGlot at 505 Forest Hills Blvd., Knoxville, TN 37919; (615) 558-8270.

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Apple has made it clear that the 1.4Mb SuperDrive will be included in their new, high-end machines, but has yet to offer an upgrade. PLI has an upgrade path for everyone, today. The TurboFloppy 1.4 from PLI gives you 1.4Mb Macintosh floppy diskettes, connectivity with MS/DOS and high-speed floppy disk performance.

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Jane Smith

File Edit Go Tools Options

Radial Help

This tool draws radial diagrams.

- Horizontal
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Welcome to Bridges, the newest addition to MacUser. Each month Bridges will examine connectivity and networking, operating systems, workstations, and human interface issues. Bridges will be the place to look for the latest on AppleTalk, Ethernet, Token-Ring, network file system (NFS), and Open Systems Interconnection (OSI) networks; A/UXiliary Information, MacUser’s ongoing coverage of A/UX; the Apple-DEC alliance; IBM mainframe connections; DECwindows, Open Look, and MacX; Display PostScript; and the news from Apollo, Sun, and NeXT.

Each month we will report the latest news and rumors and apply a critical eye to in-depth product reviews. This month we offer a look at Liaison, a low-cost software AppleTalk bridge from Infosphere. Trouble Shots, by Kurt VanderSluis of The Network Group (a Seattle-based consulting company), will offer advice on how to iron out the gremlins out of your AppleTalk network. Kurt will share his expertise from years in the AppleTalk trenches with Farallon Computing. In his first installment, Kurt tells you how to exorcise the gremlins responsible for ghosting.

NetWare for Macintosh Ships

The big news is that Novell’s NetWare for Macintosh finally shipped. This long-awaited addition to NetWare adds AppleShare compatibility to one of the most popular DOS network systems around. With NetWare 2.15 and NetWare for Macintosh, Mac users can access NetWare file servers just as they would any other AppleShare server.

The NetWare Operating System runs on a dedicated PC or clone. Each such server can support up to four connected networks, and there is virtually no limit to the number of servers that can be connected. NetWare has already distinguished itself by supporting dozens of different PC networks, including Token-Rings, Ethernet, and ArcNet. With the release of NetWare for Macintosh, LocalTalk and EtherTalk networks join the list.

Macintoshes and PCs on all these types of networks can share files on a NetWare server as easily as two Macintoshes share files on a Mac-based AppleShare server. However, PCs on other NetWare networks cannot access AppleShare servers on Macintosh networks connected to the same NetWare server. Note that all this works only for servers running NetWare 2.15. NetWare also lets workstations on different networks share PostScript printers.

NetWare’s eight levels of file security are transparently mapped into the standard See Folders, See Files, and Make Changes dialog boxes familiar to AppleShare users. NetWare also provides password protection for its servers. This is retained in NetWare for Macintosh.

NetWare for Macintosh is only $200 per user site. You can install it on as many servers as you like at the same location. But first you need the NetWare Operating System, version 2.15. For the moment, NetWare 2.15 is available only on the most expensive NetWare option, System Fault Tolerant NetWare. The cost of a new copy of this software package is $3,695. You can upgrade from 2.1, 2.11, or 2.12 for $1,175. In addition, you have to find yourself a 286 or 386 PC or clone to run it on. Version 2.15 of Advanced NetWare ($2,995) and Entry Level NetWare ($1,495) will be available sometime in the first quarter of 1989. We’ll be giving NetWare a full workout and a full review in an upcoming Bridges. — Henry Bortman
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I hate Murphy. When I was a young engineering student, I read Ayn Rand’s The Fountainhead. I wanted to be a heroic engineer like Rourke and make perfect designs using materials that would never rust. I thought if only I considered every aspect of how an object would be used, I could design a way for the object always to be perfect.

In practice, however, Murphy and his law were dead-on. Everything fails — and usually does so at the most critical time. We cannot shrink from our obligation to design reliable networks, but we have to acknowledge that at some point, they will stop working. When that happens, someone must fix them. To fix a network, you first have to find out what’s broken.

There are a number of ways to notice a network problem, but they all have one thing in common — something happens that is different from what you expect. Perhaps it takes much longer to print than you expect, or the file server seems to be missing, or you can’t connect to the mainframes.

Often, if you’re familiar with the network and how it is set up, you’ll have an idea of where the problem lies. In other cases, you’ll have to figure it out. That’s where troubleshooting comes in. Troubleshooting is an orderly way of locating the broken part of the system and fixing it. We’ll begin by looking for problems on the lower layers of the network — the data-link layer, where we will observe the logical connections between devices, and the physical layer, the wires and electrical connections.

Troubleshooting starts by comparing how the system behaves when it’s not working with how it behaves when it is. Rule No. 1 of troubleshooting is to know how everything is supposed to look. So before a problem occurs, you want to observe the network in a healthy state, using the same tools you’ll use again later when you have a problem. The tools you need to troubleshoot the data link layer are CheckNET from Farallon Computing or Inter•Poll from Apple. For the physical layer, you’ll use the StarCommand desk accessory — if you have a Farallon StarController — and an ohmmeter.

The first observation to make on your healthy network is what devices are logically visible. Both CheckNET and Inter•Poll send out a query to all the devices on the network. Any device that receives the query will respond by giving its device name, device type, and network address. Make sure all the devices on the network are powered up before doing this check. Also you must have either RegisterName or Responder in each System folder. These are INITs that enable the Mac to respond to the query. A device that is powered off or does not have one of these INITs installed cannot respond. A list of all the devices that respond will appear on your screen. Print it out and save it. It’s a good idea to repeat this procedure every time your network changes significantly.

Now suppose one of your printers or AppleShare file servers suddenly “disappear” from the Chooser. After checking the obvious — it’s plugged in, turned on, and appears to be connected properly to the network — run CheckNET or Inter•Poll again. Then compare the problem list with the healthy list. Either the lists are the same, the problem list has no entries, or the lists are different.

If the two lists are the same, you know there is no trouble with the logical network. In this case, the trouble is generally connected with either a software configuration problem or a user’s lack of understanding of the proper procedure. (Future articles will focus on troubleshooting these higher level network functions.)

If there are no devices on the list, make sure your AppleTalk connection is plugged in and that AppleTalk is activated in the Chooser.

If there are some devices on the list but not all that appear on the normal list, and you’re sure that all the devices are powered up, you must look to the physical network. Now the task becomes finding the physical location of the problem.

Keep CheckNET or Inter•Poll running for a while and watch the display. Both programs will update the screen every few seconds. Are there some devices that seem to come and go from the list? This is called ghosting.

If the devices are not ghosting but are simply not present, then you may look for shorts or breaks in the network wire near the missing devices. Perhaps the wires have become unplugged or are connected improperly.

If they are ghosting, there are two likely causes. The first is that the total length of your network is too great and the signal reaching your Macintosh from the ghosting devices is weak. Perhaps you have intentionally run your network wiring farther than the manufacturer recommends. Or you may not realize the wiring is too long, because it’s routed inside the wall where you can’t see it. In either case, it is never wise to exceed the manufacturer’s specifications. Your phone installer might be able to suggest a reroute. Or you may want to add a StarController to help pump the signal to all the places it has to go.

The second cause of ghosting is reflect-
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Bridge 5

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Small reflections are caused by changes in impedance (resistance) in the wire along its length. You can have changes in impedance when the network wire changes from one wire type to another (for example, going from Apple's shielded LocalTalk wire to Farallon's unshielded telephone wire through an adapter) or from one wire gauge to another (e.g., going from 22 AWG wire running around a building to 26 AWG jumper wire in the phone closet). It can also happen when there are kinks in Apple's LocalTalk wire.

Small reflections usually cause small problems, but once in a while they will add up in some combination to give you big trouble. Large reflections occur when a wire has not been properly terminated. This will almost always cause problems. Next month we'll look at how to use an ohmmeter and — if you have a StarController — the StarCommand desk accessory to troubleshoot reflection problems.

In the meantime, a word to the wise: Don't push your network beyond its recommended limits. If your connector vendor says that the network can be 3,000 feet long, that doesn't mean that 3,001 won't work. But beyond the stated limits, there is a sieve. The further you push the design, the coarser the sieve becomes and the more leaks through and get lost. Work within manufacturers' specifications, even if you have to spend a little more money. The reliability bonus you get will be well worth it.

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Liaison: A Flexible Flier

Most vendors implement a bridge with specialized hardware, which contains a custom chip that knows how to perform only one specific bridging task. For example, an InterBridge can bridge one LocalTalk network to another.

Liaison takes a different approach. It turns your Mac into a bridge and runs the bridge process in the background. This has two advantages. It’s cheaper — no extra hardware — and it’s extremely flexible because the Mac’s general-purpose CPU can be programmed to perform any bridging task. Liaison can even bridge LocalTalk to ArcNet (although we didn’t get a chance to test this). And when TokenTalk (Token-Ring AppleTalk) comes along, Liaison will be ready and waiting.

Fine, you say, but anyone who’s used PrintMonitor will be wary of trying to get work done on a Macintosh with a network process going on in the background — which is why Infosphere recommends running Liaison behind an AppleShare server, rather than a workstation. The impact on server performance is negligible.

The Torture Test

But suppose that, for whatever reason, you need to run Liaison on a workstation. I tried it (see Figure 1). I set up two networks — one LocalTalk, one EtherTalk — each consisting of five workstation nodes (I’ll call these data workstations) and one AppleShare server. I bridged the two networks with Liaison, running on another workstation (I’ll call this the primary bridge) that was physically connected to both nets. All the data workstations were running a 4D/3 program that, every 20 seconds, made a database request of the server on the opposite network. So all these data packets were going through the primary bridge.

Simultaneously, I had a dial-up connection to the primary bridge, courtesy of the same single copy of Liaison. Over this link, I was printing a file to a LaserWriter connected to the EtherTalk server. (This required a second copy of Liaison running behind the server to bridge from EtherTalk on the server to the printer, which supports only LocalTalk.)

Then I opened Word 3.02 on the primary bridge and started typing. Not only did I never lose a character, but the screen never lagged behind my keystrokes. (I type 80 words per minute.) Liaison allows you to give priority either to the background bridge process or to the foreground task. Whichever way I had it set, my typing was unaffected. I don’t know how Infosphere did it, but they did it right.

There was a noticeable delay opening and saving files when the bridge process had priority, but it was still tolerable. For graphics applications, however, you’d want to give the foreground task priority to avoid an annoying delay (several seconds) in redrawing the screen.

Doing It

Setting up Liaison is a snap. You drag it into your System folder and reboot. It’s installed and appears in the Chooser (see Figure 2).

The three pop-up menus in the Preferences dialog box allow you to bridge up to three networks. Usually you will select LocalTalk for the printer port. By selecting LocalTalk for the modem port as well, you can bridge two LocalTalk networks. Alternatively, you can configure the modem port for a dial-up connection, as shown in Figure 3. If you have an Ethernet connection, “Other ports” allows you to select EtherTalk as well.

The Network Services dialog box lets you name and assign network IDs to the various networks you have just configured. If you don’t specify them, Liaison will assign them for you the next time you reboot. But you need to watch out: There are a few gotchas.

Gotcha No. 1: For some reason Infosphere can’t explain, Liaison sometimes has trouble automatically assigning a name to a dial-up network. You’re safer entering it yourself.

Gotcha No. 2: Whichever Liaison-configured Mac gets turned on first gets to establish, for other bridges on the network, the names and IDs of the networks it’s connected to. Any bridges turned on after that, if they’re on the same network(s), pick up net names and IDs from the bridge that got there first. So if you turn on the wrong one first, you just shut down, start the other bridge, then restart the first machine, right? Wrong. This works only for Mac IIs. A Shut Down command from any other machine leaves Liaison running in the background. Unless you are using...
a Mac II, you must physically turn off your Macintosh to kill Liaison.

Gotcha No. 3: Liaison lets you enter an asterisk (*) for a zone name. Doing this tells Liaison: “Get your name and ID from another bridge, not from me.” This is a way around the confusion that can arise on large networks, where you don’t want zone names to change every day depending on which machine starts up first. However, when an asterisked Liaison gets booted up, if there is no other bridge process running from which to get a name and ID, Liaison won’t make one up and go into action. It will simply not activate.

The moral: Carefully plan where you put your Liaison bridges and how you set up network names and IDs, or you could get caught.

**Keeping Secrets**

Liaison provides excellent security. You can assign a password to the Liaison Chooser icon itself. No password, no access to Liaison functions. In addition, robust security is provided for dial-in access.

The Authorized Users dialog box (see Figure 4) is where dial-in users are given their rights. Each user can be assigned a password. In addition, for each dial-in user, access can be restricted to a single node, a zone, or the entire internet. This goes far beyond the security other dial-in AppleTalk bridges provide. With Liaison, for the first time, you can “hide” resources on your network — for example, a Linotronic — that you don’t want dial-in users to access.

But unlike hardware dial-in bridges, Liaison doesn’t require you to leave the resources of your own network behind when you dial into another net. For example, with a NetModem, if I dial into MacUser’s network from home, I have to say good-bye to my LaserWriter. Liaison lets me have simultaneous access to the resources of both my printer at home and
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the network I am dialing into at work.

When you use Liaison to connect two networks over phone lines, you can choose between a private and a shared connection. With a shared connection, anyone on the network of the dialing Mac automatically gains access to the resources of the network dialed into. With a private connection, only the Mac dialing out gains access to the resources of the network at the other end of the line. Liaison also allows multiple nodes on a network to share a single modem for dialing out to another net. The Authorized Users dialog box lets you specify on a per-user basis who may share the modem.

So perhaps now you’re thinking, “This seemed like a good deal at first, but at $295 a node, it could get expensive pretty fast.” Ah, but not every node has to run its own serialized copy of Liaison in order to use the program’s services. Liaison ships with LiaisonNet, which can be copied freely and provides a subset of Liaison’s functions sufficient for most nodes. Only those nodes actually running a bridge process or providing shared dial-out capability need Liaison proper.

Another gotcha: For dial-up connections, Liaison has an extensive initialization sequence that gets sent to the modem at startup. But if for some reason the modem gets reset after that, Liaison may not reinitialize it. The manual recommends a roundabout way of forcing modem initialization; the most effective seems to be starting a telecommunications application and quitting it. When the program quits, Liaison will initialize the modem properly. By the way, Liaison will not talk to NetModems or other similar devices. It will, however, work with any telecommunications program that uses the serial port properly.

**Parting Shots**

I have found Liaison to be more reliable than a NetModem for dialing into the MacUser network from home. With a NetModem, about one out of three calls fails to go through, often for reasons I can’t explain. Liaison works every time.

The manual is strong on explaining difficult networking concepts with simple language and clear pictures, but it’s short on examples and troubleshooting tips.

The technical support is excellent. The folks at Infosphere know how their product works, and when you call them with a problem, they take the time to make sure you know how to get the most out of it.

Liaison is compatible with Timbuktu and TOPS; I’m told that it works with QuickMail as well, although I didn’t get to try it. And for those of you who already have other bridges on your nets and need to add more, Infosphere says you shouldn’t have any problem.

This is a brilliant piece of programming at a great price. If the time has come to add bridges to your network, look to Liaison first.
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Pop Quiz. Stop. This is a test. For the next 60 seconds, we will be conducting a quiz about Macintosh® II Videographics. Do not turn the page until you have looked at the visual clue and answered all the questions.

