Get On-Line!

Resource Guide:
Dial-Up Business Services

Word Processing Shoot-Out
MacWrite II vs. WriteNow

Power Up Your System with INITs and cdevs

At Last!
AppleTalk 2.0 Token Ring for the Mac

Special Report: Telecom Hardware and Software

PLUS
HOT NEW MAC REVIEWS

Acknowledge
Acta Advantage
Intelligent D... oper
Smartcom II
MicroPhone II
Red Ryder . . . and more!
As you can see, there's more than one way to highlight. Now pick from 256 fonts. Change row height. Shade. And get used to the sound of applause.
Back in 1985, not long after the Macintosh was unveiled, Microsoft Excel became the most compelling reason to buy one. Within minutes, it was the spreadsheet standard on the Macintosh. And before we knew it, a full 9 out of 10 Macintosh spreadsheet users were swearing by it. They still are.

But while many consider Microsoft Excel to be one incredible spreadsheet, we've been working on a way to change all that. The result: Microsoft Excel version 2.2 has just come to the small screen.

In simple mathematical terms, let's just say that 2.2 is greater than 1.5. In more technical terms, let's just say that now your spreadsheets aren't limited to 1MB of memory — version 2.2 taps every ounce of power from even the 8meg machines. Which means very soon you'll be creating spreadsheets of outrageous proportions.

Equally outrageous is how much faster you'll be able to perform your calculations: Try up to 40% faster, thanks to our advanced intelligent recalc.

As for presentation? Version 2.2 lets you highlight data in ways you never could before: You can pick from 256 different fonts per sheet, including up to six styles and eight colors. You can change row height. You can shade. And basically pack your documents with more visual punch than ever before.

You can also add notes to any cell on a worksheet, or macro-sheet, so key assumptions are documented — and printable. Plus, thanks to our new built-in tools, you can even audit things like cell precedents and dependents.

Microsoft Excel version 2.2.

Another improvement designed to make Mac enthusiasts even more enthusiastic. Something 90% of you are already used to.

And you other 10% easily can be.
90% of Macintosh spreadsheet users have been working on this program.
### Selected Five-Year Financial Data
(In thousands, except employee and per share data)

#### Revenue and Costs

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Revenues</td>
<td>$432,806</td>
<td>$318,663</td>
<td>$309,266</td>
<td>$239,656</td>
<td>$207,907</td>
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<tr>
<td>Cost of Revenues</td>
<td>79,809</td>
<td>165,570</td>
<td>58,346</td>
<td>40,710</td>
<td>40,215</td>
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<tr>
<td>R and D</td>
<td>79,809</td>
<td>52,361</td>
<td>33,081</td>
<td>21,420</td>
<td>20,676</td>
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<tr>
<td>Sales/Marketing</td>
<td>87,680</td>
<td>88,103</td>
<td>62,490</td>
<td>48,999</td>
<td>26,409</td>
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<tr>
<td>Gen Admin</td>
<td>27,653</td>
<td>18,537</td>
<td>12,594</td>
<td>7,266</td>
<td>4,520</td>
</tr>
<tr>
<td><strong>Income from Operations</strong></td>
<td><strong>$157,855</strong></td>
<td><strong>($5,913)</strong></td>
<td><strong>$142,756</strong></td>
<td><strong>$121,221</strong></td>
<td><strong>$116,088</strong></td>
</tr>
<tr>
<td>Non-op Income</td>
<td>7,804</td>
<td>6,639</td>
<td>3,715</td>
<td>2,008</td>
<td>1,387</td>
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<tr>
<td>Income Before Taxes</td>
<td>165,659</td>
<td>726</td>
<td>146,471</td>
<td>123,229</td>
<td>117,475</td>
</tr>
<tr>
<td><strong>Provision for Taxes</strong></td>
<td><strong>67,992</strong></td>
<td><strong>294</strong></td>
<td><strong>59,321</strong></td>
<td><strong>49,908</strong></td>
<td><strong>47,577</strong></td>
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<tr>
<td><strong>Net Income</strong></td>
<td><strong>$98,567</strong></td>
<td><strong>$432</strong></td>
<td><strong>$87,150</strong></td>
<td><strong>$73,321</strong></td>
<td><strong>$69,898</strong></td>
</tr>
</tbody>
</table>

#### Assets and Liabilities

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td>223,579</td>
<td>112,622</td>
<td>79,282</td>
<td>44,256</td>
<td>44,055</td>
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<tr>
<td>Net Property</td>
<td>75,468</td>
<td>73,937</td>
<td>41,209</td>
<td>24,957</td>
<td>19,374</td>
</tr>
<tr>
<td>Other Assets</td>
<td>9,643</td>
<td>3,764</td>
<td>3,673</td>
<td>2,402</td>
<td>1,899</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>$304,690</strong></td>
<td><strong>$190,323</strong></td>
<td><strong>$124,164</strong></td>
<td><strong>$71,615</strong></td>
<td><strong>$65,327</strong></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>34,423</td>
<td>18,319</td>
<td>11,599</td>
<td>5,077</td>
<td>9,940</td>
</tr>
<tr>
<td>Long-term Liabilities</td>
<td>4,578</td>
<td>4,114</td>
<td>3,602</td>
<td>3,293</td>
<td>3,146</td>
</tr>
<tr>
<td>Stockholder's Equity</td>
<td>265,689</td>
<td>167,990</td>
<td>108,964</td>
<td>63,245</td>
<td>52,242</td>
</tr>
<tr>
<td><strong>Total Liabilities and Equity</strong></td>
<td><strong>$304,690</strong></td>
<td><strong>$190,323</strong></td>
<td><strong>$124,164</strong></td>
<td><strong>$71,615</strong></td>
<td><strong>$65,327</strong></td>
</tr>
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MacUser

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TECHNICAL DIFFICULTIES AND HELP
Although we can't offer any telephone assistance, MacUser welcomes your technical questions. If you've got a Mac question or problem, send it to Chris Espinosa, The Help Folder, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94044. Chris works for Apple, and if he can't give you an answer himself, he'll find someone who can. Because of the volume of mail we receive, we can't answer all of your questions, so we also recommend that you take advantage of your local user groups. You can find the one nearest you by calling Apple toll-free at (800) 338-0988, ext. 500.

TIPS, HINTS, AND PROGRAMS
We love to test tips and hints (on a disk, please) from our readers. Any tips should be sent to Tip Sheet, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94044. We can't print every tip, but we try our best to pick the most interesting and representative ones for publication. We'd also like to hear from any programmers who are interested in contributing to our utility disk series or labs benchmark disk series. If interested, contact Michele Stokol at the same address.

WRITING FOR MACUSER
If you have an idea for an article you'd like to write, we'd like to read it. Send a query letter with samples of your writing (published or unpublished) and some information about your background to Louise Kohl, Executive Editor, MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94044. No calls, please. Since we rarely buy unsolicited manuscripts, we do our best work and don't send a rejected article without writing first. Please allow 4-6 weeks for a reply.

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- Text rotation
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PAGES IN THE HISTORY
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No matter which Radius color system you choose, you'll be working across two flicker-free, paper-like pages that give you 30% more working area than commonly seen on other 19 inch displays.

Which means the view of your work is never cropped off at the sides or chopped off at the bottom.

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Intelligent Hardware™

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PRESENTING THE WRITEMOVE PORTABLE PRINTER.

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

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

WriteMove weighs a scant three pounds. It measures just 2"x8½"x10½"(Any smaller and you couldn't get the paper in.)

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

As a result, you can use WriteMove to compose documents with word processing software like Microsoft® Word, or desktop publishing programs like PageMaker®. And then silently print them out at 192-DPI resolution. In other words, you get much higher print quality than the ImageWriter II, for not much more money.

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

To exercise that freedom, see your authorized GCC Technologies dealer for a WriteMove demonstration. For the one nearest you, call (617) 890-0880.*

INTRODUCING THE MOST INGENIOUS PORTABLE PRINTER SINCE THE PENCIL.

WriteMove Portable Printer

GCC TECHNOLOGIES

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We spend a lot of time attending demonstrations of new hardware and software. Over the past few months, we’ve noticed a curious trend — whether the product we were seeing functioned flawlessly or barely worked at all, the vendor showing it off would inevitably lean forward and chant “just wait until System 7.”

This repeated mantra had a hypnotic effect. What was Apple up to? Was it on the verge of another system breakthrough with as much impact as the original Mac interface? Was it preparing a proactive response to the flashier systems from Sun and NeXT? The thing was supposed to do everything from employing Display PostScript, to allowing true protected-mode multitasking, to making all DAs obsolete, to growing hair on balding men and curing warts.