Which Macintosh II graphics card offers the widest range of capture and display resolutions—NTSC, PAL, Apple® Monitor, hi-res, interlaced, non-interlaced and other modes?
a) NuVista 2M  b) NuVista 4M  c) All of the above

Name the only videographics card which provides true-color, real-time capture and broadcast-quality display while occupying only a single slot in a Macintosh II.
a) NuVista 2M  b) NuVista 4M  c) All of the above

Which videographics card offers full QuickDraw™ compatibility at 1,2,4,8,16 or 32-bits per pixel?
a) NuVista 2M  b) NuVista 4M  c) All of the above

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### COMMUNICATIONS & NETWORKING

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### DATABASES

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### Internal Hard Drives for the SE

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<td>CDC Enhancements 140</td>
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<tr>
<td>173 Megabyte</td>
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<td>$1,649</td>
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### Removables

- MicroNet 45: $1,199 (includes one cartridge)
- 45 Cartridge: $119

### Tape Back-Ups

- CMS Enhancements 60: $699
- Everex 60: $749
- Irwin 60: $1,099
- MicroNet 60: $739

### Hardware Accessories

- Anchor-5 year warranty (includes Cable & Software): $149
- Everex 2400 Baud Modem: $139
- Farrallon Mac Recorder: $34
- Cutting Edge ADB Keyboard: $119
- General Computer Business Laser Printer: $3,199
- Personal Laser Printer: $1,499
- Irwin Accelerator 25 SE: $1,249
- Qume Crystal Print Publisher: $3,299
- Script 10 Laser Printer: $3,299
- Radius Radius 16+ Accelerator: $799
- Radius 25 Accelerator: $1,249
- Full Page Display + SE: $1,299
- Full Page Display II: $1,375
- Two Page Display SE, II: $1,849
- Radius Color Monitor: $1,849

### Memory

- SIMMS in stock
- All hard disk drives carry a manufacturer's one year warranty except for the *Quantum drives, which have a manufacturers two year Warranty.

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Software 

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<thead>
<tr>
<th>Software</th>
<th>rent</th>
<th>buy</th>
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<tr>
<td>HSF Locator +</td>
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Hardware 

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<th>Hardware</th>
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<tr>
<td>Accelerator Boards</td>
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<tr>
<td>Audio Digitizer</td>
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<tr>
<td>Disk Files (plastic or Teak)</td>
<td>8.80</td>
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<td>800k External Drives</td>
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<td>Mac 101 Keyboard</td>
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<tr>
<td>60 Mb SCSI Tape Backup</td>
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UPDATES

There is a poetic saying that "life is but a metamorphosis," and in the same sense, software is but a metamorphosis, constantly changing with upgrades and new versions. As with all changing things, software tends to be difficult to keep up with, and for Mac users, upgrade information is important.

Therefore, the following chart is an attempt to keep your knowledge of upgrades and new versions (as of press time) of many popular programs up-to-date. To see if you have the most current versions, check the About ... item at the top of the Apple menu when you run a program.

Those of you with the Mac 512K, 512KE, or Xl (Lisa) should be running System 3.2 and Finder 5.3. Everyone else should be running System 6.0.2.

Microsoft has updated PowerPoint to version 2.01. Included in the upgrade is a Genigraphics driver and GraphicsLink. Users can image slides directly to any Genigraphics Service Center in North America. Quark has updated QuarkXPress to 2.0A. In this program, lists here are IFS-compatible. From this chart, you can extract the following information: CP or NCP for copy-protected or not copy-protected; /* for programs we have found to be Mac II compatible (not yet a comprehensive list); and $ for shareware (try before you buy). Changes and new listings are in bold. Programs that appear to be compatible with the Mac II may not actually perform 100 percent of the functions they perform on other Macs and do not necessarily take full advantage of the Mac II.

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MINIFINDERS

Have you often wished for a personal assistant to help in picking software? These MiniFinders may not breathe and move, but they do tell you what products are hot and better, what these products do. Each of these items has been carefully reviewed and selected by the MacUser editorial staff. Each has been ranked in hundreds of half-miles, from 1 to 5. Ratings are relative within categories, and they can change as categories expand and new products advance the state of the art. You won't see many low ratings or bombs, since we're telling you about the cream of the crop, but we will warn you about the really bad products so that you don't spend your money on them. Red names indicate this month's additions. The letters at the end of the entries indicate whether a product is copy protected (CP) or not (NCP). If a product has been reviewed or Quick Clicked in MacUser, the date of the review is shown. Eddy (Editor's Choice) Award winners are noted with a *) and the year in which they won prizes for an excellent product. Next time you have to find products you can count on, count on MacUser!

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BUSINESS ACCOUNTING
Accountant, Inc. integrates accounts payable, accounts receivable, general ledger, and inventory modules. Prints checks, purchase orders, invoices, and customized reports. Bare-bones accounting system limited in size and scope, but ease of use and integration make it suitable for small businesses. Requires 512K+. Version 2.0. $299. SoftSync, 162 Madison Ave., New York, NY 10016. NCP (Oct '87)

Back to Basics Accounting is a powerful double-entry accounting software package for the small business user with GL, AR, and AP modules. Exhaustive manual with numerous examples. Report capabilities are excellent. $199. Peachtree, 4355 Shackelford Road, Norcross, GA 30093. NCP (May '87)

BPI General Accounting is an easy-to-use system. Six journals, Accounts Receivable, Accounts Payable, Payroll, and General Ledger on one disk. Offset amounts automatically post to ledgers. Up to 8,000 accounts. Detailed records, wide range of reports. Requires 512K+. $89. Computer Associates, 1240 McKay Drive, San Jose, CA 95131. NCP (Aug '86)

InSight is a high-powered accounting program for the small-to-medium-sized business. Modules include Accounts Receivable, Payables, and General Ledger; others are in the works. Requires 512K and hard disk. $959. Layered, 529 Main St., Boston, MA 02129. NCP (Dec '86) *'86 Eddy

Databases

DBase II is a relational DBMS that includes a structured programming language to develop stand-alone applications. Palette icons can be used to create a bibliographic database. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. $129. Niles & Associates, 2150 East Brown Road, Mesa, AZ 85203. NCP (Oct '88)

Double Helix II is a powerful database that supports a multimedia environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odessa, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Apr '88)

EndNote provides database management for bibliographies. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. $129. Niles & Associates, 2150 East Brown Road, Mesa, AZ 85203. NCP (Oct '88)

DBase III Plus is a relational DBMS that includes a structured programming language to develop stand-alone applications. Palette icons can be used to create a bibliographic database. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. $129. Niles & Associates, 2150 East Brown Road, Mesa, AZ 85203. NCP (Oct '88)

Emerald is a powerful database that supports a multimedia environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odessa, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Apr '88)

Gale Data is a powerful database that supports a multimedia environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odessa, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Apr '88)

GraphBase 2 is a powerful database that supports a multimedia environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odessa, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Apr '88)

MacMail is a powerful database that supports a multimedia environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odessa, 4084 Commercial Blvd., Northbrook, IL 60062. NCP (Apr '88)

Quick BLP provides database management for bibliographies. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. $129. Niles & Associates, 2150 East Brown Road, Mesa, AZ 85203. NCP (Oct '88)

Rags to Riches integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the hit. Information entered in a window automatically transfers. Detailed, flexible report options. Very easy to use, but it can be confusing with several windows on-screen. Requires 512K+ and printer. $199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Dec '87)

Rags to Riches Professional Billing tracks and bills professional services. Batch creates invoices for individual timekeepers. Uses as stand-alone, or integrates with R to R modules. Requires 512K+, printer, $399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb '87)

Simply Accounting has six ledgers and eight journals to handle the needs of most small-to-medium-sized businesses. Better Maic interface than most. Payroll tax labels can't be modified, which forces you to subscribe to Bed ford's yearly update service. Requires 512K+ and hard disk. $349. Bedford Software, 15311 N.E. 99th St., Redmond, WA 98052. NCP (Sept '88)

Strictly Business General Ledger features clear, well-outlined setup procedures and operations. Very flexible, up to 99 profit centers with access to 10 departments each, and customized reports. Program print spools. Requires 512K+, printer and external drive. $395. Future Design, 13681 Williamette Drive, Westminster, CA 90283. NCP (Dec '88) *'86 Eddy

Timeslips III tracks billing and expense information for people who charge by the hour. DA turns the clock on and automatically bills a client when a session is over. Version l.06. Requires 512K and two disk drives. Mac II and MultiFinder friendly. $199.95. North Edge Software, 239 Western Ave., Essex, MA 01929. NCP (Sept '88)
MINIFINDERS

Associates, 2200 Powell St., Suite 755, Emeryville, CA 94608. NCP (Feb '88)

FileMaker II is a multisensational version of the all-time best flat file manager for the
Macintosh. New features include more flexible layouts, hierarchical menus, and color on the Mac II. Version 1.0. Requires 1 megabyte with two 800K disk drives, $299. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Dec '88)

4th Dimension is a versatile tool that creates stand-alone relational databases.

Design and layout environments allow easy linking of information. Robust. Pascal-based procedure language. $295--$349. Steven Creek Blvd., Cupertino, CA 95014. NCP (Nov '87) ★ 87 Eddy

FoxBASE+/Mac is a relational database that can read unmodified dBASE III PLUS applications created in the MS-DOS world. Amazingly fast. Good macros, and a charting capability. Has macros, and a charting function. Good Manual. It can exchange files with a very wide variety of other programs (including IBM software). $396. ProUVE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov '85) ★ 85 Eddy

Pro-Cite is a flexible, easy-to-use, form-oriented data manager. Setup is particularly simple and the search features are powerful. $39.95. Software Discoveries, 137 Krawski Drive, South Windsor, CT 06074. NCP (Apr '86) ★ 86 Eddy

Reflex for the Mac is a relational database. Excellent report generator gives full control over appearance, style of output. Requires 512K+, second drive, or hard disk. $99.95. Borland International, 4855 Scotts Valley Drive. Scotts Valley, CA 95066. NCP (Dec '86) ★ 86 Eddy

Reflex Plus is a relational database with “smart” entry, and report design, but no overall programming facility. Simple to set up, yet fast. Graphic capabilities are quite limited. Version 1.0 reviewed. $279. Borland/Analytica, 4855 Scotts Valley Drive, Scotts Valley, CA 95066-9887. NCP (Feb '88) ★ 88 Eddy

Writer's Workshop maintains current records for writers. Can track manuscripts, income, and publisher. Based on and includes Runtime Helix. $99.95. Futuresoft System Designs, P.O. Box 132, New York, NY 10012. NCP (Apr '87)

NUMBER CRUNCHING

Data Desk Professional lets you visually look at statistics with more ease than any comparable Macintosh program. Puts variables so you can analyze data to see what patterns develop. Version 2.0. Requires 1 megabyte and two 800K disk drives or hard disk. $495. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (Nov '88)

Excel is the power spreadsheet of the Mac. Has 256-column by 16,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K+ Mac and external drive required. $395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9177. NCP (Prem '85) ★ 85 Eddy

MacCalc is a fast, competent, full-feature spreadsheet with impressive built-in functions, font control, on-line help, ability to expand columns and rows, and read/write SYLK or WKS files. The worksheet is 125 columns by 99 rows. A very desirable program. pure spreadsheet, $139. Bravo Technologies, c/o DPAS, P.O. Box T, Garden Grove, CA 92641. NCP (Feb '88) ★ 88 Eddy

MacSpin is a unique and powerful graphic data analysis program. Handles multi-variates in a highly visual manner. Nothing else like it for any micro. $199.95. DDD Software, P.O. Box 9456, Austin, TX 78766-9456. CP (June '86) ★ 86 Eddy

MacSOQI compresses Excel files up to 86 percent of their actual size. Good to free up disk space. Also contains password utility. $99.95. Turner Hall Publishing, 12020 Torre Ave., Cupertino, CA 95014. NCP (Aug '88) ★ 88 Eddy

Mathematica is a powerful tool for doing all kinds of math. Offers arbitrary-precision numeric calculations, symbolic computation, PostScript graphics, and programmability. Version 1.03. Requires 1 megabyte and a hard-
10 reasons why you should switch to New Turbo Mouse.

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**MINIFINDERS**

**Cricket Presents** is a presentation tool with strong emphasis on graphics. Good
master template. Lacks import capability for text. Version 1.0. Requires System 4.2 or later. $695. Cricket Software, 40 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355. NCP (Nov '88)

**Crystal Paint** creates an electronic kaleidoscope. It's MacPaint's Brush Mirror
simple, yet wonderful application. Does not work in color on Mac II. MultiFinder friendly. Requires 512K+. $49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Feb '88)

**Curator** catalogs your art and graphics so it's easy to see what's what and where it is. Supports PICT, TIFF, EPSF, PostScript, MacPaint, and more. Changes creator types. Requires 512K and an 800K drive. $139.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (Sept '88)

**DeskPaint** is a full-blown paint program as a desk accessory. Allows you to spunc up a graphic while in another application. Imports and exports MacPaint and TIFF images. Great for DTP, but not enough features to rival the leaders in paint programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85713-5205. NCP (Mar '88)

**EPS Illustrations** is a potpourri of illustrations with no real focus. As an art package, this one is not very useful as you cannot alter any of the drawings. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $129.95. T/Make, 1773 Landings Drive, Mountain View, CA 94043. NCP (Aug '88)

**EZ Draft** is a high-level CAD application. Does things usually only found on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of print/plotter/morse drivers. A real powerhouse. $1995. $500 for IEGS module to link to other CAD programs. Bridgepoint Machines, 500 Lindley St., Bridgeport, CT 06660. CP (May '87)

**FastFormsl Construction Kit** is both a fast and efficient business forms creator (a drawing program) and a sped allzed application (and DA) to fill out the computer programs. Uses "pop-up" menus to supplement a full set of ed.

**Fastlmpostor** lets you customize bit-map fonts or even create new ones.

**Fontgrapher** is a complex, but excellent laser font creator. The fonts created have 300 bits-per-inch resolution. The fonts are actually downloadable Postscript files. $395. Attaya, P.O. Box 865410, Piano, TX 75074. NCP (Apr '88)

**FontSizer** creates high-quality screen fonts of any downloadable PostScript type. Face in sizes up to 127 points. Excellent utility for producing large font sizes with true WYSIWYG. Requires 1 megabyte, PostScript printer, and fonts. Version 1.1. $199.95; U.S. Labbits, 1611 Headway Circle, Build­ ing No. 3, Austin, TX 78754. NCP (Apr '88)

**FreeHand** greatly simplifies the drawing of curves, the use of layers and text handling when manipulating PostScript graphics. And it works in color on the Mac II. Requires 1 megabyte and two disk drives, $495. Aldus, 411 First Avenue South, Seattle, WA 98104. NCP (Aug '88)

**FullPaint** is an expanded version of MacPaint. Features include full-screen drawing, up to four documents open simultaneously, brush editing, and movable tool palettes. $99.95. Ashton-Tate, 20101 Hamiton Ave., Tor­ rance, CA 90602-1319. NCP (June '88) *$95, 87 Edy*

**GraphicWorks 1.1** is a powerful drawing and painting program that creates high resolution-bit-maps. Easels contain graphics, balloons hold text, and both reside on panels. Graphic primitives are now a separate tool. $1.495. Mindscape, 3444 Dundee Road, Northbrook, IL 60002. NCP (Oct '87)

**GraphistPaint II** is a powerful color drawing program but has some rough edges. Cumbresome drawing environment yet very good at combining and re- touching existing objects. Clumsy. Version 1.0 reviewed. Mac II with 2 megabytes and 8-bit video card required. $495. Abo, Software Inc., 41 Great Valley Parkway, Malvern, PA 19355. NCP (Apr '89)

**Illustrator 88** is a professional-level graphics program from the people who make MacDraw. Groups, Dimension, and libraries are stand-alone objects. Very high quality and very simple to use. Williamette looks like Avant Garde. MicroFonts provides tiny, expanded, and condensed versions of the LaserWriter's own fonts. $34.95 to $44.95 each. Century Software, 2483 Hearst, #175, Berkeley, CA 94709. NCP

**ImageStudio** puts a photo-retouching lab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Version 1.0 reviewed. Requires I megabyte + and two 800K disk drives. Mac II and MultiFinder friendly. $495. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. (June '88)

**Images with Impact** brings clip art out of the turn-of-the-century woodcut style and into a modern graphic sensitivity. "Graphics and Symbols 1" is the first in a series. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $99.35. 3 Graphics, 11104 N.E. 124th St., Kirk­ land, WA 98034. NCP (Aug '88)

**Japanese Clip Art** is a two-disk set of extraordinary Japanese clip art. Consists of MacPaint documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matter. $149.95 each volume; $149 for eight-part set. Dallas Trading, 6079 Norfolk Road, Berkeley, CA 94705. NCP (Apr '87)

**LaserFonts** are new fonts for the LaserWriter. Users download them to their machines. Very high quality and very simple to use. Williamette looks like Avant Garde. MicroFonts provides tiny, expanded, and condensed versions of the LaserWriter's own fonts. $34.95 to $44.95 each. Century Software, 2483 Hearst, #175, Berkeley, CA 94709. NCP

**LaserPaint's** clumsy interface makes it a slow program. There's good laser output if you persevere through the creation of a document. The support is scads better than the documentation. Version 1.1.4. $495. LaserWare, P.O. Box 668, San Rafael, CA 94915. CP (Jan '88)

**LaserTalk** is a PostScript programming tool that establishes interactive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires LaserPrint +, and a PostScript IEGS module. $249. Eddywave Software, P.O. Box 2103, Menlo Park, CA 94026. CP until registered (May '88)

**Mac Art Dept.** is a collection of over 150 graphic images ranging from foods to hands holding signs to borders. Best suited for letterheads, memes, other business use. $39.95. Simon & Schuster, Computer Software Div., 1 Gulf + Western Plaza, New York, NY 10023. NCP (Mar '88)

**MacCalligraphy** simulates brush painting. User-defined Seals and Touches enable you to design your own signature tool and the style of brush you use. Takes some getting used to. $175. Qualitas Trading, 6079 Norfolk Road, Berkeley, CA 94705. NCP (Feb '88)

**MacDraft** is an object-oriented graphics program. It supports advanced features such as variable scaling, single-degree rotation, complex ans, auto dimen­sioning, and variable zoom/panning. $295. MicroDraft II. 2280 Bates Ave., Concord, CA 94520. NCP (Feb '88)

**MacDraw** is an object-oriented graphics program. Can be used to design forms, create presentation materials, and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Lacks free rotation or zoom-in capabilities. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov '88) *$95 Eddy*。

**MacPaint** hasn't lost its shine after all these years. Version 2.0 supports multiple windows, design templates, and a magic eraser for corrections. It lacks free rotation or distortion talents. Requires 512K and second disk drive. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (July '88) *$95, 87 Eddy*

**Mac3D** is a feature-laden 3-D program with a MacDraw-like interface. PostScript resolution shading with six variable light sources, user definable tools, and many more features. Clumsy interface to rotate objects and camera. Version 2.0. $929. 3D Graphics Software, 16550 Hedrie Ave., Home­ wood, IL 60403. NCP (Jan '87)

**MapMaker** is a digital cartographer that charts demographic and marketing infor­ mation on a geographic basis. Wide variety of maps available, some at an additional charge. Version 3.0. Requires 512K. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Dec '88)


**MiniCAD** is a pro CAD by design. Vast array of features, many accessible only through Command/Shift/Option key combinations. Works in 2-D or 3-D with easy transition from one to the other. MacDraw-like interface makes it easy to learn and use. Version 3.0. Requires 512K+. $125., Dieth Graphsoft, B370 Court Ave., Suite 202, Ellicott City, MD 21043. CP (Oct '87)
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**MINIFINDERS**

VersaCAD is a powerful CAD program that doesn’t show any of its MS-DOS roots. Excellent element manipulation, full plotter support. Library user interface is crude. Requires 1 megsabyte + $1595. VersaCad, 2124 Main St., Huntington Beach, CA 92648. NCP (July '88)

VideoWorks II is an easy-to-use animation tool — the best available on the Mac. Has an Overview mode that acts as a slide show carousel for presentations. Works in color on the Mac II. $195. Requires 1 megsabyte + and an 800K drive. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Mar '88) • 90, '87 Eddy

VideoWorks II Accelerator compiles VideoWorks II movies to make them run more smoothly. Compensates for the QuickDraw screen display. Version 1.0. Requires 1 megsabyte, VideoWorks II; hard-disk drive recommended. $195. MacroMind, 1028 West Wolfram, Chicago, IL 60657. NCP (Dec '88)

VideoWorks II Clip Animation, Clip Charts, Black and White Movies, and Clip Sounds are four separate aids to help you construct movies and business presentations. Requires VideoWorks II. $49.95 to $59.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Aug '88)

WetPaint consists of two three-disk volumes of very high quality clip art. Also includes the Art Roundus DA, a good art browser/editor. Volume 1 or 2. $39 each; both volumes. $59. Available in PictureBase format for $15 extra per volume. Dubl-Click Software, 1801 Gresham St., Northridge, CA 91325. NCP (Sept '87)

World-Class Fonts comes in two volumes of three disks each. Includes all the Mac the Knife fonts and a lot more, including two useful utilities. This is now the best collection of ImageWriter fonts available. Each volume: $39; both volumes: $59. Dubl-Click Software, 1801 Gresham St., Northridge, CA 91325. NCP (Dec '86)

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**DESKTOP PUBLISHING**

DTP Advisor combines a HyperCard-based tutorial on publishing with a project-management system. Beautifully designed but better off as a book. Requires 1 megsabyte and HyperCard 1.2. Version 1.0. $79.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. NCP (Apr '89)

Interleaf Publisher is a speedy multiuser layout system for producing large, complicated documents. Version 3.5 has an improved user interface, but it still suffers from poor font management. Requires Mac II with 5 megsabytes of RAM and hard disk. $2,495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (Apr '89)

JustText is a professional-level word processor and page makeup program that generates PostScript output. Comes with a set of LaserWriter utilities that allow total manipulation of art and text. Requires LaserWriter or other PostScript compatible output device. $195. Knowledge Engineering, G.P.O. Box 2139, New York, NY 10011. NCP (Dec '85)

MacTEX is the TeX environment of choice for hardcore TeX users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Version 2.0. Requires 1 megsabyte +. $750. FTL Systems, 234 Eglinton Ave. East, Toronto, Ontario M4P 1K5, Canada. NCP (Apr '88)

PageMaker retains its paste-up approach to page layout. New features include auto text flow, style sheets, and spot color support. The standard keeps getting better. Version 3.0. Requires 1 megsabyte +, and a hard disk. $595. Aldus, 411 First Ave. South, Seattle, WA 98104. NCP (Aug '88) • 85, '87 Eddy

Portfolio: Designs for Newsletters provides more than 20 templates for two-page newsletters with preset columns, headlines, graphics, and captions. Documentation provides excellent tutorial in page design. Requires 512K +; PageMaker. $79.95. Aldus, 411 First Ave. S., Suite 200, Seattle, WA 98104. NCP (May '87)

Publishing Packs bundle together three Adobe typefaces that work well for a particular publishing project. The packages offer substantial savings over purchasing the typefaces individually, and the documentation has useful information on typeface characteristics. Newsletters, $395; Forms & Schedules, $475; Presentations, $475. Adobe Systems Inc., 1585 Charleston Road, Box 7900, Mountain View, CA 94039. NCP (Feb '89)

QuarkStyle is a collection of 72 designer-created templates for “instant” desktop publishing. The templates, which cover the gamut from business cards to newsletters, let you concentrate on a page’s contents rather than its appearance. Version 1.0. Requires 1 megsabyte and hard disk. $295. Quark, 1983 Landings Drive, Mountain View, CA 94043. NCP (Feb '89)

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MINIFINDERS

QuarkXPress is a powerful page-layout program, with 24-bit color, style sheets, and search and replace of text attributes. Also does four-color separations. Layout is done using text and picture boxes, which improves control but is difficult to master. Version 2.0, requires more than 1 megabyte as well as a hard disk. $755. Quark, 1983 Landsdowne Drive, Mountain View, CA 94043. CP until registered. (Jan '89)

Ragtime is an "Integrated Page Processor" with text, graphics, and built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a range of function with word processor. Requires 512K +. $395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. (Aug '88)

ReadySetGo!4 has an elegant interface and excellent manual. Powerful text processor with a word processor, typesetter, and desktop publishing capability. Good for people trained on mainframes in the early days. Otherwise very sticky with a high learning curve. Version 1.0. Requires 512K +. $495. Blue Sky Research, 534 S.W. Third Ave., Portland, OR 97204. NCP (Apr '88)

COMMUNICATIONS

AppleShare is the file sharer marketed by Apple. Software-based, AppleShare requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to access files from other machine and copy them to the folder interface. Level to network is provided at a revised Finder. $799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May '87)

ComServe allows you to share a Hayes-compatible modem over an AppleTalk network. You turn it on, but you can't call. Works with most telecommunications packages. $195 per server. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. CP (Feb '88)

DeskTop Express is a simple-to-use, semi-automated program for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K +. $149. Dow Jones, P.O. Box 300, Princeton, NJ 08543. NCP (Jan '88)

InBox is an easy-to-use mail system. It's called up from a desk accessory. Has a very slick interface. Dedicated Mac not required. $350 for starter set, which includes one Administrator disk and three Connection disks. Additional Connections cost $125 each. Tops, 950 Marina Village Parkway, Alameda, CA 94501. NCP (May '87) $86 Eddy

InTalk communications comes with a command language able to do unattended sessions. Supports Xmodem and MacBinary. Has a very Mac key function. Many sample setup documents and command language files provided. $195. Palantir, 1277 Jones Road, Houston, TX 77070. NCP (Aug '87)

LapLink Mac quickly transfers data to and from the MS-DOS and Mac environments. Kit contains a cable and software. Control of transfer is on the IBM side. Version 1.2. Requires 512K. $395.95. Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011. NCP (Aug '88)

MacTerminal provides text, telnet, and email in Macintosh. Doesn't have macros nor any sort of auto redial/auto log-on capability. Best for those needing faithful VT100 or IBM 3278 emulation — it is superb at those. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (June '88)

MacWorkStation is a development environment and communications program that accesses custom mainframe applications through the Macintosh interface, Modem design allows for expandability, Mac II and MultiFinder friendly. Version 3.0. $2,500 for internal use license, $5,000 for commercial use license. Apple Software Licensing, 20525 Mariani Avenue, Cupertino, CA 95014. NCP (Oct '88)

MicroPhone II is a high-powered terminal program that's easy enough for novices. Very powerful command language allows full automation of communications if desired. $236. Software Ventures, 2007 Claremont Ave., Berkeley, CA 94705. NCP (Jan '89) $86 Eddy

Microsoft Mail is an electronic mail system that runs under AppleTalk. Supports file transfers across the mail system. Full on-line help facility. Also includes "While you were out" messages. Desk accessory based. Process determined by number of users licensed. One to four users, $299.95; five to 10 users, $499.95; 11 to 20 users, $749.95; 21 or more users, $949.95. Microsoft, 1601 N.E. 36th Way, Redmond, WA 98073-9717. (Mar '87)

PC MacTerm/PCAnywhere II are two programs that work together to take control of an MS-DOS machine from the Mac keyboard. Versions: PC MacTerm 1.1; PCAnywhere III 3.0. Requires 512K: System 4.1 or later; 128K IBM PC-compatible with MS-DOS 2.1 or later, PC MacTerm, $590; PCAnywhere III, $145. Dynamic Microprocessor Associates, Inc., 60 East 42nd St., New York, NY 10165. NCP (Jan '89)

Red Ryder is a full-featured telecommunications program that supports MacBinary, Xmodem, and Kermit. Has big-screen support, auto Procedure creation, and up to 30 keyboard macros. Version 10.3 reviewed. $80. FreeSoft, 150 Hickory Drive, Beaver Falls, PA 15010. NCP (Jan '89) $86 Eddy

Smartcomm balances portability and ease of use. Capable of unattended operation and has a powerful command language. The fastest screen updating available can keep up even at 9,600 baud. The large-screen buffer can easily be archived. Version 3.0 reviewed. $149, Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan '89) $86 Eddy

TOPS is a file server designed to network computers with different operating systems. Supports Macs, MS-DOS compatible, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac files. Only handles MS-DOS or Text files. $249 for Mac version, TOPS 959. Marina Village Parkway, Alameda, CA 94501. Serial number protected. (May '87) $86 Eddy

VersaTerm-Pro is a very powerful terminal program with several special features. Does one of the best VT100 emulations available and specializes in high-quality terminal: 4014 and 4051 emulation. A pro's tool. Requires 512K +. $295. Peripherals, Computers & Supplies, 2457 Perikon Ave., Mount Penn, PA 19066. NCP (Apr '87)

WORD PROCESSORS

ArchText is a text processor with many hypertext capabilities, as well as the ability to include graphics. "Nodes" of text are accessed by means of drop-down menus. "Maps" of the document are created, as are "Outlines." Performance is traded off for ease of use. Requiring 512K+. $349.95. Brainpower, 24090 Ventura Blvd., Suite 250, Calabasas, CA 91302. NCP (Feb '89)

Document Compare allows users to compare any two MacWrite 4.5, ASCII, or MD5 documents. Differences in spelling, punctuation, formatting, and indexing are detected. Documents can be printed out with differences highlighted. $99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May '86)

Document Modeler can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial setup requires time and is complex. $299.95. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (Mar '87)

Doug Clapp's Word Tools is a useful punctuation and style-editing program. It can turn you into a Proofread but it will help you make your writing cleaner and more pleasing. Word counts among different formats show discrepancies, but not to worry. Requires 512K +. $79.95 Aegus Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sept '87)

Expressionist is a powerful DA that allows you to create axiomatic mathematical equations from within an application. Equation manipulation has never been easier. $79.95. Allan Bonadice Associates, 1579 Dolores St., San Francisco, CA 94110. NCP (July '87)

FullWrite Professional combines outlining and word processing with page layout and drawing. Its many features translate into slight performance unless you have a lot of extra RAM. Impressive. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. $395. Ashton-Tate, 2010 Hamilton Ave., Torrance, CA 90502. NCP (Sept '88)


Kadmos Greek Font is a complex font character set of ancient Greek that prints on any Macintosh. PostScript printer. Requires learning new typing skills, but excellent quality makes it worthwhile the effort. $85. Alotype Typographics, 1600 Packard Road, Ann Arbor, MI 48104. NCP (Oct '87)

LaserAuthor is a high-powered, technically oriented word processor. Good mathematical capability. Has style sheets, word count, and page layout capability. $199.95. Firebird Licensees, P.O. Box 49, Ramsey, NJ 07446. NCP (Mar '87)

Liberty Spell Checker is a fast, effective, interactive checker. The dictionary is smaller than average, but well chosen. Unfortunately, it has a few misspelled words. $59.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct '86)

Lookup is an on-call, quick, word-based spelling checker. Designed for the way writers really work. Uses the 3,000+ word SpellDew dictionary. $49.95. Working Software, 321 Alvarado, Suite H, Monterey, CA 93940. (Dec '87) NCP

MacGAS is a DA spelling checker with both a small and extended dictionary. Its unique point is the excellent thesaurus. Provides antonyms and glossary. A slow checker. $99. EnterSet, 2380 Eltiswood, Berkeley, CA 94720. CP (Oct '86)

MacProof is a grammar, style, and spelling checker that's like having your own personal checker. Great for spelling, but fact and figures are fixed, and you may not agree with the choices. The program only suggests corrections, it doesn't make them for you. And the checking process can be slow if your document is long. $195 for stand-alone version; $2,500 for networked version. Automated Language Processing Systems, 190 W. 600 North, Provo, UT 84604. NCP (Apr '87)
The easiest way to learn Macintosh software is to play it by ear.