Then Apple opened the kimono at its recent Developers’ Conference. Actually, in terms of the quantity of information released, Apple took off the kimono and hung it in the closet.

One reason for this stark disclosure was obvious — Apple wanted to show that it was still in there swinging, both against middleweights like NeXT and at bruisers like OS/2 and Presentation Manager. It wanted to tell the world that it would stand toe-to-toe with any contender for years to come. Even its code name for this new system carried a lot of punch — Big Bang.

Well, OK, the revelations did show that Apple is serious about slugging it out in the corporate market. Its new virtual-memory (VM) and 32-bit addressing schemes will allow high-end systems to handle immense applications that use up to 4 billion bytes of memory. Its Database Access Manager (DAM) gives users access to remote big-iron SQL databases. And the new Macintosh File System Manager shatters the current limit of 2,000 entries in the Desktop file.

Now just a second. You mean you don’t use 2,000 icons on your desktop? Or run software that requires even a single gigabyte of space, let alone four times that amount? Or spend all day hooked to an off-site mainframe pulling down data? From your point of view, should the code name have been Big Deal?

That’s really not fair. System 7 does offer tangible benefits to every user (see this month’s Newsletter). Scalable fonts (and the new Layout Manager) mean far-sharper displays and enhanced flexibility in creating custom documents. InterApplication Communication (IAC) architecture will let you link (“live paste”) a spreadsheet program to your word processor so that fast-minute changes in a particular spreadsheet are automatically reflected in the report you’re writing about it. (Live copy/paste will also make accessing remote mainframe databases as easy as looking up something on your own hard disk.)

Virtual memory can save on pricey RAM, so long as you’re using a 6x, a 16x, or an SE/30, or if you have a II with an optional PMMU coprocessor. Under System 7, applications that are “32-bit clean” (written to adhere strictly to Apple’s internal memory-manager guidelines) can juggle lots of complex space-hogging color images. The new Print Architecture can let any printer work in the background rather than tying up your system, handle color output, and eliminate reformatt ing bottlenecks.

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Virtual memory can save on pricey RAM, so long as you’re using a 6x, a 16x, or an SE/30, or if you have a II with an optional PMMU coprocessor. Under System 7, applications that are “32-bit clean” (written to adhere strictly to Apple’s internal memory-manager guidelines) can juggle lots of complex space-hogging color images. The new Print Architecture can let any printer work in the background rather than tying up your system, handle color output, and eliminate reformatt ing bottlenecks.

Apple’s jazzed-up 32-bit QuickDraw can tame 64K times as many colors as its current incarnation. And its Sound Manager makes it a snap to hook up MIDI devices, store sounds a lot more efficiently on your disk, and synchronize sound with graphics.

What this announcement really says is that the Mac market, like the rest of the desktop-PC industry, is splitting into two groups that industry guru Bill Machrone once termed the “haves” and the “have lesses.” At one end of the spectrum, casual users will hum along contentedly with single-megabyte, monochrome, 68000-based systems. At the other end, mainstream corporate users will want as much horsepower as the Mac can crank out, and they’ll demand beefed-up host/micro links, vast helpings of RAM, a streamlined communications manager, and 16 million colors on-screen. (For color to become the standard, we’ll need a generation of fast, affordable color printers. But System 7 anticipates this.)

What does all this mean for the everyday serious Mac business user — the bread and butter of the industry? Some analysts would contend that many business users are pretty much satisfied once they’ve crossed the ease-of-use threshold. According to this scenario, they’ve flocked to the Mac because it lets them get their work done without a lot of fiddling and arcane commandspeak. They don’t want to know from MIPS or CL/l or fancy kerning. System 7 may lack real muscle, the wags argue, but do users really care about such exotica?

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As important as what Apple announced is what it didn't. While MultiFinder does let you run more than one application concurrently, it doesn't yet handle preemptive scheduling, multiple CPUs, or protected memory. When I'm running half a dozen applications at once, I want the ones with priority to get the disproportionate attention they deserve when they need it. And I don't want the whole house of cards to come tumbling down just because one of the six applications goes south.

Finally, one scandal that still is unsolved — Apple doesn't add any intrinsic assistance to making automatic backups. (At least it's consistent with industry standards; neither does IBM.) Apple does crow that the "extensible" nature of the new system will let it add such backup capabilities in the future, but users need such an easy, automatic feature today. Ask yourself honestly — are you totally backed up? Is your network?

Well, just wait until System 8.
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2201 TrafficWatch 1.08...139.
2203 PhoneNET Plus (DIN-8)...35.
2204 PhoneNET Plus (DB-9)...35.
4869 PhoneNET Connector 10-Pack...225.
4868 PhoneNET Repeater...325.
2206 PhoneNET STARController...1199.

**Freesoft...60 day MBG**
2219 Fast Ryder 10.3...54.

**Hayes**
2300 SmartCard II 3.1...88.
2307 SmartCardModem 2400...429.
5178 2400M (internal)...419.
5169 2400M (internal w/Smartcard II)...459.

**Chang Labs...60 day MBG**
Special—Rags-to-Riches GI 3.3—Thu Aug 31, 1989 place an order of 250 or more (any
products) from MacConnection and you may
also purchase this top rated accounting module
for only $159. Limit 1 per customer.
4321 Lunar Rescue (CP)...34.
4517 Road Racer (CP)...39.

**Sierra On-Line**
3397 Leisure Suit Larry (CP)...23.
3396 King's Quest III (CP)...29.

**Silicon Beach...60 day MBG**
3502 Beyond Dark Castle...special 27.
3501 Apache Strike...32.
3503 Dark Castle...32.

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

**Softstream Int'l, Inc...60 day MBG**
4071 Mac•Man w/adaptor...23.
4072 The Solitaire DA...23.
4955 Cribbage Tutor...26.
4073 Color-Billiards...38.

**Spectrum Holobyte...30 day MBG**
4175 Solitaire Royale (for Mac SE)...20.
3464 Tetris...20.
4472 Tetris (color version)...24.
3462 PT-109...24.

**Dow Jones...30 day MBG**
News/Subscription Package—Allows off-
line set up of personalized reports to retrieve
and analyze key data from Dow Jones News/
Retrieval's 50+ databases. Includes five free
hours of service...$24.
Dear MacConnection,

I have been dealing with your company almost since your first ads appeared. I knew you were good, but I think you've overdone it now.

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Raymond C. Andrews, M.D.
Imola, Italy

"Next time I'll fly MacConnection."
**Expo-se yourself to**

Insignia Solutions
4089 SoftPC 1.3 .......................... $249.

Intel Corporation
5119 LaCie, Ltd. ... 30 day MBG
4975 LaCie Utilities 1.0 (includes SilverLining, SilverPlatter, and SilverServer) .... 89.

* Lamir ... 30 day MBG
4984 Askari Software ................................ 329.

* Microsoft ... 30 day MBG
2875 Microsoft Mail 1.3 (1-4 users) .... 195.
2872 Microsoft Mail 1.3 (5-10 users) .... 325.
2873 Microsoft Mail 1.3 (11-20 users) .. 489.
2874 Microsoft Mail 1.3 (21-32 users) .. 639.

* NuvoTech ... 60 day MBG
3000 TurboNet ST (DIN-9) .......................... 30.
3001 TurboNet ST (DIN-9) .......................... 209.
5277 TurboBridge ................................ 359.

* Practical Peripherals ... 30 day MBG
3100 1200 Baud External Modem .......... 77.
3102 2400 Baud External Modem .......... 179.
3089 Mac Communications Pack 1.5 ... 225.

* Shiva ... 30 day MBG
3444 NetSerial X202 .......................... 289.
3437 NetBridge ................................ 349.
3492 TelBridge ................................ 349.
3443 NetModem V2400 ......................... 479.

* Software Ventures ... 30 day MBG
3454 MicroPhone 1.5 .......................... 119.
3455 MicroPhone II 3.0 .......................... 219.

* Solutions INT! ... 60 day MBG
4308 BackFax (rect. Apple FAX modem) .... 125.

* Synergy ... 30 day MBG
3130 VersaTerm 4.0 ................................ 89.
3131 VersaTerm-PRO 3.0 ................. 179.

* TOPS ... 30 day MBG
3723 TOPS Mac 2.1 .......................... 149.
3726 TOPS for DOS 2.1 .......................... 119.
3724 NetPrint 2.0 .......................... 119.
4715 InBox Connection Mac 2.2 .... 75.
4714 InBox Starter Kit 2.2 .......... 199.
4188 TOPS Teleconnector (DIN-8) ..... 29.
4598 TOPS FlashBox .......................... 125.
3725 TOPS Repeater .......................... 129.
3720 TOPS Flashcard .......................... 169.
3729 LAP-LINK Mac 2.0 .......................... 83.