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Macspell + is a spelling checker that installs as a desk accessory. Works easily with MacWrite 4.5 and 2.2 and Word, but has some drawbacks. New version 1.1. Offers spelling and grammar checking. Probably enough for the occasional user. Version 5.0 includes command key equivalents and spelling checker. Requires 512K +. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (June '88) ★$15 Eddy

MergeWrite is a mail-merge program for MacWrite (also works with ASCII files). Program combines names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. $45.95. Software Discoveries, 137 Kwardy Drive, South Windsor, CT 06074. NCP (Dec '87)

MindWrite integrates outlining and word processing better than anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Unimpressive speed. $295. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Feb '88)

QUED/M is an excellent text editor that saves documents in a form readable by most computers and printers. Doesn't support graphics or multiple fonts. Programming language allows creation of database. Version 2.01. $129. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '89)

QuickLetter is a well-designed and -implemented DA for the creation of letters and envelopes. You can create stationery, complete with graphics, and maintain an address book including salutations. It's the best envelope creator/printen in its class, but not all of the features work well. Poor value, $295. Screenplay Systems, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073. NCP (Oct '89)

Sensible Grammar corrects some of the more glaring errors that writers make. Also analyzes the word count and structure of sentences to come up with a readability rating. Slow. Version 1.1. Requires 512K. $99.95. Sensible Software, 335 E. Big Beaver, Suite 207, Troy, MI 48093. NCP (Dec '88)

Spelling Champion is a fast and accurate batch-type spelling checker. Back-up feature allows you to undo corrections in a paragraph. Works only with MacWrite 4.5. $39.95. Champion Software, 6617 Gettybury Drive, Madison, WI 53705. NCP (Oct '88)


Spellswell is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak guessing. Version 2.0. $74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061. NCP (Sept '88) ★$15 Eddy

Thunder! is a desk accessory spelling checker. Includes macro features. Fairly fast, good guessing of misspelled words. Small dictionary. MultiFinder hostile. Version 1.1. $49.95. Electronic Arts, 1620 Gateway Drive, San Mateo, CA 94404. NCP (Sept '88)

Word Finder is an electronic thesaurus that won't replace your trusty Roget's, but is still useful for checking synonyms on the fly. Large, relatively- ly slow. Version 2.0. Requires 512K. Mac II and MultiFinder friendly. $79.95. MicroFacts, 300 Main St., Rochester, NY 14445. NCP (Sept '88)

Word 3.0 is the most feature-laden word processor around. Also has Microsoft's somewhat unusual view of what the Mac Interface is. Esoteric command key combinations. Requires 512K +. $395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073. NCP (Mar '88)

WordPerfect is an excellent offering from the leading desktop publishing competitor, but is not so hot otherwise. Good internal file-management system and macro maker. Uses hidden formatting codes, hierarchical menu system. Requires Mac 512KE, System 4.1 or later. Two 800K disk drives or a hard disk recom- mended. Not fully compatible with System 6.0. $395. WordPerfect, 1555 N. Technology Way, Orem, UT 84057. NCP (Feb '89)

WorkPlus Spell is a speedy spelling and hyphenation checker for Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its inability to be mailed. No error feedback. Requires 512K +. $359. Lunideon & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (Oct '87) ★$8 Eddy

Witte is a "beginner's" version of Word 3.0. More features than some word processors in its class, but not all of the desktop publishing features work well, poor value, and expensive upgrade path to Word. $175. Requires 512K+. Micro- soft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073- 9717. NCP (May '88)

WriteNow for the Macintosh has many of the features of MacWrite and then some, including the ability to work in columns. Has the spelling checker with 50,000-word dictionary. $175. T. Makez, 1735 Landings Drive, Mountain View, CA 94043. NCP (Mar '87)

SYSTEM SOFTWARE

HyperCard is a totally unique program for the Mac. It uses an index-card metaphor and it contains a programming language, HyperTalk. Requires 1 mega- byte +. Free with new Macs and bundled with many HyperCard stacks, otherwise $49.95. Application Computer, 20525 Marian Ave., Cupertino, CA 95014. NCP (Dec {'87) ★$15 Eddy

SoftPac puts an IBM PC/XT inside your Mac without cracking the case to add any special coprocessor boards. The emulation of an MS-DOS machine is done entirely in the software. Version 1.2. Requires Mac II or SE equipped with 68020 accelerator card; 2 megabytes of RAM, $595. Insolia Solutions, 1255 Post St., Suite 625, San Francisco, CA 94109. NCP (Nov '88)

System Tools 5.0 is the Apple System upgrade for Mac Plus, SE, and II owners. It contains MultiFinder (a multitasking environment), a LaserWriter spooler, and a Control Panel resource to add color to the Mac II desktop. Requires 1 megabyte +. $49. Apple Computer, 20525 Marian Ave., Cupertino, CA 95014. NCP (Mar '88)

System Tools 6.0 contains an improved version of MultiFinder and new features like CloseView (for visually impaired users), Map, and MacroMaker. Incompatible with many programs: lots of small bugs. Requires 1 megabyte. $49. Apple Computer, 20525 Marian Avenue, Cupertino, CA 95014. NCP (Nov '88)

HYPERCARD

Business Class is a HyperCard stack that contains world travel information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1 megabyte + and HyperCard. $49.95. Activation, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '89)

City to City imparts travel information on 31 U.S. cities including details on hotels, restaurants, and nightlife. Helps plan an itinerary. Requires HyperCard, two disk drives, and a printer. $49.95. Activation, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Sept '88)

Focal Point is a HyperCard stack that ties together a calendar, phone log, client accounts, and more in one easy-to-use organizational tool. Requires 1 megabyte + and HyperCard. $99.95. Activation, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

HyperAnimator enables you to create talking heads for your HyperCard stacks. Use MacPaint or provide digitized sounds. Easy to implement. Version 1.0 reviewed. Requires 1 megabyte, System 6.0, HyperCard. $149.95. Bright Star Technology, Inc., 14450 N.E. 29th. Suite 220, Bellevue, WA 98007. NCP (Feb '89)

HyperAtlas is a collection of U.S. and World maps that are networked to stacks containing economic, political, and population data. Version 1.0. Requires HyperCard and second disk drive or hard disk. $99. MicroMaps Software, P.O. Box 757, Lombardville, NJ 08530. NCP (Oct '88)

HyperData lets you browse through HyperCard stacks through a desk accesso- ry. A true equalizer for 512K Mac owners who cannot normally access stackware. Doesn't support global variables. Requires 512K +. $99. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (May '88)

Macintosh Bible: STAXI Edition is a collection of Macintosh tips in a stack, based on the book by Coleman and Naiman. Version 1.0 reviewed. Requires 1 megabyte, second 800K drive, HyperCard. $79.95. STAXI, 8008 Shool Creek Blvd., Austin, TX 78758. NCP (Mar '89)

Reportmaker HyperCard stacks with the power to sort and import Information like a database. Customizing reports is difficult. Requires HyperCard. $99.95. Activation, Inc., 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Aug '88)

ScriptExport helps you generate HyperTalk scripts by leading you through the correct use of the language. Select a common command, and dialog boxes prompt you for necessary components. Version 1.0. Requires HyperCard. $79.95. Hyperpress Publishing, P.O. Box 8243, Foster City, CA 94404. NCP (Oct '89)

VideoWorks II HyperCard Driver lets you play movies directly from a stack. One way to add color animation to HyperCard. Version 1.0. Requires 1 mega- byte, VideoWorks II, and HyperCard; hard-disk drive recommended.
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ORGANIZATIONAL TOOLS

Acta is an outline processor in disk accessory format. It has practically all the features of a stand-alone program and then some. Can save files as Acta outlines, MacWrite files, or text files. Version 2.0. $79. Symposium Corporation, 771 E. University Drive, Mesa, AZ 85203. NCP (Oct '88)

Comment is an electronic version of Post-It Notes. A mini-word processor lets you attach notes to a spreadsheet cell, to words in a text document, or to a window on the desktop. Version 2.0. Requires 512KE. $99.50. Deneta Software, 3305 N.W. 74th Ave., Miami, FL 33122. NCP (Dec '88)

Design is a powerful organizational tool. It goes beyond mere flowcharting. Graphically depicts relationships between systems. Complex, detailed program aimed at software pros. $250. Meta Software, 150 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

FamilyCare is a 'yuppy' handbook to childhood diseases. The rule-based expert system gives advice based on symptoms. Alliments and diseases run the gamut from minor ailments to appendicitis to whooping cough and mild infections. Lacks graphics. Version 1.0. Requires 512KE. $99.50. Lundin Laboratories, 29451 Greenfield Road, Southfield, MI 48076. Mac II and MultiFinder friendly. NCP (Sept '89)

FlowMaster charts your ad dollars in print, TV, billboard, and other media. Analyzes cost/benefit of a campaign in terms that even jaded Mad Ave. execs will find innovative. Includes bar-chart and tabular output. Requires 512K +. $495. Select Micro Systems, 40 Triangle Center, Yornton Heights, NY 10598. NCP (Jan '89)

For the Record is a database specifically designed for legal, financial, and personal records. Allows password locking of screens containing sensitive personal data. Version 1.0 reviewed. Requires 512KE. $49.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Jan '89)

FormSet: Business Forms Edition is a business working form that allows expense reports and profit/loss statements, into the electronic arena. Fields are automatically calculated. Can't be customized beyond adding labels. Version 1.0 requires 512KE and two 800K floppy drives or hard disks. $95. SoftView, 4820 Arbor Lane, Suite D, Camarillo, CA 93010. NCP (Jan '89)

GeoQuery lets you find your location on a map by accessing zip code information. Comes with maps of the U.S. Other areas available. Version 1.0 reviewed. Requires 1 megy-byte plus second disk drive. $349. Odeste, 4084 Commercial Avenue, Northbrook, IL 60062. NCP (July '89)

Guidetools allows you to "cross reference" from within a document using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics, and other useful items. The word processing and formatting functions, however, are limited. $135. Owl International, 851 H.B. N.E. 21st St., Dallas, TX 75207. NCP (Aug '89)

Inspiration's flowcharting tools let you free-associate ideas visually, then automatically dumb the flowchart into a text outline. Version 1.0. Requires 512KE and an 800KE disk drive or hard disk drive. $149. Ceres Software, 9449 S.W. Barbur Blvd., Suite 103, Portland, OR 97219. NCP (Dec '88)

Instant Expert is an excellent way to learn the mechanics of creating an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. $49.95. Human Intellect Systems, 1670 S. Amphlett Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan '88)

MacProject allows a user to plan and track a project from beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar '86)

MacSMARTS is a utility for backing up and restoring hard disk files. Creates a "SmartSet" of floppy disks so incremental back-ups only update files modified since the last back-up procedure. Backs up to floppy or another hard disk. Requires 512KE +. $99.95. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (June '87)

MacDiskRanger is a disk inventory program that records major file information on an HFS disk. Version 1.0 reviewed. Requires 512KE +. $49.95. IdealSoft, P.O. Box 1540, Fairfield, CA 52556. NCP (Apr '87)

Copy II for the Macintosh is a collection of powerful yet easy-to-use disk utilities. Disk copying and much more. Version 7.2 reviewed. Requires 512KE. $39.95. Central Point Software, 15220 N.W. Greenbriar Parkway #200, Beaverton, OR 97006. NCP (Mar '89)

DiskExpress optimizes hard-drive performance by reorganizing fragmented files. Best of its kind. Version 1.5. Requires 512KE. $49.95. ALSoff, P.O. Box 927, Spring, TX 77383. NCP (Jan '89)

DiskFinder searches disks for files as well as cataloging disks. Requires 512KE. $49.95. Williams & Macias, South 3707 Godfrey Blvd., Spokane, WA 99204. NCP (Feb '89)

DiskKit is a utility for backing up and restoring hard disk files. Creates a "Smart" Set of floppy disks so incremental back-ups only update files modified since the last back-up procedure. Backs up to floppy or another hard disk. Requires 512KE +. $99.95. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (June '87)

DiskQuick is an easy-to-use cataloging program. Criteria selection option for organizing files. Requires 512KE +. $49.95. IdealSoft, P.O. Box 1540, Fairfield, CA 52556. NCP (Apr '87)

Disk Ranger is a speedy cataloging program that doubles as an efficient labelmaker. Comes with potted labels, Works with regular and hard disks. Can catalog INFOs, files, etc. $49.95. Graham Software, 8609 Ingalls Cir, Arvada, CO 80003. NCP (Mar '86)

DiskTools Plus is a set of eight useful DAs and applications. Earlier version was sold as Battery Pox. The DA Disk Tools II is a Finder replacement. Also included are an RMP editor, Phone Pad, and Calendar Manager. Requires 512KE +. $49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Mar '89)

DiskTop is a disk accessory Finder replacement of extraordinary power and ease of use. Comes with HyperCard, MacPPP 1.0, and 4.0 Toolbox. editor. The extras alone are worth the price. Requires 512KE +. Upgrade from version 1.0. $77; $10 with new manual. $49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Aug '87)
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MINIFINDERS

Dubl-Click Calculator Construction Set lets users design personalized calculators with a variety of standard and special functions. Finished calculators can be saved as installable disk accessories or as clickable applications. $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Apr '86)

Eureka: The Solver is a free-form numerical equation solver. Standard trigonometric functions and no other list command program is available, as is treatment of imaginary and complex numbers. $195. Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Mar '88)

Fastback for the Macintosh is hard disk back-up software that is very quick, but very efficient. Doesn't automatically exclude applications. Creates a separate catalog disk. $99.50. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Apr '88)

Fedit Plus is the file and disk editor for everyone, from newest Mac user to oldest. It can do for your disks and files what no other application can. Can recover deleted MFS files. If you own a Mac, get it. HFS-compatible. $49.95. MacMaster Systems, 108 E. Fremont Ave., #37, Sunnyvale, CA 94087. NCP (Sept '86) ★★★★★ Eddy

Findswell is an indispensable utility that installs a new button in the Open Dialog box of virtually every Macintosh application. Press the button, type a search string, press Find, and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires 512K+. $49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95060. NCP (Nov '87) ★★★★★ Eddy

1stAid Kit HFS recovers lost or damaged files from floppy or hard disks. An excellent manual-converted-textbook actually teaches the Hierarchical File System. Requires 1 megabyte. Version 2.2 reviewed. $99.95. 1st Aid Software, 42 Rednor Road, Boston, MA 02115. NCP (June '86)

FlashBack is a utility to back up HFS hard disks onto floppies. A unique graphic display of the HFS directory facilitates file selection. The program can handle files larger than 600K. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Nov '86)

Font/DA Juggler Plus gives you unlimited access to almost any number of fonts, desk accessories, and sounds. Uses hierarchical menus. $55.95. AlSoft, P.O. Box 927, Spring, TX 77387. NCP (Mar '88)

Glue adds a print-to-disk capability to many programs. ImageSaver installs as a printer driver; Viewer allows copying and printing of Glue files. Handy utility for desktop publishing. International, P.O. Box 985, Montpelier, VT 05602. NCP (Dec '86)

Hard Disk UTIL uses patch files to allow users to mount and run specified programs on their hard disks. The list of patches is constantly expanding. $49.95. FSB Software, 2040 Polk St., San Francisco, CA 94109. NCP

HFS Backup ranks as one of the preferred hard disk back-up utilities. Back up by file/folder or fast changes. Back-up specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. RCPI, 4710 Eisenhower Blvd., Scotts Valley, CA 95066. NCP (Dec '85)

HFS Locator Plus is the essential HFS desk accessory. It can search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. $39.95. PBI Software, 1163 Triton Drive, Foster City, CA 94404. NCP (Sept '86)

IconHt lets you create icons to use as an alternative to menu commands. Comes with 47 icon templates or you can create your own. Version 1.0, $79.95. 0ldVio1 Software, 7520 Red Road, South Miami, FL 33143. NCP (Feb '88)

LabView is a graphical programming environment that creates "virtual instruments" to perform calculations, acquire laboratory data, and control experiments. Sw. Version 1.1 reviewed. $1900. National Instruments, 12109 Technology Blvd., Austin, TX 78727-6204. NCP (July '88)

LaserServe is a printer spooler for AppleTalk networks. After Installation all operating systems recognize the LaserServe printer as native on the network. $250. Requires 512+. SE and Plus; $350, Mac II. Jask Designs, 343 Trenton Way, Merlo Park, CA 94022. NCP

MacSafe is a data file security program that allows you to place multiple files into a "safe," and then you can further protect them through the use of encryption (including DES). A utility for installation on hard disk. $149.95. Kent Marsh Ltd., 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar '87)

MacServe converts a Mac and a hard disk into a disk and print server. Uses the AppleTalk network and is easily hooked up. Users can partition the hard disk into multiple volumes. Runs in the background, so users can work on all machines in the network. $250. Requires 512+. Infosphere, 4730 S.W. Macadam, Portland, OR 97271. CP

MacTree displays your files in the form of a hierarchical tree. Good idea, poor performance. Can't view tree easily. Good search function. Requires 512+ . $69.95. Software Research Technology, 22901 Mill Creek Drive, Laguna Hills, CA 92653. NCP (Apr '88)

MacZap is a three-part disk and memory utility. It can be used to recover some damaged files and disks, compare disks, display file structure, and make back-up copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan '86)

MasterJuggler is Font/DA Juggler with many features added that they can't be listed here. A world-class utility. Not as elegant as Suitecase II but has more features. Version 1.0 reviewed. 512K+. $79.95. AlSoft, P.O. Box 927, Spring, TX 77383-0927. NCP (Mar '89)

Menu Fonts displays the names of fonts in the actual font instead of standard icon. Works well with both standard Font menu and no Font menu. Comes with LookOut, a utility that gives password access to your Mac, and FastFormatter, an utility for formatting multiple blank disks. Requires 512K+. $15. Beyond Software, 6069 E. Grant Rd., Tucson, AZ 85717. NCP (July '87)

MockPackage is a set of extremely powerful Da's. Includes a text editor, text printer (supports LaserWriters), charter, terminal, and EZmenus. HFS compatible. $35. CE Software, 1854 Full Road, West Des Moines, IA 50265. NCP (Mar '87)

myDiskLabeler is an excellent label maker. It can read directories and use large or small icons or anything desired. Comes with 54 precut labels. $44.95; with color printing ability (on the ImageWriter II), $54.95; with PostScript font compatibility on the LaserWriter, $64.95. Williams and Macias, P.O. Box 11906, Spokane, WA 99219. NCP (Aug '87)

"Nercryptor is a simple, safe program that lets users password-protect their files. The same program is used for encoding and decoding. This is one of the best products in its category. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (July '88)

NightWatch locks your hard disk by using a floppy start-up disk that acts as a key. Type in the correct password, and access to the hard disk is allowed. Version 1.02. Requires 512K, a hard disk, and an 80K drive. Mac II and MultiFinder compatible. $145. Williams and Macias, P.O. Box 1200 Post Oak Blvd., Suite 210, Houston, TX 77056. NCP (Sept '88)

On Cue lets you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a pop-up menu. Can also launch directly to a specific document. Version 1.0. Requires 512K. Mac II and MultiFinder friendly. $59.95. ICSoft, 1322 Bell Ave., Tustin, CA 92680. NCP (Dec '87)

OmniPage is a very good OCR program that can create editable text files out of scanned images. It works only with certain scanners and requires a lot of memory, so be sure you can meet its requirements before you buy. Version 1.0 reviewed. 68020 and 4 megabytes required. $695. Core Corporation, 100 Cooper Court, Los Gatos, CA 95030. NCP (Mar '89)

PowerStatlon is an extremely easy-to-use, versatile and powerful Finder substitute. Loaded with powerful features. Comes with a Pyrol $59.95. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Dec '87)

Printworks for the Mac is a comprehensive software-based dot-matrix printer control system. Optimizes printing from different applications, and is easy to use. Requires 512+ . $50. SelectSoft, 7102 Kellanelanne Highway, Honolulu, Hawaii 96825. NCP (Aug '87)

Programmer's On-Line Companion puts an abridged version of inside Macintosh into your system for reference. Simply read the text or transfer some or all of it directly into your executive program. Includes -ish interface makes the program confusing, somewhat difficult to use. $34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (July '87)

Quick & Dirty Utilities, Volume One is a disk full of handy programs. Several disk accessories include a menu bar clock and a terminal emulator. $39.95. Dreams of the Phoenix, P.O. Box 10273, Jacksonville, FL 32247. NCP (Nov '85) ★★★★★ Eddy
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MINIFINDERS

Quick Keys lets you make full use of your keyboard. Assign any command (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Enormously powerful; necessary for Apple Extended Keyboard owners. Requires 512K +. $99.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Jan '88) * $87 Edy.

RamSnap is a RAM disk and disk cache in one easy-to-use package. Can store multiple concurrent files. Great product but at a little price. $30. Dove Computer Corp., 1200 North 23rd St., Wilmington, NC 28405. NCP (June '87)

Read-It! is the best consumer value in optical character recognition software. Performs well above what other programs can do. Also includes a bit map, PICT format. Comes with type tables that can be customized. Version 1.1. $395; ThunderScan version, $149.95. Olduvai Software, 7520 Red Road, South Miami, FL 33143. NCP (Apr '89)

RoundUp searches your disk for a specified text string. Slow, awkward, poor performer. Does not work with Mac II or 68020 accelerators. Version 2.0E reviewed. Requires 512K. $49.95. Virginia System Software Services, 5509 West Bay Court, Midlothian, VA 23112. NCP (Apr '89)

Sentinel encrypts data files (or sets of files) using a super-secure DES or a superfast SuperCrypt algorithm. Provides high level security so you can keep your passwords secret. Requires 512KE. $295. SuperMac, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Apr '88)

Smart Alarms is the best reminder system for the Mac. Easy to use, versatile, and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advanced warning options. $49.95. Imagine Software, 19 Bolinas Road, Fairfax, CA 94930. NCP (Oct '86)

SmartScreen and The Clipper are two useful desktop accessory utilities for graphics work. SmartScreen is a major enhancement to the standard Scrappack DA. The Clipper provides you with a transparent clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. $39.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (July '87) * $87 Edy.

SoundWave is a useful sound recording and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55438, NCP, NCP (Apr '89)

Stepping Out II is a software alternative to a large-screen monitor. Lets you create a virtual screen (as large as memory allows) inside the Mac's 9-inch screen. Automatically scrolls to new document position as you type or perform an action. Does not work with Mac II or 68020 accelerators. Version 2.0. Requires 1 megabyte. $59.95. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709. NCP (Oct '86)

StuffIt compresses files to reduce the amount of space they take up on disk. Great for transferring documents via modem. Also joins and encrypts files. Version 1.5. Requires 512K. $249.95. Raymond Lau, 100-107 40 Ave., Forest Hills, NY 11375-5133, also available on most electronic services. NCP (Dec '88)

Suitecase is a transparent program that automatically lets you use all your fonts and DAs. Footprint and price impossibilities. Comes with Pylvania, the best screen saver. Requires 512K. $59.95. Fifth Generation, 1322 Bell Ave., Tuscaloosa, AL 35401. NCP (Nov '88)

SuperLaserSpool is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background, but doesn't print a faultless rendition of PostScript. Does as a result need some cleanup, which is a $39.95 fee for the first five users on one network. SuperMac Software, 950 N. Rengstorff Ave., Mountain View, CA 94043. NCP (June '87)

Switcher is a powerful keyboard macro program that gives you extended keyboards their money's worth. Especially good for building sequential macros. Features include conditional branching and the ability to remember user menu selections by name. Version 1.0. $19.95. LPA Logic Systems, 31 Crescent Drive, Milford, CT 06460. NCP (Mar '88)

Synamtec Utilities for Macintosh (or SUM) reduces worries about losing data. It prevents, diagnoses, and if required, fixes many serious disk and file problems. Recover lost files on crashed hard disks. Version 1.0. Requires 512K +. $1.95. Synamtec. 10201 Torre Ave., Cupertino, CA 95014. NCP (Sept '88)

Tempo II is a powerful keyboard macro program that gives owners of extended keyboards their money's worth. Especially good for building sequential macros. Features include conditional branching and the ability to remember user menu selections by name. Version 1.0. $19.95. LPA Logic Systems, Ltd., 1050 Walnut St., Suite 425, Boulder, CO 80302. NCP (Dec '88)

TopDesk is a set of seven self-installing (and self-removing) DAs. Menu Key adds Command key sequences to programs: View allows looking at and moving data between applications in a light MacWrite format. Touch 'n' Go, Blank, Encrypt, and Launch. $59.95. Corland Computer, P.O. Box 9916, Berkeley, CA 94709. NCP (May '89) * $87 Edy.

TMON is the debugger for the Mac. This isn't open to question. TMON is simply the best. Comes with the latest version of Darin Adler's Extended User Area. $149. ICOM Simulations, 626 Wheeling Road, Wheeling, IL 60090. NCP

TURBO DOWNLOAD is a disk accessory designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50 percent to over 1000 percent at 2400 baud. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

TWO C-Financial Desk Accessory brings all the power and functionality of a Hewlett-Packard 2C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $49.95. Positive Works, 142 Cone Road, Ormond Beach, FL 32704. NCP

TypeNow is a desktop accessory that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan '88)

WorkPlus Command lets you build and define macros for all Works modules. Predefined macros provide for an even tighter integration of the program's word-processing, spreadsheet, and database modules. Requires 1 megabyte +. $99.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94606. NCP (May '88)

LANGUAGES

AAIS Prolog is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $150. Advanced AI Systems, P.O. Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar '87)

Acknowledge lets advanced program developers create customized applications that will accomplish many telecommunications tasks — from automatically picking up E-mail to communicating with XAs. Version 1.0. Requires 512K. $495. SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Jan '88)

Allegro Common LISP's development environment is a full EMACS style editor called FRED that implements most Common LISP editing and debugging functions. Version 1.2. Requires 1 megabyte and a hard drive. $600. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Nov '88)

Aztec is a C language that will appeal to users with a UNIX background. It uses many UNIX conventions and in more expensive versions comes with standard UNIX utilities, including the VI editor. $75 beginners, $199 basic system, $299 development system. $499 commercial system. Manx Software Systems, P.O. Box 55, Shrewsbury, NJ 07701. NCP (May '86)

Basic Compiler is the long-awaited compiler for Microsoft BASIC. The interface is unfriendly, but it gets the job done. Compiled programs run faster, but you can still tell they are written in BASIC. $195. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9177. NCP (May '87)

ExperCon is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and stand-alone applications. Requires 1 megabyte +. $995. ExperTellige, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Aug '87)

ExperLISP is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. $495. Requires 512K +. ExperTellige, 559 San Ysidro Road, Santa Barbara, CA 93108. CP

ExperLogo is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than the usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTellige, 559 San Ysidro Road, Santa Barbara, CA 93108. CP

ExperProlin II is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. $495. ExperTellige, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Mar '87)

LPA MacProlog is a much improved program that includes incremental and optimizing compilers, a graphics environment package, and C and Pascal submodules. Version 2.0. Requires 1 megabyte +. $495. Programming Logic Systems, 31 Crescent Drive, Milford, CT 06460. NCP (Feb '88)

Mac is a good, highly Mac-oriented implementation of this popular development language. Assembler and linker included. $425. Consulair, 140 Campo Drive, Portola Valley, CA 94025. NCP + $85. Edy

MacExpress is a development environment or shell. Programmers use it to save time and effort when developing stand-alone applications for the Mac. $195. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (Feb '88)

MacForth Plus is an excellent implementation of the popular Forth programming language. New, reduced price, $199. Creative Solutions, 4701 Randolph Road, Rockville, MD 20852. NCP
Mac II is a multitasking implementation of Fort that allows local variables and text files. Can create stand-alone applications. Several windows can be up with different operations in each, operating concurrently. Execution is fast. $599 +. Microsoft, One Gulf and Western Plaza, New York, NY 10023. NCP (May '86)

Macintosh 68000 Development System is a fairly traditional assembly language package. The two disk set provides an editor (Edit), an assembler, a linker, and an emulator, and a resource editor (ResEdit). $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

Macintosh Pascal is Apple Computer's version of this very popular programming language. Loaded as it is with innovative teaching features, this interpreter is an excellent introduction to Pascal. $15. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. CP

MacScheme is a LISP dialect with "artificial intelligence" capabilities. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. $125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (June '86)

MacScheme + Toolsmith is a Mac version of Scheme, a LISP dialect. Beautiful implementation, only related by simple slowness compared to similar products. Get Toolbox. Requires 1 megabyte +. $395. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Aug '87)

Microsoft Basic was the Mac's first programming language. This interpreter (it's not a compiler) now supports the Toolbox and the whole Mac interface can be implemented in your programs. For nonprogrammers, there are lots of programs available. $99. Microsoft, 1801 N.E. 36th Way, Redmond, WA 98073-9717. NCP + $95 Eddy

MIDIBasic is a library of simple, but highly useful routines for writing MIDI software. Good stuff. Sketchy documentation. Works with both Microsoft and 2Basic. Requires 1 megabyte +, plus a Macintosh, or a Mac II. Moving Windows, 831 Kings Highway, Shoreview, MN 55119. NCP (Aug '87)

Object Logo is an object-oriented programming language. Great product, can't produce stand-alone applications. Requires 512K +. $79.95. COO.

Personal Prolog is an inexpensive and well-documented program. Has no debugging or search and replace facilities, making it a more appropriate tool for learning than development. Documentation and use of Mac interface are excellent. Optimized Systems, 1221 B Kentwood Ave., San Jose, CA 95129. NCP (Mar '87)

Prolog/m is a solid Prolog following the Edinburgh standard. Has extensive debugging facilities. But you'll need a separate Toolbox disk with 8K additional predicates. Drawback: No true editing or printing facilities. $99.95. Claris, 270 Saturn Ave., Mountain View, CA. 95037. NCP (May '85)

QUED (Editor for Developers) is the ultimate source code editor. Loaded with useful and well-thought-out features, it will make any programmer's life much easier. It is not a word processor, however. $45. Paragon Concepts, 45725 Main Street, Valley Road, Del Mar, CA 92014. NCP (Aug '86)

THINK's Lightspeed C features rapid turnaround time for development and testing of programs by the use of an integrated compiler, linker, and editor. Source-level debugger steps through your code line by line to examine the values of variables. Version 3.0. Requires 2 megabytes RAM. $175. Syntaxenta, 10201 Torre Ave., Cupertino, CA 95014. NCP (Jan '89)

THINK's Lightspeed Pascal is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K +, 2 megabytes RAM, and a Toolbox, or a Mac II, 1 megabyte. $125. Syntaxenta, 10201 Torre Ave., Cupertino, CA 95014. NCP (Jan '89)

TML Data Base Toolkit is an ISAM-type database that provides fast and efficient administration of large data files in applications developed with TML compiler. Supports multiple open index files. $89.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

TML (MacLanguage Series) Pascal is a good Pascal compiler, capable of producing stand-alone programs. Can use most Lisa Pascal programs with only slight modification. Requires 512K +, $399.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (June '86) * $66 Eddy

TML Source Code Library is a library of routines that can be used to produce distinctive applications. Provides a good number of routines, such as: 2 can/net routines, speech drivers, serial drivers, and others. Provides access to about 100 APIs. $199. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Sep '88)

Visual Interactive Programming is a unique development programming system for creating simple Macintosh applications. Programs are constructed in a flow-chart type manner. Easy access to most toolbox routines. $149.50. Manx, 531-1 B Derry Ave., Agoura Hills, CA 91301. NCP (June '87)

ZBasic is a first-class Just-In-Time Pascal compiler that takes advantage of Mac's unique features and abilities. Includes Edit, RMaker and MachTalk. Requires 512K +, $99.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec '86)

American Discovery is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 512K +. $59.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (May '88)

Business Simulator is a training tool in a simulation game. Make decisions that manage the company through several stages over 25 years. Decisions become more difficult over time. Requires 1 megabyte +, two disk drives (one must be 800K). May run from a hard disk, $99.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Dec '87)


KidsTime is a package of five quality educational programs for children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech, and one is a nice introduction to musical notes. $49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Oct '89) * $96 Eddy

LearnWord 3.0 is a three-part series of cassette tape/diskette modules that explain the intricacies of Word 3.0. They do the job, but remind you why cutting classes was more fun. $49.95 per module. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154. (Apr '88)

LXTi-Test generates tests from a database of questions. Makes it easy to modify and scambles test questions. Flexible output. Requires Mac 512K +, 2 floppy disk drives, or a Mac II, 1 megabyte. $39.95. Logic extension Resources, 9651 Business Center Drive, Rancho Cucamonga, CA 91730. NCP (May '88)

MacType offers structured typing instruction. Can teach both standard and Dvorak keyboards. Requires 512K +. $299.95. VIDA Design, 1500 Cameron Road, Ottawa, Ontario, K2E 7H7. NCP (Aug '88)

MasterType is proof that learning to type can be fun. In this arcade-style action game words descend from four corners towards the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons and provides comparison scores. $49.95. Mindscape, 3444 Dunleith Road, Northbrook, IL 60062.