Practical Peripherals ... 30 day MBG

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5082 ScanMan Mac 349.

* LYNX Computer ... 30 day MBG
1211 LYNX Trackball 65.
1216 LYNX Trackball ADB 65.

* Microseeds Pub. ... 60 day MBG
4843 WristMac 1.0 149.
4846 WristMac Executive 1.0 199.

* Mobius Technologies ... 60 day MBG
5018 MultiScreen 315.

* Mouse Systems ... 30 day MBG
2808 A+ Mouse 65.
2809 A+ Mouse ADB 85.

* Nutmeg Systems ... 30 day MBG
2984 15" Monitor for Mac SE 999.
4096 19" Monitor for Mac SE 1349.
4097 19" Monitor for Mac I 1449.
4249 LCD Interface (Kodak DataShow) 399.
5138 Read-It OCR Personal 2.0 99.
3034 Read-It OCR 2.1 249.

* Orange Micro ... 30 day MBG
4488 Grappler Spooler 39.

**Datadex ... 30 day MBG**

MAC-101 Keyboard—Includes macro program, Masterstrokes, to assign keystrokes and mouse dics to 15 function keys. Beige, platinum, or ADB version .......................... $145.

Foreign keyboards are also available .......................... call

3036 Grappler C/Mac/4S 2.0 ... 79.
4076 Grappler LO 1.5 103.
4487 Grappler LS 1.0 103.

* PPC ... 30 day MBG
5005 SHADOWGRAPH Monitor (gray scale, incl. CGC/2 Card) .......................... call
5004 CGC/2 Graphics Card call

* PTC/DataShield ... 30 day MBG
4845 MacDirect 109.

**SUMMAGRAPHICS**

3282 Printworks (Dot Matrix) 3.5 . 43.
3283 Printworks (HP laser) 3.6 85.

**MEMORY & DRIVES**

* Cutting Edge ... 30 day MBG
3999 800K External Disk Drive 149.
3993 20 Meg Hard Drive 439.
3990 30 Meg Hard Drive 499.
3991 45 Meg Hard Drive 599.
5276 65 Meg Hard Drive 649.
5275 80 Meg Hard Drive 749.

* Dove Computer ... 60 day MBG
1800 SCS Interface/Port 109.
1807 MacSnap 524E 189.
1809 MacSnap 524S 249.
1811 MacSnap 548 449.
1812 MacSnap 548S 499.
1820 MacSnap 25E 319.
1797 MacSnap Plus & 319.
1804 MacSnap 25 399.
1793 MacThon 1020 MASE 585.
1794 MacThon 1020 MASE 2 (1 Meg) 979.
1795 MacThon 1020 MASE 3 (math chip) 779.
1796 MacThon 1020 MASE 4 (1 Megchip) 1159.
1592 MacThon 200 MASE (4 Meg) 1369.
1593 MacThon 200 MASE (4 Megchip) 1559.
4663 MacThon 200 MASE 1559.

**Epson**

5132 40 Meg Raw Drive (25ms) 436.
5204 70 Meg Raw Drive (25ms) 586.
our overnight delivery.

**ACCESSORIES**

- **Avery** 60 day MBG
- **3 1/2” Disk Label Set (Qty. 250)** 10.
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- **8 1/2” x 11” Transparencies (Qty. 50)** 11.
- **1” x 2” Laser Labels (Qty. 3000)** 25.
- **Computer Coverup 60 day MBG**
- **1723 MacLuggage III Cover** 8.
- **1722 MacLuggage LQ Cover** 8.
- **1725 Mac SE Ext. Keyboard Cover Set** 10.
- **4657 LaserWriter II Cover** 10.
- **Ergotron 60 day MBG**
- **2004 Mouse Cleaner 360°** 10.
- **3992 The Muzzle (covers power outlet)** 25.
- **2000 MacTilt SE** 60.
- **Goldstein & Blair 30 day MBG**
- **I/O Design 30 day MBG**
- **2379 MacLuggage ImageWedge II** 49.
- **2376 MacLuggage Macinware Plus** 64.
- **2381 MacLuggage Macinware SE** 75.
- **Kalmar Designs**
- **2531 Teakwood Rolltop Case (holds 45 disks)** 14.
- **2532 Teakwood Rolltop Case (holds 90 disks)** 21.
- **2533 Teakwood Rolltop Case (holds 135 disks)** 31.

**Farallon Computing 30 day MBG**

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**MacConnection 60 day MBG**

- **Fanny Mac GT** 60.
- **Mousstrap 60 day MBG**
- **2694 Mousstrap Pad (standard 7” x 9”)** 8.
- **2692 Mousstrap Pad (large 9” x 11”)** 9.
- **2693 Mousstrap Pad L/F (9” x 11”)** 10.
- **Mousstrap Designer Series** ea. 12.

**Ribbons**

- **3255 ImageWriter II Ribbon** 4.
- **3251 ImageWriter II 4-color Ribbon** 9.
- **3260 ImageWriter LO Black Ribbon** 17.

**Simon & Schuster 60 day MBG**


**Sopris Softworks 60 day MBG**

- **4016 MacPlus Cover (navy)** 10.
- **4171 Mac SE Std. Keyboard Cover (navy)** 10.
- **4019 Mac SE & Ext. Keyboard Cover (navy)** 15.
- **4017 ImageWriter IV Cover (navy)** 11.
- **4168 ImageWriter LO Cover (navy)** 13.
- **4018 LaserWriter II Cover (navy)** 17.
- **4012 High Trek ImageWriter II carry case.** 49.

**Kensington 30 day MBG**

MacConnect’s carries the entire line of Kensington’s accessories. Partial listing below.

- **2589 Universal Printer Stand** $15.
- **2545 Universal Copy Stand** 22.
- **9711 modem/FAX protector 20** 25.
- **9731 Power Tree 20** 27.
- **9741 Power Tree 50** 34.
- **2559 Apple Security Kit** 34.
- **2556 Mac accessories Anti-Glare Filter** 33.
- **2568 Mac accessories Super Base** 34.
- **2565 Printer Muffler 80** 43.
- **4070 System Saver SE** 52.
- **2566 System Saver Mac (platinum)** 64.
- **2548 Mac accessories A/B Box** 64.
- **5064 Apple Color Monitor Polarizer Filter** 65.
- **5065 Full Page Display Polarizing Filter** 65.
- **5066 Two Page Display Polarizing Filter** 135.
- **9411 Mac II Monitor Stand** 65.
- **9463 Mac II Stand and Cable Kit** 65.
- **2561 MasterPiece Mac II** 105.
- **5229 PowerBacker 330** 269.

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- To order, call us anytime Monday through Friday 9:00 to 9:00 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.
Peripheral Vision

Paul Somerson’s “DOS-to-Mac Conversion” (June ’89) should delight the folks at Apple Computer. Perhaps they will listen to you when you point out the simple and obvious things they have been missing. For example, our small, new, avant-garde university has saved at least $500,000 on typesetting in just three years, thanks to our Macs. But for many applications — such as accounting — we still have to struggle along with other computers for the simple reason that the Mac cannot readily be made to use low-priced peripherals such as third-party printers and paper bins. We can’t imagine how Apple ever expects to invade the business offices of America when Macs can’t print a decent letter without a LaserWriter.

Ralph D. Winter
Pasadena, CA

System 7.0 — parts of which are expected to be released by the end of 1989 — promises to broaden printer choices by simplifying the process of writing drivers for third-party printers. — JZ

Knowledge on Tap

Your readers may be interested to know that a copy of the Knowledge Navigator video Louise Kohl mentions in her April ’89 Control Panel column can be obtained by virtually any academic library and at most public libraries through the OCLC interloan system. It is included in a keynote address given by John Sculley at EDUCOM ’87. To obtain the VHS cassette, librarians should request OCLC cassette 17562069 or 17503272. The tape also includes some interesting interactive-video demonstrations that use the Mac.

Kenneth L. Dudley
Grand Rapids, MI

It’s about Time

Many thanks for your review of our CD-ROM, Time Table of Science and Innovation (May ’89). None of your competitors have reviewed the disc, but now that CD-ROM titles are being stocked in software stores, the future of this technology is a good bit closer.

There are a few points we want to set straight. The main stack has 5,539 cards (or stories), not “just over 500,” and the next version will have more than 6,000. Also, where the Time Table proposes extensive historical linkages, a source is directly cited (often James Burke, the master of these things).