Mavis Beacon Teaches Typing has more features than a Selectric. Lots of diagnostics concerning typos. Incomplete docs. Version 1.1. Requires 1 megabyte. $49.95. Software Toolworks, 1 Toolworks Plaza, 13557 Ven-Venta Blvd., Sherman Oaks, CA 91419. (Nov '88)

On Becoming a Desktop Publisher is a video training tape based largely on the concepts taught in "Desktop Publishing" by David H. N. Halbert. Good introduction to the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. $49.95. Ocean Communications, 1641 North First St., Suite 160, San Jose, CA 95112. (Sept '89)

Reader Rabbit teaches reading skills. Uses a 5-year old's age of interest. Comes with a set of 10 booklets that can be used in a multi-student environment. $49.95. Palantir Software, 2030 Main Street, Suite 3000, San Carlos, CA 94093-2704. NCP (Nov '88)

Speedway Blvd., Tucson, AZ 85712. NCP (Dec '86)

Sensors Physics is a capable, intelligent, well-designed study aid. Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out concepts. Requires 512K +, $99.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (Jan '88)

TypeP is a typing tutorial that is both practical and flashy. It allows users to interrupt and move easily between functions; however, use of the Return key or space bar are assumed but never explained. Version 1.0. Requires 512K +. $29.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. (Nov '89)

Typing Instructor Encore recognizes that it's been used on a word processor. While it is easy to control, there are some strange bugs in the program. Requires 512K +. $49.95. INDIVIDUAL Software, 125 Shoreway Road, Suite 3000, San Carlos, CA 94070-2704. NCP (Nov '88)

Typing Tutor IV consistently tests you with your own keys, including seldom-used ones. It's hard to maintain user's attention span, as the testing material is unimaginative. Requires 512K +. $59.95. Dem & Schuster, One Gulf and Western Plaza, New York, NY 10023. NCP (Nov '88)

ENTERTAINMENT

A Mind Forever Voyaging is a departure in text adventure games. It has a more extensive vocabulary and a more involved story than most of the genre. The story here is gripping, but there are only a few puzzles to solve. Requires 512K +, $39.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '89)
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* SIMM kits available for the Macintosh Plus, SE and II.

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MINIFINDERS

The Ancient Art of War gives users a chance to relive some famous campaigns
on both strategic and tactical levels. Campaigns can also be designed
$44.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903. CP (Apr '88)

Apache Strike would have been an excellent arcade game in the late '70s. Now, it's
passer. Navigate a helicopter to destroy ever-increasing numbers of enemy
aircraft and tanks. P. J. Cheeseburger, 512K + $49.95. Silicon Beach
Software, P.O. Box 261430, San Diego, CA 92126. NCP (July '88)

Balance of Power is the world's first computer peace game. This simulation
allows players to become either the President of the United States or
General Secretary of the Soviet Union. Requires three pre-programmed
routines and general play make this a classic. $49.95. Mindscape, 3444
Dundee Road, Northbrook, IL 60022. CP (Prem)

Battle Stations is a deceptively simple game based on the pen and paper game of
Battleship. Requires strategy on several levels. Makes excellent use of
Mac sound and graphics. Fun, casual game, especially when the Mac is
one of the players. Requires 512K + $30. Timeline, P.O. Box 60, Ypsilanti, MI 48197. NCP (June '87)

Beyond Castric Castle brings back Prince Duncain in an encore performance to run,
jump, and beat his way to victory. But really, just more of the same.
Requires 512K. $49.95. silicon Beach Software, P.O. Box 261430,
San Diego, CA 92126. NCP (Aug '88)

Beyond the Dynasties is a computer version of the famous Zork series of text
adventure. Finds the fabled Coconut of Guerdon to restore failing magic in this
expert-level game. On-screen mapping and the Mac's window environ-
ment are utilized. $49.95. Infocom, 125 Cambridge Park Drive, Cam-
bridge, MA 02140. NCP (Apr '88)

The Chessmaster 2000 is a very sophisticated chess game that will appeal to both
novice and master. You can view the board from 2D or 3D perspective
and turn the board for a better look. Play is smooth and easy, and the
program responds by voice. You may get tired of hearing "Gotcha,"
though. $39.95. The Software Toolworks, 13597 Ventura Blvd., She-
man Oaks, CA 91323. CP (July '87)

Chuck Yeager's Advanced Flight Trainer doesn't quite have the right stuff to
hold interest for long. Simplicity is not the game's forte. Requires 512K.
$49.95. Mindscape, 3444 Dundee Road, Northbrook, IL 60062. CP (Jan '86)

Crystal Quest combines all the elements of nearly every video game ever made.
Move around to gobble up points and crystals. Shoot the nasses and get through the goals before they get you. Excellent sound
effects. In color on the Mac II. Requires 512K. $49.95. Casady and
Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Aug '88)

Dark Castle is an outstanding achievement in action games ... but it's well worth the effort. Requires
512K +. $39.95. Practical Computer Applications, 1305 Jefferson
Highway, Champiyn, MN 55316. CP (Jan '89)

Dark Castle is an outstanding achievement in action games ... but it's well worth the effort. Requires
512K +. $39.95. Practical Computer Applications, 1305 Jefferson
Highway, Champiyn, MN 55316. CP (May '86)

Mac Pro Football is a terrific sports simulation that gives you the chance to pit any
collection of 38 Super Bowl teams against each other and direct team play.
It comes with excellent manuals and documentation. Play selection can get a bit Byzantine. $49.95. Avalon Hill, 4517 Harford
Road, Baltimore, MD 21214. CP (Mar '87)

MacRacqueball uses digitized videos and sounds of professional players for a
realistic simulation. Has lots of control settings and can be played against
someone else over a modem or between hard-wired Macs. Tum off hard
disks before playing. $59.95. Practical Computer Applications, 1305 Jefferson
Highway, Champiyn, MN 55316. CP (Oct '87)

MoonMaiden is an adventure game. This is a typical haunted
English castle story, not quite up to Infocom's best. It has four versions,
so it's good for more than one play. $39.95. Infocom, 125 Cambridge
Park Drive, Cambridge, MA 02140. NCP (May '87)

MSFL Pro League Football is a professional football league simulation that
encourages people to play people, not the machine. Fast with lots of
stats. Quirky MS-BASIC behavior. Spotty manual. No LaserWriter sup-
port. Requires 1 megabyte +. $49. MicroSports, P.O. Box 15799, Chan-
tanooga, TN 37415. NCP (Apr '88)

NewGamm is a game that will challenge even good players. Fea-
tures include variable skill levels and strategies and options to play the Mac
and watch the Mac play itself. An arcade-like high-speed mode is included.
$39.95. Newsoft, P.O. Box 1145, Emeryville, CA 94608. CP (Nov '88)

NHL Challenge simulates coaching and watch-
ing professional football. Comes on

Ogre is a strategy tank game played on a hexagon grid. The ogre is an intelligent
cybertank out to smash your command post. Customize your defense.
Exceptionally good Mac interface. Has two player option. $39.95.
Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (Apr '87)

Pinball Construction Set lets users create their own pinball games, as elaborate
or as easy as desired. Uses MacPaint for backgrounds and has lifeless
disks. $83.95. Millsoft, 2472 Lookout Lane, Alameda, CA 94501. NCP (May '88)

Paperboy is a graphic adventure that breaks new ground. Innovative use of the Mac interface in a truly playful and excit-
ing game. A great introduction to graphic adventure games. $49.95. Mindscape, 3444 Dundee Road, Northbrook, IL 60062. CP (Jan '86)

Play against either human or computer coaching. Plays are selected from pre-defined playbooks. $99.95. XOR Corp., 5241 Opportunity Court,
Minnetonka, MN 55343. NCP (June '87)

PT-109 by any other name Is Gato, a WWII submarine simu-
lator also put out by Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. NCP (May '88)

Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. NCP (May '88)

Quarterstaff is a fantasy adventure game of the typical "good versus evil" variety.
Ability to use characters in other adventures gives this game a lot of
potential for development. Version 1.2. Requires 1 megabyte +.
Crate Technology welcomes seven new drives! We offer a great line of external disk drives known as MacCrate ranging from 0MB to our performance driven 160MB. Our line of internal disk drives known as InnerCrate now ranges from 20MB to 160MB for the Mac SE, and 40MB to our new upgraded high performance 600MB for the Mac II.

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- 100MB 27ms $949.00
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- 600MB 16ms $3845.00
- 80MB 28ms $560.00
- 50MB 28ms $730.00
- 80MB 27ms $849.00
- 100MB 27ms $949.00
- 60MB tape backup $739.00
- 155MB tape backup $1049.00

Mac SE
- 20MB 65ms $545.00
- 40MB 28ms $740.00
- 60MB 28ms $839.00
- 80MB 27ms $949.00
- 100MB 27ms $1049.00
- 160MB 17ms $1625.00

Mac II
- 60MB 28ms $585.00
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Please circle 40 on reader service card.
**Shadowgate** is an icon-based graphic adventure. You, as the seed of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound, and adventure. $49.95. Mindscape, 3444 Dundee Road, Northbrook, IL 60062. CP (Dec '87)

*Shanghai Challenge* lets you clear a board of all 144 tiles by matching pairs of mah-jongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keeps this one fresh. $44.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Nov '86) ★ $65 Eddy

**Snake-Bar** lets you guide a snake (or train or semi) through a maze, picking up objects that feed and make your snake grow. Options include changing languages, editing the maze, and an X-rated game. $15 (shareware). Georges Malmound, 37 Bis rue des Abbesses, Montmartre, 75018 Paris, France. NCP (Dec '87)

**Solitaire Royale** is a collection of eight solitaire card games. The Tournament cycles through each game. Tournament deals the same hand for several play sessions. $34.95. Distributed by Spectrum HolobYTE, 2061 Challenger Drive, Alameda CA 94501. CP (May '88)

**Space Quest** is a three-dimensional, animated adventure in which you play a junior in a dicey situation. All you have to do is get off your ship before it explodes and save the Eavon System. Runs on any Mac. $49.95. Sierra (Aug '87), 1050 Eddy Street, Corte Madera, CA 94925. CP (Sept '87)

**Star Trek: The War Game** is a space opera of the Star Trek variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K+. $55. Interstar, P.O. Box 57825, Webster, TX 77598. NCP (May '88)

**Strategic Conquest Plus** challenges you to discover an unexplored world and conquer it by manufacturing and deploying armies, ships, and planes. A two-disc game that doesn't support an external drive. Requires 512K+ $69.95. RBI Software, 11111 Triton Drive, Foster City, CA 94404.CP (Feb '88)

**Sub Battle Simulator** is a superior naval combat game. Sixty different missions complete with four greeting cards and matching envelopes. Requires 512K+. $55. On-Line, P.O. Box 485, Coarsegold, CA 93614. CP (Dec '87)

*Wizardry* is an outstanding dungeon exploration adventure pitting a party of up to six characters against the guardian monsters of the evil wizard Werdna. Capture his amulet to earn your reward. Even after solving the game, you'll want to go back into the dungeon. $59.95. Sir-Tech, Charlottesville-Ogdenburg Mall, P.O. Box 245, Ogdenburg, NY 13669. CP (Mar '86)

**Your Royal Potty** creates personalized greeting cards on the Mac. Comes complete with four greeting cards and matching envelopes. Requires 512K+. $29.95. Computer Post, 775 E. Greg St., Sparks, NV 89431. NCP (June '87)

## MUSIC

**Alchemy** loads and edits digitally sampled sounds from most commercial samplers. Works with 512K, but it eats up memory quickly. Requires MIDI or RS-232 interface, and sampler, $495. Blank Software, 1477 Folsom St., San Francisco, CA 94103. CP (Oct '88)

**Apple MIDI Interface** is a simple Musical Instrument Digital Interface with a 1 megahertz clock rate. Has only one MIDI input and one output. Works with all Macs; adapter required for 128K and 512K. $45. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (June '88)

**Deluxe Music Construction Set** lets you enter up to 48 voices on eight staves, and play the music through the Mac's internal speaker and/or via MIDI. Requires 512K+. Mac II and MultiFinder hostile. Version 2.0 reviewed. $99.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (June '88)

**Graphic Notes Music Publisher** is a very good page-layout program for music notation, with MIDI support. Comes with special musical notation key-pad. Version 2.0 reviewed. Requires 1 megabyte and second disk drive. $395 (including Presto keypad). Graphic Notes Inc., 200 Seventh Ave., New York, NY 10011. CP (July '87)

**Jam Factory** is a program for performing complex manipulations on MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $189. Intelligent Computer Music Systems, P.O. Box 6748, Albany, NY 12208. CP (Dec '87)

**Jam Session** is a music program for those who think MIDI refers to the length of skirts. Without any skill, you can "Jam" with rock, jazz, rap, or country tunes. A sort of "Sing Along With Mitch" for the computer set. Requires 512K+. $49.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903. CP (July '86)

**Lister** is an educational tool for ear training. It has both a piano keyboard and a guitar fretboard for the student to input notes, and offers a wide range of exercises. $95. Resonate, P.O. Box 596, Menlo Park, CA 94026. (Jan '87)

**M** is a music composition and creation program that works with MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $219. Intelligent Computer Music Systems, P.O. Box 6748, Albany, NY 12208. CP (Oct '87)

**Master Tracks Pro** is a full-featured, second-generation MIDI sequencer that adheres to the Mac interface very well. It's the first program to have graphic-controller editing. Needs patch chasing for professional use, but it's still a rock-solid program. $350. Passport Designs, 625 Miramontes St., #103, Half Moon Bay, CA 94041. (Dec '87)

**MIDIBasic** is a simple, but highly useful routine for writing MIDI software. Good stuff. Sketchy documentation. Works with both Microsoft and MacBasic. Requires 512K+ plus Basic. $49.95. Atecht Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug '87)

**Music Mouse** is a music program in a game all its own. Called an "intelligent instrument," Music Mouse makes the music move and allows you to move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. $59.95. Opcode Systems, 444 Ramona St., Palo Alto, CA 94301. NCP (May '87)

**Performer** is the definitive MIDI sequencer, and is priced accordingly. Includes looping, SMPTE syncing, 32 simultaneous Ins and Outs, unlimited overdubbing, and compatibility with Professional Composer for transcription. Version 2.2. Requires MIDI interface and 512K+. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

**Practice Music** uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student. It is also fun for anyone who wants to develop a trained ear for intervals, chords, and melodies. Requires 512K+. $125. Ars Nova Software, P.O. Box 40629, Santa Barbara, CA 93140. NCP (Nov '87) ★ $87 Eddy

**Professional Composer** produces performance-quality sheet music using Ado­ be's Sonata font. Scores can be created from scratch or imported from Performer (and can be exported, too). Works with both Microsoft and MacBasic. Requires 512K+. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

**Softsynth** creates sounds for additive synthesis samplers. Downloading from Mac to sampler is time consuming. Requires 512K+ sampler. MIDI interface, $295. Digidesign, 1350 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

**Sound Designer** sets the standard for editing samples on lower-cost samplers, but it still lacks real-time high-fidelity playback. Requires 512K+ sampler, MIDI interface. Emax, E. 8, 2000/2002, DSW-1, S900, $495; all others,
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$395, Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025-2702.