Peter Black
President, Xiphias
Marina Del Rey, CA

Macs Ax Lax VAX?

I read the article “Making a Small Net Work” (May ’89) and came away with terminal depression (no pun intended). Most of the professionals who use the VAX system in my office have never mastered even the basics, so the system is greatly underutilized. I would love to have a Mac in the office and, in my ignorance, have even recommended that we scrap the VAX, put Macs on every desk (about 50), and connect them all together into one big happy family.

But after reading your article, I soon realized that this is not the answer. If our computer illiterates cannot figure out how to use a VAX menu, they simply don’t use the system. With an interconnected Mac system, they would be creating the wrong kinds of folders, putting them into the wrong places, and generally screwing up the system. It seems that one still has to choose between having really good interoffice communication (which is essential for our office) and having the type of flexibility that the Mac provides (which we can grudgingly live without).

Walter L. Williamson
Atlanta

Congress of Libraries

As a librarian who has spent the past ten years trying to remind the public that the business of the library is to bring people and information together, I was gratified to see Louise Kohl’s wish list for networking computers and libraries (Control Panel, May ’89). Many of us librarians have been beating our brains out trying to keep libraries in people’s minds in their quests for information. One of our greatest fears is that public libraries might become out-of-date, replaced by private-sector information services. Most public libraries cannot find the money to buy into the hardware and on-line services needed to keep up with
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information technology: it’s hard to invest in a computer network when you’re trying to find the money to keep your branches open. It would be wonderful if one (or several) of the big hardware or software companies could help set up a big demonstration project to show that libraries are not just books and librarians don’t just say “Shush!” They also say “Network!”

Walter Kafon-Minkel
Portland, OR

On the Sea Level
Here at the Discovery Bay Marine Laboratory, I have had my Mac Plus and ImageWriter II in non-air-conditioned circumstances by the sea for a year. I minimize the flow-through of the salty, humid air in the room, especially when it is stormy out; do not idle the printer (which Apple says won’t run on our 50-cycle power); and have cheesecloth taped on all vents and drive openings to keep bugs out, hemipteran and colloquial. So far no problems, except for an earthquake during which I attributed the movement to a flickering screen. When the reality dawned on me, I wondered if I should save the file instead of diving under my desk. It’s scary what a computer can do to your survival instincts.

William R. Allison
Discovery Bay, Jamaica

Signs of Success
Thank you for running an item about my American Sign Language font (New on the Menu, June ’88), which contributed greatly to the worldwide dissemination of more than 1,000 copies of these freeware fonts. I learned a few lessons from this experience.

Some requesters forgot to include self-addressed, stamped envelopes; blank disks; and proper postage to reach me and get their disk back. And you wouldn’t believe the number of 5.25-inch blank disks I had to return to readers who expected to use the font on their Apple II computers.

Some folks made up for the shortcomings of others, including extra disks or a couple of dollars as a donation to the effort; overall, the gains outweighed the losses.

Here are some reminders for readers responding to offers from freeware and shareware publishers:
• Note the machine for which the offer is intended.
• Include all specified SASE requirements.
• Please initialize disks before sending them (my Mac had to work overtime for those who didn’t).
• Include clear instructions if you have any special requests (e.g., to use single-sided disks).
• Package your disks properly to prevent them from being mangled on either leg of their journey.
We found a measure they could both agree on.

Up on the hill it looked like another split along party lines. Both Macintosh and PC users fought for access to the same information. Until aTOPS network brought them together in bipartisan agreement, that is.

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Incidentally, here is my new address — 4 Nottingham Way N., Clifton Park, NY 12065 — for readers interested in ASL Fonts or in the new compiled version of my practice program for new signers.

Richard L. Smith
Clifton Park, NY

Chinese Food for Thought

The article “Word Processing with Character” (May ’89) gave a good survey of Chinese computing on the Mac. Another product, which wasn’t mentioned in the article — Apple’s own ZhongWenTalk system, the Chinese counterpart to KanjiTalk — can be easier, but only if you have friends in Hong Kong or Taiwan who can obtain it for you. Like KanjiTalk, it is not a word-processing system but an operating system that lets you enter Chinese characters as 2-byte codes. So in HyperCard, for example, the Chinese characters can be processed as text instead of as graphics, reducing the size of the stack.

Edmund Lai
Campbell, CA

CLARIFICATIONS

MacPaint Continues
Although Claris intends to integrate many of MacPaint’s features into a future version of MacDraw II, a headline in the May ’89 Newsline overstated the case; the company has no immediate plans to discontinue MacPaint.

Type Righter
In the February ’89 Tip Sheet, the tip on how to access the draft-mode fonts of the ImageWriter when using Word will work if you select Typewriter, not ImageWriter, in the Chooser.

A Slip of the Tuck
The price for EDCO Services’ Letter-Tuck was incorrectly reported in the December ’88 issue. The correct price is $99 for either the Mac or PC version, or $149 for the pair.
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3-D In, 3-D Out

At the recent National Computer Graphics Association (NCGA) show in Philadelphia, Tektronix showed a jaw-dropping hardware/software package called CACh (computer-aided chemical modeling). CACh is a molecular-modeling program with 3-D input control, stereo 3-D output, and exceptional speed. If you work with molecular management, those features should excite you; even if you're not a chemist, you may be interested in the hardware components of the system, which can be used separately for a variety of leading-edge applications.

First let's consider the 3-D painting device. Face it: When it comes to 3-D freedom, the mouse and trackball are quite limited.

The Tektronix device looks and works much like a trackball, but the ball sits in a shallow cup so it can be grasped and turned in any direction. It has three entirely programmable mode buttons. In the demo system, the buttons were in rotation, translation, and scaling modes in any or all of the three axes. The ball is a serial device, which means it's widely compatible. Tektronix is planning an Apple Desktop Bus (ADB) version for release in late 1989, but no price was announced.

The heart of the molecular-modeling system is a Motorola 68000-based application coprocessor board. This 20-megahertz pipelined reduced-instruction-set-computer (RISC) processor is the key to the system's speed. Tektronix has also developed FORTRAN and C compilers for developing applications that exploit the 88000 board. The board, called the ImPuet Coprocessor for the Macintosh II, is available for $10,495 for a basic configuration with a 32K data and instruction cache (upgradable to 48K) and 2 megabytes of RAM (upgradable to 32 megabytes). The $995 Software Development Toolkit runs under MPW and includes a symbolic debugger, an assembler, a C compiler, and interface libraries for access to the full Mac II Toolbox; the FORTRAN compiler and additional libraries are optional.

For live stereo 3-D, Tektronix's stereo frame-buffer board fits in a Mac II and drives a liquid-crystal, stereo frame shutter that covers the monitor's screen. The unit is flicker-free and transparent to the naked eye, but it reverses the polarity of the emerging screen's image at 120 hertz, which provides each eye with a left or right view at 60 hertz per eye. The viewer wears cross-polarized glasses so that each eye sees only the image meant for it. The board is double-buffered, capable of showing two frames while two others are being updated. The 3-D viewing system is not currently sold separately, but it wouldn't hurt to write or call Tektronix about it at P.O. Box 500, Beaverton, OR 97007; (503) 627-7337.
—Salvatore Parascanlolo

Motion Slickness

Following on the heels of Electronic Arts' Eddy-winning Studio/8 color paint program is Studio/1. Studio/1 is an elegant black-and-white paint application with an interface, tools, and capabilities that closely follow its color predecessor's. In some areas, Studio/1 even surpasses Studio/8.

In addition to its painting tools, which include editable Bézier curves and polygons, eight configurable airbrushes, and controllable gradient fills, Studio/1 has these power features: resolutions from 72 to 900 dots per inch (dpi); a separate layer for PostScript text that can be edited and that prints smoothly; a perspective plane for completely tilting an area with copies of a selection; masking of one or more areas of a page; intelligent selection tools; and, quite unexpectedly, animation.

Although Studio/1 can't boast the object-oriented animation of VideoWorks and MacroMind Director, its animation powers command respect. It starts with flipbook animations and builds from there with a set of animation tools that includes intelligent options, shortcuts, and special effects — and it's easy to use. It features tweening, sound synchronization, variable playback speeds, pauses, acceleration and deceleration, real-time recording of mouse-dragged objects, calculated 3-D rotation and translation of selections, and templates that define a motion and let you select the object to be animated.

You can construct and paint objects with an animated brush. For example, you might create a brush as a flying bird; as you move the brush, the bird flaps its wings and each of its intermediate positions is recorded onto the main animation. The result is a bird that flaps around on your screen.

Studio/1 can also import and edit PICT files from applications such as Swivel 3D, Super 3D, and VideoWorks. It comes with a free-ly distributed XCMD for running Studio/1 animations in HyperCard. Excited? Animated? This program has a list price of $150 and comes from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; (415) 571-7171.
—Salvatore Parascanlolo

Studio/1's painting and animation tools were used to create this factory, in which a rough stone gets tumbled smooth; polished/split, and equipped with brains, a battery, and feet; and then shuffles away — all in 20 frames.
Tektronics' CAChe workstation offers stereo 3-D viewing — advantageous for using its molecular modeling software. It's a Mac II assisted by a RISC processor, stereo hardware, and a 3-D trackball.

Spreadsheets with Fuller Impact

Just when you think Wingz has won the battle of the programmable spreadsheets, Ashton-Tate launches a new salvo. Version 1.1 of Full Impact has more application-development and customization features with the use of XMacros, which are similar in function to HyperCard's XCMDs.

Full Impact's FullTalk macro language uses XMacros to access C or Pascal (Lightspeed and MPW) code. XMacros let you customize menus and Command keys and create applications with new functions. They also give programmers access to the Macintosh Toolbox. Nonprogrammers will be able to use and store libraries of XMacros created by third-party developers.

For those who would rather not program in C, Ashton-Tate is giving away XMacro libraries and complete applications on MacNet and CompuServe. For example, a stock-quote application automatically dials up and logs into CompuServe, finds the appropriate section, and locates the latest price of stocks you have previously told it to find.

Some of the tools being put online include XMacros that let you attach customizable dialog boxes and hierarchical menus to Full Impact. Another XMacro adds sound to your spreadsheet by playing SND resources. They can work as background tasks so they won't prevent spreadsheet calculations. Ashton-Tate plans to make the source code for these XMacros available.

Full Impact 1.1 is the same price as version 1.0, $895, and comes as a free, automatic upgrade for registered owners of version 1.0. Contact Ashton-Tate, 21020 Hamilton Ave., Torrance, CA 90602-1319; (213) 329-8000.

— John Rizzo

NEWS LINE!

EDITED BY GIL DAVIS

System 7.0 Preview

SAN JOSE, CA — Apple outlined some of the capabilities of System 7.0, an ambitious yet "seamless" upgrade to the Mac operating system, at its System Software Press Seminar. System 7.0 will remove a number of limitations, such as the 8-megabyte memory limit, while adding powerful features such as more flexible printing, improved font management, and the ability to customize the System through user-defined scripts. Apple did not announce a ship date for System 7.0, characterizing the presentation as a disclosure of upcoming technology (underscored by the fact that all speakers wore informal attire).

Virtual memory, using hard-disk space as an extension of RAM, will enable users to run large applications or simultaneous multiple applications with as little as 2 megabytes of real RAM. Only the Mac SE/30, II, IIcx, and IIx, which have, or can accommodate, paged-memory capability, will be able to use virtual memory.

Full 32-bit addressing will enable a total contiguous reach of 4 gigabytes of virtual memory or 128 megabytes of RAM.

Outline-font technology will scale printed or displayed fonts to any size with much less jaggedness than current font-scaling techniques. Existing applications will use these new fonts without modification, and many major font publishers have already announced production of their fonts in this new format (refer to this month's DTP section).

A new Finder will be able to really find a file by opening its folder as the front window, with the file highlighted and ready for action. Document views (by Icon, by Name, and so on) will be customizable. You'll be able to assign several names to one file and use those aliases in multiple folders, allowing redundant organizational schemes without requiring redundant copies of files. (This will even work for files on a remote server.) Applications will join DAs on the Apple menu.

Installation of fonts, DAs, sounds, and other System resources will be accomplished by simply placing them in the System folder. They can be removed just as easily by dragging them out.

InterApplication Communications (IAC) lets programs share data, locally or over a network, in real time or on demand. For example, one application can process data from another program and return the results in a standard format. Live Links between documents will enable a section of a document created in one application to be "published," so that one or more documents created in other applications can "subscribe" to it — similar to file sharing, but extending the concept to parts of documents, including text, graphics, and numeric data. When a published document is saved, the change is reflected in other documents that subscribe to it (e.g., that have pasted it in). Applications will communicate with each other using a standard protocol driven by Apple Events, and these intra-application messages can be handled immediately, if the addressee is active, or they can be stored and forward-
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NEWS L I N E!
ed later. User-written scripts will automatically drive a complex series of multiapplication functions.

Database access will be facilitated through a common language, CL/1, allowing Macs to query and modify data residing at remote sites, including mainframes. The connection and update mechanism can be totally transparent; the user need not know where the published data resides.

Communications will be simplified for file transfer and terminal emulation. Users will be able to add new terminals or features simply by dropping files into the System folder.

Printing will be far more flexible. A single document will be able to have a mix of portrait- and landscape-oriented pages. Background printing will be possible with all printer types. You’ll be able to redirect queued print jobs to any accessible printer — overriding the original Chooser selection.

Developing and upgrading applications will be simplified because Apple will provide “toolboxes” containing much of the underlying logic that software developers must now each reinvent for themselves. This should yield shorter development times and smaller, more powerful, and more stable applications with more consistent interfaces. System 7.0 will include toolboxes for communications, database access, and printing.

Any Mac from the Plus on up will be able to run System 7.0, but it will need at least 2 megabytes of RAM. Apple intends to move its entire product line to System 7, but it will continue to ship System 6 with 1-megabyte Macs and will provide technical support for both versions. (And networked printers will operate on networks that include a mix of Macs running the two Systems.)

All existing applications that follow published Macintosh programming standards will run under System 7.0 and will immediately take advantage of a few of its features. Most System capabilities, however, will be available only through application-software upgrades (which may simply need to tap into the System-level routines). Developers will receive early releases of System 7.0 and its tools this fall.

Aldus Goes to Hell
SEATTLE, WA — PageMaker Color Extension will soon have a direct link to the Chromacom color prepress systems marketed by Hell Graphic Systems. Once the link is completed in early 1990, PageMaker users will be able to send files directly to high-end Hell prepress systems, which will produce four-color separations of documents containing photographs and other scanned images.

This desktop-to-prepress link will be based on Aldus’ Open Prepress Interface (OPI). Unlike Quark and Letraset, which have exclusive interfaces linking their page-layout programs with prepress systems from Seitz and Crosfield, respectively, Aldus developed OPI as a universal handshake that will eventually connect PageMaker to all the prepress players. Several prepress vendors have endorsed the new standard, but Hell is the first to reach a formal agreement with Aldus on implementing it. The two companies will also offer joint programs for customer training and technical support.
I was flying back from Europe last spring when Brian O'Reilly's excellent article on Apple in the international edition of *Fortune* caught my eye. I was particularly struck by how differently John Sculley and other Apple executives tell their story when talking to a writer from *Fortune* than when they are talking to Mac enthusiasts.

Perhaps we can just write it off as business machismo when these executives talk to a major business publication. Nevertheless, one can't help but wonder whether the attitudes expressed to *Fortune* aren't perhaps the way John Sculley and "his people" really think.

Apple Management: An Oxymoron?

Sculley is quoted as saying critically, "This has always been a right-brained company that flitted from idea to idea." Talking about the discipline that Allan Loren has brought to the company, Sculley remarks, "Allan scared the hell out of people, and I'm thrilled. I knew a tough guy from the East Coast demanding implementation would be unpopular."

It seems that Sculley's "tough guy" business macho ethos has been making progress against the old California mystique at Apple. Apple's vice president for human resources, Kevin Sullivan, is quoted in O'Reilly's piece as saying, "As we move from countercultural to mainstream, all that California stuff doesn't mean as much. My 81-year-old mother shouldn't have to like surfing before she can consider using a Macintosh."

Apple's current management structure (current, at any rate, as this is written; I wouldn't be the least surprised were it to change again before this column is in print) — pitting Loren's Apple USA marketing organization against Jean-Louis Gassée's research, product development, and manufacturing units — reinforces the impression of cowboy management by conflict. Speculation on inner conflicts is rife as talk is heard of a possible departure by Gassée.

I have been one of the more vocal critics of the inward-turning tendencies of the Most High Holy Cult of the Sacred Macintosh. I have argued strongly that, excellent as the Macintosh is, it should not be treated as an object of worship and reverence.

I have advocated a more mature approach that remembers that computers, however nifty, are still only tools. I have suggested that Apple and the Macintosh will gain wider acceptance only if the latter is presented as a more effective tool rather than as a superior religion.

There is, therefore, a potentially positive side to the attitudes that Sculley and others at Apple displayed when talking with *Fortune*. To the extent that their efforts result in better focus for Apple and the Macintosh, more timely and reliable development of new products, and more concern about being objectively useful for business users, they should be applauded.