Studio Session consists of two programs, an Editor, and a Player, that produce music with six voices of digitized sound. Excellent program plus good manual makes this a good buy. $89.95, Bogas Productions, P.O. Box 66999, Terra Lina, CA 94093-0699. NCP (Aug '87) $65 Edy


HARDWARE & ACCESSORIES

AppleCD SC reads CD-ROM optical discs that contain up to 656 megabytes of data. Also plays audio compact discs. Reads High Sierra format, an industry standard for CD-ROM. Requires SCSI port. $1,295. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Dec '88)

AppleShare is not the state of the art, but is adequate for scanner neophytes. The 4-bit (16 gray levels) scanner comes with AppleScan software and HyperScan, written by Bill Atkinson. Requires System 6.0; hard disk for full-page work; SCSI connection cables. $1,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Feb '88)

AST TurboScan is a 300 dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 320 dpi. SuperScan software offers halftone, line art, and mixed modes. "Virtual memory processing" lets you scan images too large to fit in RAM. $1,899. Requires 512K+. SuperScan software included.AST Research, 2121 Alton Ave., Irvine, CA 92714. NCP (Nov '87)

Classic Professional Graphics Display is a low-cost color monitor for the Mac II. Good value, but has an IBM look about it. Green tint is annoying. Requires Apple video card. $543. Classic Components, 1420 Artesia Blvd., Gardena, CA 90247 (June '88)

CMS S-140 SCSI Hard Disk is a very fast, high-capacity SCSI hard disk with a unity interface and average access time of 18 milliseconds. Holds 40 megabytes. Help, file transfer, and tape back-up commands built-in. Hard Disk Partition is a useful DA. Comes with a 6-foot SCSI cable. $2,995. CMS Enhancements, 1372 Valencia Ave., Tustin, CA 92680. (May '88)

ColorVue SE is a video processor board for the Mac SE that lets you display 16 colors on an external RGB monitor. Slows up performance. $959, Orchid Technology, 43565 Northport Loop West, Fremont, CA 94538. (Oct '88)

DASCI is an external RAM disk available In

EasyScrubber is an optical-tracking graphics tablet that replaces a mouse. Precision mode gives pixel-by-pixel control. Doesn't collect dirt like a mouse does. The 5-inch square device is designed primarily for right-handed people. Works with Mac Plus. $149. Lightspire, 6202 Christie Ave., Emeryville, CA 94608. CP (Feb '89) $65 Edy

FX-20 is a good 20-megabyte external hard drive. Good utility software. Reliable and reasonably quiet. Sits next to the Mac, has a large, oiled-shaped case. Requires SCSI port, 512K+, new ROM, $1,199. General Comput---er, 215 First St., Cambridge, MA 02142. (Feb '87)

GrappleLQ looks Maacs up as parallel port and 24-pin letter-quality printers. A cable, driver software, and special fonts combine to make dozens of once-unfriendly printers now compatible with the Mac. Requires 1 megabyte and a parallel printer. $149. Orange Micro, 1400 North Lakeway Ave., Anschelm, CA 92507. (Nov '88)

Hard Drive 200SC is an 80-megabyte SCSI hard disk. Reliable, fairly noisy unit. $899. Apple Video, 20525 Mariani Ave., Cupertino, CA 95014. (Feb '87)

Hewlett-Packard HP/7000 Graphics Plotter is an eight-pen desktop plotter that requires third-party software to drive it. Fonts are limited to an optional Graphics Enhancement Cartridge that requires some BASIC programming. $1,295. Hewlett-Packard, 16399 W. Bernardo Drive, San Diego, CA 92127. (Feb '87)

HyperDiaPlot provides an interface between a phone and your Mac so you can "dial" a number using one of the Rolodex-type programs, like SideKick, Focal Point or QuickDex. Hooks up between the Mac's sound port and a telephone handset. Requires 128K. MultiFinder friendly. $39.95. DataDesk International, 7653 Haskell Ave., Van Nuys, CA 91406. (Sept '88)

ImageMaker shoots 35mm color slides direct from the Mac. Supports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires 512K+. $4,995. MacDriver software, $149. Presentation Technologies, 743 North Pasta 0r Ave., Sunnyvale, CA 94086. (Feb '88)

ImageWriter LQ outputs letter-quality text and graphics at 216 dpi. To do so, it reduces one third of the screen image to a third of the memory. Printer Driver version 2.0. Requires 1 megabyte and large font sizes. $1,400. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Jan '89)

IS/ONE tablet with PerForm software lets you use a corded or cordless pen and a mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DAs. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1 megabyte +. $595 to $1,145. Kurita, 4160 S. 35th St., Phoenix, AZ 85040. (Sept '89)

Jasmine Direct Drive 50 is a very quiet 1:1 interleave 50-megabyte hard drive and one of the fastest SCSI drives around. A small fan keeps it cool, but it's still quiet. $1,159. Jasmine Technologies, 555 De Haro St., San Francis-co, CA 94107. (Mar '89) $75 Edy

LaserWriter INT is Apple's mid-priced PostScript laser printer. It's faster than the LaserWriter Plus, with blacker blacks. Gray scale is less even than that of Plus. Requires 512K+. $4,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Mar '89)

LaserWriter INT is Apple's top-of-the-line PostScript laser printer. $6802 chip makes it very speedy; expandable to 12 megabytes; SCSI hard disk can be attached for fonts. Requires 512K+. $5,999. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '89)

Mac II Workstation is the best, most versatile computer workstation around. This freestanding or wall-mountable heavy steel unit includes a high shelf for your Mac II, and a moveable, damped arm for your monitor. The unit comes in a variety of configurations. $540. Ergotron, 3450 Yankee Drive, Suite 100, Eagan, MN 55121. (Mar '89)

Mac-101 is a keyboard alternative that has a good feel to it. Has a keypad, 15 function keys, and more. The 101-Keys desk accessory lets you define macros. Comes in an ADB version for the SE and II. Requires 512K+ $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. (Apr '88)

Mac-105 Keyboard is a good alternative to Apple's Extended Keyboard, with a larger Return key, higher and more sculpted key tops, and a lower profile. Requires 512K+. $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. Software NCP (Apr '88)

Mac-105 Keyboard is a good alternative to Apple's Extended Keyboard, with a larger Return key, higher and more sculpted key tops, and a lower profile. Requires 512K+ $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. Software NCP (Apr '88)

MacADIOS II is a hardw ar e and sw itc h service for laboratory instruments. Standard configuration consists of up to 124 kbyte channel. Documentation is sketchy. $1,290 for Macintosh II d at a read y drive card; $500 for MacADIOS II software interface. GW Instruments, 264 Msgr. O'Brien Highway, Cambridge, MA 02141. (July '88)

MacBook II is a 45 SCSI and Interface with a modem that fits into the top half of the 45-megabyte SCSI hard drive case. Comes with HFS Backup and Eureka. $1,795. Personal Computer Peripherals Corp. (PCPC), 4710 Ei senhower Blvd., Tampa, FL 33634. (Oct '87)

MacBoost II HD-21 is a very inexpensive, external 20-megabyte hard drive. Fits under the Mac. Very quiet. Very reliable. Good utility software, including HFS Backup. Requires SCSI port, 512K+, new ROM, $1,195. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Tampa, FL 33634. (Feb '89) $65 Edy
Imagine having a 2 pound Mac everywhere you go ...

You’d like to do some writing while you’re on vacation in Hawaii; take your name, address and phone number file on a business trip; take a spreadsheet to a meeting down the hallway. You’d like to throw your Mac in your briefcase along with everything else.

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**Word processing** If your word processor can handle MacWrite or plain text files, you can create files on MacLite and transfer them to your Mac, and vice versa.

**Spreadsheets** MacLite can transmit and receive files in the WKS format, so you can download Excel files from your Mac, change them on MacLite, and upload them back to your Mac.

**HyperCard stacks** MacLite includes HC Organiser™ - a HyperCard stack for your Mac that keeps track of names, addresses, phone numbers and things to do. Data from HC Organiser stacks can be transferred to and from MacLite.

**Memory** MacLite can be expanded to over 1.5Mb of memory. There’s 32K built in, and three memory modules of up to 512K can be inserted under the keyboard. (A 128K memory module is included with MacLite, for a total of 160K.) You can even put EPROM cartridgds in the memory slots, and burn your own EPROMs.

Virtually all the memory is available for your data files, because MacLite’s built-in software is all in ROM.

**Batteries** MacLite runs on 4 AA disposable batteries for up to 20 hours, and your data is safe for months. You won’t even lose data when you change batteries.

**Keyboard** MacLite has a silent keyboard, so you can use it anywhere - in the classroom, meetings, libraries.

**Display** The display is a supertwist LCD with eight lines by 106 characters. There’s even a page map to show you the “shape” of a complete page.

**Peripherals** MacLite is only 8.25"x11.5"x.875", but it’s a complete computer, and can be used with a pocket modem, a serial or parallel printer.

**Operating system** MacLite’s multi-tasking operating system allows you to have several documents open simultaneously, and to switch from one to another with just a few keystrokes. When you return to a document - even after switching off - you’ll find it exactly as you left it, without booting, loading, opening, saving, closing or quitting.

MacLite includes Cambridge Z88 portable computer, additional 128K RAM (for total of 160K), serial-to-serial cable, data file transfer software, and HC Organiser. $849 (plus $15 shipping; 7% sales tax in IL)

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MacBottom HD-70 Hard Disk is an excellent drive that comes with some very good software, including HFS Backup. Requires SCSI port. $1,995; 1.200-baud Hayes-compatible modem. $200 extra. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33614. NCP (Apr '89)

Mac Cable 600/700HD Hard Disk outs a Seagate drive in a platinum casing. At $14 per megabyte, it’s a good consumer value. Also comes in 20-, 40-, and 80-megabyte models. Requires SCSI port. $839. Crate Technology, 6850 Vineland Ave., Bldg. M, North Hollywood, CA 91605. (Nov '88)

Macintyre is a graphics tablet and absolute-positioning device that replaces the mouse. Various scales are possible. $595. GTCO Corp., 7125 Riverwood Drive, Columbia, MO 65204.

MacLarger is a 12-inch external monitor for 512K machines up to the SE. Displays the same number of pixels as an internal monitor, only three times larger. Bigger and brighter, but less crisp than those that allow one’s own screen. $449. Power R, 1606 Dexter North, Seattle, WA 98109. (Apr ‘88)

MacPac transforms the Macintosh into a digital oscilloscope, waveform generator, and chart recorder. PaciManager is software expandable via external routines in Turbo Pascal and other languages. Version 1,03, $595. Biopac Systems, 42 Aero Camino, Goleta CA 93117. NCP (July ‘88)

MacRecorder is an easy-to-use sound digitizer. Includes software to turn sounds into WAV or AIFF format files, adds special effects, and controls recording formats. Stereo recording possible on a Mac II. Requires 512K+. $1,199. Farallon Computing, 2150 Ketttridge St., Berkeley, CA 94704. NCP (June ‘88)

MacScan Plus 2 is a 2-megabyte memory upgrade for the Mac Plus. The board has 256 kilobits chips. User installable. Not compatible with existing big screens or internal hard disks, and can’t be expanded further. $729. Dove Computer, 1200 N. 22nd St., Wilmington, NC 29205. (June ‘87)

MacTablet is an elegant mouse with tables that holds a Mac and pmtter with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, $289; cabinet, $139, ScanCom, P.O. Box 3217, Redmond, WA 98073-3217. (Mar ‘88)

MacTablet is a stylus-driven graphics tablet. Users can easily sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430. (Jan ’88)

MacTilt is an ADB mouse that tilts up to 90 degrees. This expands the range of swiveling and tilting. Very strong, this well-made unit is also very easy to use. $99.95. Ergotron, P.O. Box 17013, Minneapolis, MN 55418.

MacVision is a digitizer that uses an ordinary video camera for input. Capable of extremely fine results and special effects. Easy to use and well-documented. $349.95. Koala, 269 Mount Mermon Road, Scotts Valley, CA 95066.

MagicDigitizer is a hardware digitizer that works with video cameras. With LaserWriter driver on, these create graphics. 300-dots-per-inch (DPI) resolution. MagicDigitizer requires 512K+ with MagicDigitizer software, $395.95; LaserMagicDigitizer software, $49.95. New Image Technology, 10300 Greenbelt Road, Western Ave., Gardena, CA 90247. (Dec ’88)

Molek is a mouse pad that replaces the ribbon cartridge in an ImageWriter, which is required to make the Mac compatible with those applications that support graphic capability. Currently supports only a handful of applications. Requires I megabyte. $215. QMS, 1 Magnusson Park, Mobile, AL 36608. (July ‘88)

QuickShare adds a SCSI port to an IBM PC for easy connectivity with a Mac. Can connect an IBM’s hard disk to run Mac applications. Requires SCSI port. Mac II and MultiFinder friend. $295/2, Mac IIcx or Quadra. $395. NCP (Jul ‘88)

Radius Accelerator 25 can make your Mac SE run 50 percent faster than a Mac II. The add-in accelerator card has a Motorola 68020 CPU that runs at 25 megahertz, and replaces the Mac’s built-in 8-megabyte RAM with 25-megabyte RAM. Requires SE or Mac II. $1,395. Abaton, 48431 Milmont Drive, Fremont, CA 94538. (Oct ‘88)

QMS ColorScript 100 is the first color PostScript printer that uses a four-color thermal wax transfer technology. Works on AppleTalk. Excellent typographic capability. Currently supports only a handful of applications. Requires I megabyte. $215. QMS, 1 Magnus Park, Mobile, AL 36618. (Oct ‘88)

QMS-PS 810 is an eight-page-per-minute, 300-dpi PostScript laser printer that competes with the LaserWriter INT. 2 megabytes of RAM is standard; upgradable to 3 megabytes. Emulates HP LaserJet, 7475 (HPGL), and Diablo 630. $5,995. Laser Computing, 7822 Schiller Park West, Mobile, AL 36608 (July ‘88)

Radius Accelerator 25 can make your Mac SE run 50 percent faster than a Mac II. The add-in accelerator card has a Motorola 68020 CPU that runs at 25 megahertz, and replaces the Mac’s built-in 8-megabyte RAM with 25-megabyte RAM. Requires SE or Mac II. $1,395. Abaton, 48431 Milmont Drive, Fremont, CA 94538. (Oct ‘88)

SpeedCard is an accelerator board for the Macintosh SE that adds 1 megabyte of RAM. Works on the Mac II and SE. $395. Abaton, 48431 Milmont Drive, Fremont, CA 94538. (Oct ‘88)

SuperRam 2 and SuperRam 4 are 2- and 4-megabyte RAM upgrades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adapter module, 1-megabyte memory module, modified power cable, jumper and fan. SuperRam 4 adds power supply booster and two 1-megabyte memory modules. Not compatible with most big screens. $49.95. SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043. (Oct ‘87)