It is difficult, however, to avoid the uncomfortable sense that a previously unmanifested dark side to all of this is working its way to the surface in the *Fortune* article. Bringing in a capable manager to focus the energies of a company is one thing; rejoicing that he "scared the hell out of people" and professing to be "thrilled" about it may be something else again.

Apple has plenty of real challenges and opportunities to prove that it can continue to grow, to innovate, and to provide leadership in the personal-computer market. Macho posturing and fantasy role playing will do nothing toward meeting those challenges or seizing those opportunities.

Apple needs to make important strategic decisions over the next year or two. For all the "Apple II Forever" talk a few years back, Apple cannot both maintain the old architecture at the low end and also develop a workable strategy for low-cost Macintosh alternatives. A decisive move forward toward a true multitasking operating-system environment is a pressing requirement at the high end.

Apple's still-shaky UNIX strategy must be brought up to market speed. Competitive challenges from IBM and compatible systems, as well as from UNIX and Steve Jobs' NeXT, require responses. A portable Mac is sorely needed. More powerful systems at the top end of the product line must be introduced as well. Apple also needs to do something about the growing frustration of software developers over incompatibilities among system-software releases.

Sharpening the focus of the organization, making tough choices concerning allocation of resources, and committing to achieving objectives are all necessary components for Apple's future that cannot be achieved by tough-guy posturing. Apple must preserve something of the spirit that built the company in the first place if it is to evolve into a more mature organization that can continue to grow and innovate in the future. Let's hope Mr. Sculley remembers that.
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Video Analysis

Most people would probably be upset if they found out that many of our best scientists, engineers, and doctors spend hours every day watching videos. Don't worry — we're not talking about "Gillian's Island" reruns. With more information being presented in the form of video images, scientists need tools that can quickly make sense of complex images, which is why Automatix's Image Analyst and Data Translation's QuickCapture were developed.

QuickCapture is a gray-scale frame-grabber board for the Mac II that captures video images for analysis, which is where Image Analyst takes over. Once an area of interest has been defined, Image Analyst sharpens the edges and lines; enhances the overall area; counts objects; and determines density, shape, size, relative position, and more.

Image Analyst directly supports QuickCapture, but the products are also available separately, so you can use a different frame grabber. Image Analyst lists for $1,985, QuickCapture for $1,585. Both are available from Data Translation, 100 Locke Drive, Marlboro, MA 01752-1192; (508) 481-9700. Image Analyst is also available directly from Automatix, 755 Middlesex Turnpike, Billerica, MA 01821; (508) 667-7900.

— Russell Ito

The 9,600-Baud Connection

Connect is the first commercial on-line service to offer 9,600-baud V.32 access to regular subscribers. Connect offers a bundle of a 9,600-baud V.32 modem, cabling, and its MacNET telecommunications software (which features a Mac-like graphical user interface), all for $899. Peak access rates are $12 per hour for 9,600-baud service, $6 per hour off-peak; charges are $8 and $4 per hour for access at 2,400 and 1,200 baud, respectively.

Connect also provides a gateway service to MCI Mail as well as MCI's associated fax service, which lets you send faxes via MacNET as easily as sending electronic mail. Connect recently opened a subsidiary based in Munich, West Germany, to provide European users with easier access to the service. Contact Connect at Bubb Road, Cupertino, CA 95014; (408) 973-0110 (voice) or (408) 973-0497 (fax).

— Stephan Somogyi

When Continents Collide

The Earth moved. For Hemingway, it was a once-in-a-lifetime experience; for geophysicists, it's just another day at the office. Terra Mobilis is a program that shows what geophysicists mean when they say, "We've come a long way, baby!"

Terra Mobilis helps teach users about Earth's history and continental drift. Using 3-D line drawings, you can study selected continents or regions in any of seven views, rotating them around any point while remaining cartographically correct. You can even move continents, creating supercontinents.

Terra Mobilis' most interesting feature, however, is its ability to create animations depicting how the Earth's tectonic plates have drifted over the past 600 million years.

To create an animation, select the continents or regions you'd like to study, and then specify the start, stop, and interval times in millions of years. The resulting depictions can be saved as MacPaint- or MacDraw-compatible files.

If you'd like to see how far the Earth has come and where it might be going, check out Terra Mobilis 2.2.

Terra Mobilis lists for $295 (educational version) or $795 (industrial version). For more information, contact Earth in Motion Technologies, 6601 Kirby Drive, Suite 529, Houston, TX 77065; (713) 529-8930.

— Russell Ito
Disposable

There are a lot of removable storage systems that work today but are expensive disposable systems tomorrow. There will probably be a lot more.

There are a lot of fly-by-night mass storage companies that are here today but gone tomorrow. There will undoubtedly be a lot more.

There are a lot of "crash and burn" "at your own risk" "unbootable" and "unreliable" storage systems out there. There will frightfully be a lot more.

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The Keyboard Percussionist

Playing a keyboard usually means playing something that looks like the business end of a piano, but in this computerized age, that's no longer true. Different Drummer, from Primera Software, is a case in point. This rhythm generator lets you create and play patterns with ten instruments, directly from your Mac keyboard.

Different Drummer uses the numeric keys across the top of the keyboard to trigger the individual instrument tracks. After selecting the desired instruments from pop-up lists, you can create a rhythm pattern either by improvising or by using the program's quantization grid. All the necessary tools—notes, accents, beats—are provided on a palette, so you can build your masterpiece one beat at a time. For users preferring the free-form approach, the program automatically quantizes notes to align them to the nearest subdivision of the beat, which ensures that you have the proper number of beats per measure.

Different Drummer is MIDI-compatible and works directly with the Mirage Ambient, Roland 505, and Alessis H16 synthesizers. To start tapping out a new rhythm, plunk down $99.95 and get in touch with Primera Software, 650 Cragmont Ave., Berkeley, CA 94705; (415) 525-3000.

—Jeremy Mazner

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Menus without a Bar

“Have mouse, will travel.”

The larger your screen, the more likely you are to mumble that phrase under your breath as you drag the cursor from your work to the menu bar and back again. At these times, what you really want is a pop-up menu right where you’re working, and that’s exactly what Magic Software’s POWERmenus gives you.

POWERmenus comprises eight INITs, the most important of which is called POWERmenus. The POWERmenus INIT gives you access to any application’s menus wherever the cursor is located if you simply hold down the mouse button while also pressing a user-definable modifier (Shift, Command, Option, Control, or a combination of these keys). All the application’s menus appear in a vertical, hierarchical list, and if any of the menus contain pop-out menus, they will appear as the next level in the hierarchy.

The other INITs (Magic Software calls them gadgets) are:

Alarms, Applications (for selecting applications directly under MultiFinder), Controls (for direct access to anything in the Control Panel), DAs (for direct access to your DAs), Dialer (a telephone dialer), Notes (a note pad with random access to notes — the first line of each serves as a title in a selection list), Time, and Windows (for switching windows).

POWERmenus is completely user-definable. You can switch the application or gadget menu off or on, have the gadget menu appear on the right side of the menu bar, and choose where the menus appear with respect to the cursor (above it or to the side).

POWERmenus can save large-display users a lot of mousing around. List price is $79.95. To find out more, contact Magic Software, 1602 Cascio Drive, Bellevue, NE 68005; (800) 342-6243 or (402) 291-0670.

— Russell Ito

POWERmenus aren’t just for power lunches anymore. POWERmenus is a collection of eight INITs that let you access any application’s menus from anywhere on the screen with a modified click.

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38 MAC USER AUGUST 1989
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Formulator = Output

Word processors are great at handling all kinds of expressions except one difficult type: mathematical. The problems of kerning and leading when you're mixing text and equations are beyond the abilities of most word processors, creating the need for a new software category: the math processor. The latest entry, Formulator, comes from across the Atlantic via ICOM Simulations.

Unlike some of its competitors, Formulator is strictly for output. It has no evaluation capabilities; it makes only your equations look good, not you. For anyone who needs to mix text and math, however, Formulator might do the trick. It has a built-in text editor, automatically italicizes variables, changes type size for superscripts and subscripts, offers a complete Greek character set as well as special symbols, and more. Formulator can also output in TeX while remaining completely WYSIWYG. So you can have all the typesetting advantages of TeX without the hassle of trying to learn it.

In addition to the mathematical symbols you'd expect, such as roots, integrals, and summations, Formulator will also create matrices, chemical formulas, and multiple limits. And since equations have a tendency to sprawl when they're proportionally spaced, Formulator also supports kerning. In fact, you can even use Formulator's kerning function to create compound symbols.