Tektronix 4693D Color Printer is a 300 dpi bit-mapped color printer. Colors look smooth and rich. Uses bit-mapped screen fonts; most type has noticeable jaggedness. Does not support graphic modes. $1,695; $2,195 with optional 25-megahertz flat ROM. Requires Macintosh SE. $399; $699 with coprocessor. SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043. (Nov ‘88)

SuperRam 2 and SuperRam 4 are 2- and 4-megabyte RAM upgrades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adapter module, 1-megabyte memory module, modified power cable, jumper and fan. SuperRam 4 adds power supply booster and two 1-megabyte memory modules. Not compatible with most big screens. $49.95. SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043. (Oct ‘87)

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ThunderScan replaces the ribbon cartridge in an ImageWriter, which is required to make the Mac compatible with those applications that support graphic capability. Currently supports only a handful of applications. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563. (‘89)

TimeWand is a bar code reader with a built-in time-date stamping clock. Can be used with TimeWand Manager software, a database that’s extensive though difficult to use. Poor docs, but good support. Requires 1 megabyte +. TimeWand 2K version, $198; TimeWand Manager, $489. Videx, 1105 E. Circle Blvd., Corvalis, OR 97330-4285. (Dec ‘87)

Turbo Mouse ADB makes an excellent mouse replacement, even if you’re not a trackball fan. If you’re seeking absolute control, you can buy the optional odev that enables you to specify custom tracking and double-click speeds. $169.05; odev $15 direct order only. Kenington Computerware Ltd., 251 Park Ave. South, New York, NY 10010. NCP (Feb ‘89)

TV Producer is an add-in card that overlays Mac graphics and text onto a video signal. Software is clumsy to use. Requires Mac II, Apple video card, and video source. Version 1.2, revised; version 2.4. $45. Videoworks, 85 E. 13th St., New York, NY 10003. NCP (Aug ‘88)

V-series Smartmodem 5600 is the fastest modem you can get for the Mac. To achieve high speeds, you’ll need a special cable and software that supports the format. Requires SuperMac II and coprocessor. $1,000. Hayes Microcomputer Products, 705 Westech Drive, Norcross, GA 30092. (Jan ‘89)

WriteMove is the smallest, lightest Mac printer around. It’s an ink-jet unit that can be ported and uses a single ribbon. Perfect for high-quality digitized images. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563. (‘89)

WriteMove is the smallest, lightest Mac printer around. It’s an ink-jet unit that can be ported and uses a single ribbon. Perfect for high-quality digitized images. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563. (‘89)

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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) Mac Plus
   b) Mac SE
   c) Mac II

2. For how many micro computers do you buy products?
   a) 1-4
   b) 5-49
   c) 50+

3. Your primary job function is:
   a) Administrative/General Management
   b) MIS/DP, Communications Systems, Programming
   c) Engineering/R&D
   d) Finance/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?
   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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HOW TO STAY ON TOP OF WHAT'S IN THE MAC MARKET

USE THIS CARD TO OBTAIN FREE INFORMATION ABOUT MACINTOSH PRODUCTS AND SERVICES IN THIS ISSUE

(SEE OTHER SIDE)

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WHEN YOU CONSIDER DATA BACK-UP MEDIA FOR YOUR SYSTEM, TAKE A LOOK AT THESE FACTS. THE PHILIPS CASSETTE FORMAT GIVES YOU THE GREATEST CAPACITY AT THE FASTEST TRANSFER RATE, PLUS, THE HIGHEST RELIABILITY AND A COST-EFFECTIVE MEDIUM. ALL AVAILABLE IN A 3¼" FORM FACTOR. BECAUSE WE PUT THE TAPE TENSIONING AND GUIDE MECHANISMS INSIDE OUR DRIVE, INSTEAD OF WITHIN THE MEDIA ITSELF, WE'VE ELIMINATED A MAJOR CAUSE OF LOST DATA. OUR SERVO-CONTROLLED DC MOTORS MAINTAIN CONSTANT TAPE TENSION AND SPEED SO OUR ERROR RATES ARE THE ABSOLUTE LOWEST. AND, OUR NEW CT-600N CASSETTE TAPE CAN RELIABLY STORE UP TO 155MB OF DATA IN ONLY 23 MINUTES. WHEN YOU CONSIDER ALL OF THIS, USING ANYTHING ELSE WOULD JUST BE BACKING UP.

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Hackensack Mac Shack Presents
You raved about our MouseWash, our Roll-a-Mac, and nonremovable write-only disk drive...
NOW THERE'S:

VooDoo Mac
Bothered by someone? No time for conventional revenge? This software from Haiti is just the ticket. Digitize a picture of your “subject,” paste it in, and select from the rich palette of tools to produce guaranteed results! The desk accessory version lets you VooDoo while U work!

Raft-Top Mac
Tired of your Mac sinking to the bottom of the pool? Float it right in our attractive yellow raft from Titanic Plastics. It comes complete with Maui-Mac sunshade and a nearly waterproof extension cord. A must for the poolside computer hacker.

You also get discount coupons for popular software such as:
MacFlipper — The Olympic swimmer’s training buddy;
Water Wings — The hot new spreadsheet that lets you balance your checkbook and practice your strokes — at the same time!
Mac Dog Paddle — Introductory swimming for the rest of us.
The Most — Sequel to Beyond Dark Castle!

MacToast
Make those idle floppy drives do some useful work! How about some perfect toast? Set it from light to dark through the control panel DA, flick the handy lever on the side of the Mac, and whir... whir... whir... TOAST! We have models for one or two floppy drives.

Soon new adapters and upgrades for Auto-buttering, Quick-Jamming, Real Soon Now, a SCSI version for FAST action and Toast-Net for true multiuser support!

Scratch 'n' Sniff Fonts
With our patented Multi-Waft ribbon or toner cartridge, your writing can really make an impression! Satisfy those with a nose for news! The bigger the font, the more it smells! Font kits come in the following fragrances: New York Subway, Love Canal, L.A. Smog, Boston Harbor, Hong Kong, and Monaco — (better than Chanel No. 5).

NOBODY EVER GOT FIRED FOR RUNNING DOS ON A MAC

After all, running MS-DOS® on a Macintosh® opens the door to thousands of software programs only available for the PC.
And there's only one software package that brings true MS-DOS compatibility to a Mac II, IIx, or 68020-accelerated SE/30.

SoftPC®
SoftPC® enables you to run all the PC best-sellers — Lotus® 1-2-3, WordPerfect®, etc. — on the Mac. And those PC programs developed in-house for special purposes.
You can even use PC and Mac programs at the same time, thanks to SoftPC and Apple's MultiFinder™.
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And when you finish, all information can be stored on the same Macintosh hard disk.

PUT YOURSELF ON THE FAST TRACK
No boards... No hassles...
SoftPC is easy to install and upgrade. Just like you'd expect from any Macintosh application. Double-click. That's it.

SEEING IS BELIEVING
Don't take our word for it. Visit the nearest computer dealer and ask for a demonstration of SoftPC. It's a safe approach.
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Insignia

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296 MACUSER APRIL 1989
MR. MACINTOSH GOES TO WASHINGTON

I was struck speechless on hearing that President Bush's transition team was using Mac IIx's to help them along. Apparently, they felt that the Mac offered a kinder, gentler interface than that of Big Blue. (Rumor has it that they wanted the Mac just so they could run Soft-PC.) But what would happen in the Macintosh industry if Apple stayed in favor with the current administration?

Bush could call upon T/ Maker and Informix to develop the ultimate Republican word processor/spreadsheet: WriteWingz. And to inspire the American people to get involved in his social welfare and economic plans, Bush might look to Microsoft and Symantec for a new blockbuster presentation/programming package: 1,000 PowerPoints of Lightspeed.

Bush is going to have to balance the budget, which might lead him to cut some programs. Look for him to cut FullWrite Professional down to HalfWrite. To convince the Washington Press Corps of his sincerity in balancing the budget without raising taxes, Bush should commission Berkeley System Design and Articulate Systems to create a customized voice-recognition product, ReadMyLips.

After outfitting the administration with Mac IIx's, Apple might also throw in a special artificial intelligence tool used for dealing with cabinet members, Congress, and certain vice presidents — the Ignorance Navigator. This could also lead Bush to changing the CIA to the AIA (Anti-Intelligence Agency).

On the subject of vice presidents, Mr. Quayle would probably want a turnkey Mac outfitted with every available golf game (though we suspect that he's a PCjr man). Perhaps CE Software will develop an E-mail package called QuayleMail that not only delivers your messages but also explains them to you slowly, in monosyllabic words. In any case, the veep's spin doctors anticipate that Mr. Quayle will have some problems getting past the opening screens of various programs — his father won't always be around to help get him in.

— Joni Coaler

THERE'S NO PLACE LIKE HOME
or: Home on the Strange

At first glance, it looks like a run-of-the-mill Home card. At second glance, we realize that HyperCardophiles James Bradbury and Laura Johnson have been ingesting too much NutraSweet, which always make them Homesick. Inexplicably, it also inspires them to brush up on their analytic geometry, proving once again that Home is where Descartes is.
WetPaint files can be read by paint programs like SuperPaint or MacPaint and layout programs like PageMaker. WetPaint is also available in PictureBase format.

Or copy directly from paint files using our ArtRoundup desk accessory. Free inside every WetPaint volume! ArtRoundup's Slideshow tool makes it easy to scan tons of pictures in minutes.

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THE SCRAP FOLDER

Did you ever want to know something about Macintosh computing but were afraid to ask? The Scrapbook Answer Team (James Finn and John J. Anderson) will try their darndest to help you. They don't know everything, but they can at least provide smart answers for your innocent questions. Need some advice? Just send us your problem, and we'll throw it on our desks along with the rest of the debris. Your lucky day will be when we finally find your letter. If we answer it in print, you'll get a bill for our usual consulting fee of $25. Good luck!

Q. I am writing a C program to test disk drives and have run into some problems. The program initially is supposed to create a random graph structure and map nodes to arbitrary disk addresses, compensating for the interleave factor used by the disk. Then it performs a depth-first traversal of the structure, keeping track of seek, latency, and data transfer times. Unfortunately, the program has started generating a peculiar structure, which as far as I can tell is similar to a Möbius strip. The drive head actually crashes through the disk media, no longer aware that the media has two sides. I've just destroyed my parents' hard disk and floppy drives. Please help before they find out and kill me. A copy of the source code is enclosed.

A. Sure, always glad to help. No, the problem is not with your cabling.

Q. I've owned a Macintosh since its introduction in 1984 and have devoted nearly all my waking hours to the machine. I can recite the Toolbox code verbatim and have spent the last six months coding my own system software. I spend over $700 a month with on-line services, and that's not including the actual phone bill.

My problem is this: My personal life seems to be suffering. The only place I ever even talk to anybody is at user group meetings, and this girl I had been seeing a little bit dropped me for the guy who bags groceries at the supermarket. I don't seem to want to sleep in bed anymore, preferring rather to nap sporadically in front of the screen. I know I'm not eating right, and the apartment looks pretty dreadful.

Lately everything seems meaningless. There's got to be more to life than this. I'm en weeks when he was building the Lisa?

Q. Anytime.

Q. I have several SCSI devices, including a scanner, hard drive, CD-ROM player, and video digitizer, all daisy-chained to my Mac SE. Recently, the Mac has become quite confused and has tried to write to the CD player and scan images from my hard disk! I checked all the devices. They have distinct SCSI addresses, and I think everything is set up correctly, with a terminator on the last device. Please help me. Could the problem be with my cabling?

A. Sounds to us as if you really need more RAM.

Q. Is it true that Steve Jobs ate nothing but carrots for seven weeks when he was building the Lisa?

A. Yes. In fact, carotene is essential for keen eyesight, which comes in handy when you're working on such things as circuit boards, disk drives, and monochrome displays. A diet consisting of Ho-Hos, Twinkies, and Jolt Cola has proven to cause frequent system crashes.

By the way, did you know that Jobs, as a result of this diet, had originally intended to make the color of the Lisa case carrot?

Q. Do you know Me?

A. No fooling! Glad to get the inside scoop.

A. Sounds to us as if you really need more RAM.

Q. Is it true that Steve Jobs ate nothing but carrots for seven weeks when he was building the Lisa?

A. Yes. In fact, carotene is essential for keen eyesight, which comes in handy when you're working on such things as circuit boards, disk drives, and monochrome displays. A diet consisting of Ho-Hos, Twinkies, and Jolt Cola has proven to cause frequent system crashes.

By the way, did you know that Jobs, as a result of this diet, had originally intended to make the color of the Lisa case carrot?

Q. No fooling! Glad to get the inside scoop. — DC

A. Anytime.

DO YOU KNOW ME?

Freddie the 13th?
Nightmare on Apple Street?
A gold Krueger-rand?
The proven resource for Macintosh systems & support.

1 MB SIMM's

1MB SIMM's  Lowest Price
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300 mb (For Mac II) .......... $1995
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80 megabyte (For Mac II, SE) .... $749
60 megabyte (For Mac II, SE) .... $599
46 megabyte (For Mac II, SE) .... $599
40 megabyte (For Mac II, SE) .... $559
30 megabyte (For Mac II, SE) .... $475
External drives available.

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Sifting through a pile of press releases can really confuse a person, as MacUser’s James Finn discovered. With so many product announcements (even for unreleased products), Mr. Finn had a little difficulty distinguishing between fact and fiction when he came upon this one. Myth or reality? You make the call.

Every businessman wants to succeed, but success is hard in this cold world. Everyone’s hustling, everyone’s your competitor, and you’re just not good enough, are you? But with MacBusinessMan, an extraordinary new software package, you can get that competitive edge that makes all the difference.

The joint effort of Apple’s Artificial Intelligence and Multimedia groups, MacBusinessMan employs software technology previously seen only in the research laboratory. It synthesizes techniques from expert systems, neural networks, and 3-D animation into the ultimate “all business” program for the Mac. And of course, it’s HyperCard compatible.

MacBusinessMan can make all your decisions for you and can even run a small business without human intervention. It manages your projects, schedules, accounting, and phone calls. It is the perfect advisor and is programmed to reassure you when you feel all alone in the rat-race business world. The manual quotes extensively from Tom Waits: “We’re going to give you the business” and “It’s the only product you will ever need.”

At $2,995, MacBusinessMan represents a radical departure for Apple “we’re not in the software business anymore” Computer. Speaking under condition of anonymity, Randy Battat, Apple’s VP of MIS, information, said: “We made that mistake with HyperCard. Why should we give this away when we can sell it for three grand?” Steve Jobs, who is bundling a good deal of free software with his NeXT machine, has it backwards, man; NeXT isn’t laughing all the way to the bank. Hey, they’re struggling. Now let them match this sucker. MacBusinessMan just cleaned their clock.”

MacBusinessMan will revolutionize business computing, and there is talk that it may single-handedly revitalize the U.S. economy. The National Security Agency has added MacBusinessMan to its list of “sensitive” software, so it can be sold abroad only with CIA approval. Apple has already filed suit against the NSA, arguing that making a profit is never contrary to the national interest.

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End of an Error

sieged by glad-handers and gung-ho enthusiasts who needed an occasional reminder that both the world and the Macintosh weren't perfect. He and his original editor, Neil Shapiro, dreamed up the idea of the anti-editor and figured I'd be the guy for the job since I'd been known in the community as a perpetual minor of working here. But it's obvious that my time has come. You, and even in form, you once in a while.

Here since the inception of the magazine, and I've enjoyed every minute of working here, but it's obvious that my time has come. I know a lot of you have both enjoyed and hated some of the words that I've put to paper over the past three or four years on this back page. I hope that I've managed to cajole you, entertain you, and even inform you once in a while.

I was chosen for this column by the original publisher, Felix "Navidad" Dennis — one of the smartest guys I've ever met. Felix immediately noticed that the Mac community was building.

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