To find out if Formulator is the answer to your problems, contact ICOM Simulations, 648 S. Wheeling Road, Wheeling, IL 60090; (312) 520-4440.

—Russell Ito

Formulator can't solve your problems, but it can make your problems look nice. This math processor is designed for anyone who needs to print equations.

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**Wham, Bam, Thank You, SPAMM**

If your Plus or SE is hungry for speed, feed it SPAMM. The System Program for Accelerated Macintosh Mathematics (SPAMM) is a utility that preempts and accelerates the math functions that are normally handled by the Standard Apple Numeric Environment (SANE). It's designed to benefit the Mac Plus, SE, and 512K, which don't have math coprocessor chips. It doesn't have the speed of a dedicated coprocessor, but it speeds up math-intensive calculations substantially. According to SPAMM's developer, a VersaCAD resizing operation took about half the time with SPAMM. I tested it with Super 3D on a Plus and an SE and found improvements of 12 percent to 27 percent; the more floating-point math is involved, the greater the speed. (Programs with built-in math routines, such as some spreadsheets and 3-D modeling applications, will not be affected by SPAMM's presence.)

SPAMM is a subset of tried-and-true math routines originating in MacCalc, a veteran spreadsheet application that boasts high-speed recalculation (see "Fitted Sheets," April '89). Although SPAMM calculates floating-point values to 15 decimal places (compared with 10 places for SANE), many applications benefit more from speed than precision. The developer is working on a faster version of SPAMM that will let you opt for greater speed (at the expense of some precision). This $79 utility is available from Bravo Technologies, Inc., P.O. Box 10078, Berkeley, CA 94709-0078; (415) 841-8552.

— Salvatore Parascondolo

**StuffIt in Stores**

Software lasts forever, but not so little boys...or, at least, so it seems. Raymond Lau, the wunderkind of compression who gave us StuffIt (figuratively only — StuffIt is shareware, not freeware), is off to college, so he won't have time to support StuffIt as shareware anymore. He's signed an agreement with Aladdin Systems, which will now support the shareware version and distribute future versions commercially. In his spare time, Lau will develop new products for Aladdin. (Yes, it's true that he was only 16 when he started distributing StuffIt.)

— Russell Ito
Rumor Manager

We recently had a chance to walk around several Apple engineering labs on a weekday between 8:30 and 9:30 A.M., so we didn't actually see any engineers. However, the signs, T-shirts, and other evidence made most of the things we saw perfectly obvious.

Before we tell you exactly what we saw, we have to remind you that Apple engineering starts many projects, very few of which actually make it into production. Many make it to the working prototype stage, however, since that's the best way to see if things actually work. This report covers only the most likely production candidates. Also, remember that Apple is very sensitive about leaks, so please don't talk to anyone about anything you read here.

Our first stop was the biotechnology lab. We saw new mouse designs in profusion—they seem to breed. There were joysticks, enhanced keyboards, and what can only be called ESP sensor devices—in two versions. One was a lightweight, skeletal bicyclist's helmet (remember, these are prototypes), and the other was a pendant to be worn on a necklace (code name: Diamond). We couldn't get either one to work, but from the stack of bug reports on the desk, it's clear that they do work in some fashion.

Moving right along, we discovered a room that seemed to be the screen technologies lab with a green T-shirt tacked to the door. It was clear from the debris in it that a fairly nasty war was in progress. It looks like one side is developing and championing "normal" thin-film transistor (TFT) color screens, although some of the undamaged prototypes appeared to be made from things other than common garden-variety thin-film transistors. They were clearly TFT descendants, however.

The other side of the lab was filled with elaborate boxes (some seemed to be ovens) and numerous EPA toxic-material and radiation-warning signs. Apple engineers are well known for their somewhat, uh, unusual sense of humor, but these signs did not appear to be part of a joke. Having taken a good look at some of the specs lying about, we'd guess that this faction's screenlike devices are based on rare-earth meshes. Unfortunately, only one of the screens was on, and it looked like a basic, run-of-the-mill TFT screen. It had a 15.67-inch diagonal measurement (the Rumor Manager always carries a good tape measure and stopwatch) and appeared to have about 700-x-500-pixel resolution. Image quality and contrast were decent but not anymore. The whole package was about an inch thick and very light, but it was connected to a rather large, noisy transformer.

Aside from the one you know about, the laptop lab had no fewer than 18 prototypes. They ranged in size from about 3.5 pounds with a standard size, high-resolution Macintosh screen (although without an on/off switch) to some 15- and 17-pound units that looked ready to ship. All of them were 68000 units, and most of them could run on battery or regular AC power. The baby laptop used ordinary (but expensive) lithium cells.

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.

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This month we lead off with MacDot, Advanced Matrix Technology’s 24-pin dot-matrix printer that emulates Apple’s ImageWriter LQ; Acta Advantage, Symmetry’s successor to Acta, its DA outliner; Prototyper 2.0, SmethersBarnes’ software prototyper; PC Tools, Central Point’s utilities grab bag; MicroNet’s lli-620, a quick 600-megabyte internal hard drive; and Accu-Weather Forecaster, Metacomet Software’s meteorological marvel.

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Edited by Russell Ito

HARDWARE

MacDot

Since its announcement in August 1987, Apple’s ImageWriter LQ printer has been beset with setbacks and problems. Almost a year after its arrival, Apple was still shipping a printer driver that occasionally printed words on top of each other in the Best quality mode. (The latest driver, version 2.0, fixes this problem.) There still isn’t much software that takes advantage of the machine’s sophisticated paper-handling abilities. Also, the printer was so unbearably noisy that Apple finally agreed to swap any LQ with a quieter, refurbished printer.

Despite this, Advanced Matrix Technology, part of a Singapore-based group of companies, has tried to emulate the LQ, but the result is a poor imitation.

Looking for an easy way into the decidedly uncrowded Macintosh printer field, AMT outfitted its sophisticated Accel-500 dot-matrix printer with a plug-in emulation card that instantly makes it ImageWriter-compatible. With the card in place, the Accel-500, a PC workhorse, becomes the MacDot, an ImageWriter impersonator.

The advantage of this instant transformation, from AMT’s point of view, is that it doesn’t have to develop and distribute a special printer driver for the MacDot—Apple supplies (and updates) the ImageWriter drivers with its system software. From a user’s standpoint, there’s the advantage of not having to learn or do anything special to use the MacDot as opposed to an ImageWriter. And if your office uses Macs and PCs, the MacDot makes sense, since it can be switched back to the PC printer, the Accel-500, easily.

Another advantage to the MacDot is that it can emulate either the ImageWriter II or the LQ (although why anyone would want to emulate the II, with its slower speed and less-crisp characters, is a mystery). The MacDot is also much faster in Draft mode than the LQ, has a larger buffer, is quieter than the LQ (at least the nonrefurbished models), and has a much better design for making hardware changes (no more internal DIP switches!). There’s also a two-year warranty.

The MacDot costs $1,550 — about $200 more than Apple’s LQ. Are these advantages worth the extra $200? To answer that question, you need to examine the disadvantages of buying a non-Apple printer that emulates the ImageWriter LQ.

Consider the fonts you need in order to
get full 216-dot-per-inch (dpi) letter-quality resolution. As explained in my Quick Click of the ImageWriter LQ (January '89), you need a font size that’s three times the size you want in order to print at 216 dpi. Apple provides a disk with the LQ with the jumbo-sized Times, Helvetica, Courier, and Symbol. AMT, however, leaves it up to you to track down a copy of these fonts—a task that’s not nearly as easy as it sounds, since not every Apple dealer will have them.

Even worse, the MacDot manual never talks about the necessity of these fonts, how to install them, or where to get them. In fact, the manual is the Accel-500 manual with only two additional pages that address the installation of the MacDot emulation card. This is a serious problem. The LQ manual spends many pages explaining how to print, how to use the software options, and the need for the special font sizes. You get zilch with the MacDot manual. Even savvy users could hardly be expected to know the ins and outs of superlarge font sizes that are available only from cooperative Apple dealers. Advanced Matrix should have done a better job of emulating Apple’s documentation. A dealer might be willing to give you the large fonts but most likely will not let you copy Apple’s manual.

Moreover, the ImageWriter emulation is still buggy, although the plug-in card makes it easy for AMT to correct and re-install improved emulations. For example, the Mac often loses contact with the printer, especially if you’ve paused or canceled a print job, and it displays an only slightly helpful dialog box. The MacDot’s paper-handling accessories are much more expensive than the LQ’s. There’s no AppleTalk option available for the MacDot, and the letter-quality print speed is slower than the LQ’s.

If the MacDot printer were immensely less expensive than the LQ, you might be willing to overlook its shortcomings, but for $200 more than the LQ, you’re entitled to expect more than what Apple provides, not less. Unfortunately, the MacDot doesn’t deliver.

— Dave Valulis
Acta Advantage

Acta Advantage is an outliner that works both as a DA and as an application — although it is more powerful as a DA. The only reason to use the application version is for its WYSIWYG page preview and its printing format features. For the real work — the spontaneous thinking — the DA is the way to go.

Symmetry has added several features to keep Acta updated. The original version, a DA, couldn’t print directly and didn’t have type-style capability. Symmetry recognized the need to develop its product long before realizing that it also had to teach people how to use it. The package now includes a 75-page manual that describes how you can leverage the power of this outlining package.

Acta Advantage’s relationships are structured hierarchically. Once you understand the tree and family structure, it’s fairly easy to use the system and keep things straight. Topics that are located directly beneath each other are called sisters. Subtopics, which are to the right of mother topics, are called daughters. Topics that are beneath and one level to the left of mother topics are called aunts.

To start using Acta Advantage, you simply open a new outline.

To keep track of the family relationships, Acta Advantage uses a simple and ingenious system. To the left of each topic is a triangle marker. A solid triangle indicates that the topic has no daughters, and a hollow triangle means that a family exists. Double-clicking on a hollow triangle collapses the topic, concealing the daughters; double-clicking again expands it, so you can keep the screen as clear or cluttered as you wish.

Collapsing topics is one way you can zero in on information in the outline; another method is called shrinking. When you shrink a topic, everything but the first line of text, or the first 16 dots of a graphic, disappears. An arrow that points down precedes the topic, indicating that it has been shrunk.

To move information around in your outline, you use standard Mac commands for cutting, pasting, dragging, adding, and deleting text. If you hold down the mouse button, all the family information related to a topic will be highlighted.

Acta Advantage organizes your information using the classic outline method or labeled format. The main topics, the mothers, can be labeled with section numbers such as 1, 2, 3, and so on. The daughters, the first indentation in the outline, can be labeled 1.1, 2.1, 3.1, and so on. The aunts can be labeled 1.1.1, 2.1.1, 3.1.1, and so forth. Or if you prefer, you can use a combination of letters and numbers such as A for the heading, or mother. A for the first indented daughter, and L for the first indented aunt.

A twist on the classic outline format is the use of bullets instead of numbers or letters. Acta Advantage allows you to define any Mac character as a bullet. You could use ampersands instead of bullets, for example. However, you can’t mix characters within topics at the same level.

Acta Advantage has a simple find-text function that lets you breathe through single outlines, looking for words or phrases. The program can also sort alphabetically, numerically, or reverse-numerically. Unfortunately, it can’t search through multiple outlines on disk or in multiple windows simultaneously.

Through the Mac interface, the program can use a host of different type styles, both on-screen and in print. The type styles can be changed in an entire outline, as well as by topic or within a topic. Different type styles make it easy to see changes in the sections of an outline and to highlight important points.

Acta Advantage includes a smart pasting feature that allows you to bring information from other applications, such as spreadsheets or word processors, through the Clipboard. This feature translates the information on the Clipboard into Acta format, automatically splitting it into topics. Wherever a carriage return appears, Acta Advantage interprets it as the end of one topic and the beginning of
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Acta Advantage has tremendous inherent power. If you need to organize your thoughts quickly, this program is for you.

Acta Advantage plans to do the same for WordPerfect. Another format driver can read Scrapbook files into Acta, and Acta topics can also be PICT images.

Acta Advantage's topics are limited to 32,000 text characters (graphics are unlimited), and outlines can be nested to 2,000 levels.

Acta Advantage is a simple program with tremendous inherent power. If you need to organize your thoughts quickly, Acta Advantage is for you.

—Ken Lands

Acta Advantage

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(application).
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LANGUAGES

Prototyper

One of the best ways for a Mac programmer to learn about the system is to examine source-code examples. The only problem is that often the source-code examples don’t address your needs. For novice programmers, it’s often tough to ferret out the application-specific parts of the code from the essentials. If you’re lucky enough to find a bare-bones piece of code, it’s usually not documented as well as a beginner might like.

To create a Mac application, programmers don’t simply sit down and start writing code. First, a full program specification must be written to define what the windows, menus, and dialog boxes will look like and how they will act. Once the specification has been written, initial coding can begin. A prototype is then built to mimic the interface functionality, and it is exhaustively tested and revised until there is a smooth, clean interface. This test/revise cycle is expensive and time-consuming.

SmethersBarnes attempts to meet the need for both code examples and prototyping in one package—a set of code generators called Prototyper.

Prototyper 2.0 is an application specification program. It allows users to create a program interface. A link facility and the ability to run your prototype let you see how well the prototype works. The tools available in Prototyper include editors for windows, menus, and icons.

The Window dialog box lets you select from the standard Macintosh window, dialog box, or alert types. When you choose a window type, a worksheet opens. The zone for the window is displayed in the contents of the worksheet. Zones (Prototyper’s term for the area taken up by any Mac object, such as a window, button, or text item) are manipulated in the standard way: anyone familiar with MacDraw or any object-oriented graphics program will immediately know how to move or resize them.

The palette located on the left side of the worksheet shows all the objects you can use in the window. They include buttons, icons, pictures, static text, editable text, check boxes, radio buttons,
lists, rectangles, lines, pop-up menus, and scroll bars.

To add one of these objects to your window, select the corresponding icon and drag a zone for it. After it's placed, you can edit any object-specific information such as a button name, icon shape, or text legend.

The application's menus are created with the Menu Editor tool, which supports Command-key equivalents, custom menu-item styles, icons in the menu bar, and hierarchical menus. Prototyper supports only one level of hierarchical menus. SmethersBarnes indicates that this was intentional, since Apple's human-interface guidelines recommend that you don't nest hierarchical menus more than one level deep.

In addition to supporting almost every aspect of the Mac interface, Prototyper also implements a few extras. Although you can't create a text-editing or graphics window in Prototyper, you can use a special demo window to simulate them.

After specifying the look of the user interface, you can use the link facility to set up the prototype's functionality. You can establish links between all the items, making it possible to open and close windows, enable and disable menus or menu options, bring up standard file and print dialog boxes, and enable and disable buttons.

To run the prototype, you can select either QuickLook — to do a quick simulation of the specific zone you're working on — or Run — to run the whole prototype. When you run it, Prototyper closes all the work windows and simulates your prototype as if it were an actual application. You can refine the program's interface until it's exactly the way you want it.

You'll want to generate some code next. Prototyper comes with source-code generators for Lightspeed C 3.0, MPW C 2.0 and 3.0, Turbo Pascal, Lightspeed Pascal, MPW Pascal, and TML Pascal II. The code generators produce resources for all the interface items created and generate source code to create an application. If you're using Prototyper to learn Mac programming, you can tell it to generate fully documented code; if you're prototyping, you can suppress most of the comments to save disk space.

After you've generated the source code, load it into the chosen development system, compile it, and you've got an application with a user interface but without any functionality. The result is rewarding, but in many ways it's similar to a movie set: It looks great, but there's nothing behind it.

It's impressive, but it's not perfect. Although Prototyper supports lists, the code generated doesn't actually implement them in a useful fashion. To get them to function, you still have to do some significant programming. The same is true of icons, pictures, and highlighting default buttons.

Prototyper is useful for quick and easy application mock-ups, but it's more useful as an instructional tool — generating the code for a window, for example, and then examining it to learn about it. Prototyper's code is a little too sparse to qualify it as a useful automatic application generator, but it's still a fascinating and informative tool to help you learn Mac programming.

— Jeffrey Sullivan

Prototyper

List Price: $295
Manufactured by: Smethers-Barnes, P.O. Box 639, Portland, OR 97207; (503) 274-2800.
Version: 2.0
Requires: Mac Plus, 2800K drives or hard drive, System 4.1
Compatibility: All Macs with 1 megabyte.
Application Size: Prototyper 290K; C code generator, 245K; Pascal code generator, 240K.
Copy Protection: None
<table>
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<th>Pixel Paint 2.0 (SuperMac)</th>
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<tr>
<td>The first and best selling color paint program for Macintosh color systems has now been enhanced. Equipped with a new set of powerful features for graphics, desktop publishing and color preprocessing work. Comes with built-in Peroni color picker, color selector with screen angling, and FlexScan (new color scanning utility). Choose PixelPaint as your complete solution for color graphics. (price) $199.</td>
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**UTILITIES**

**PC Tools Deluxe**

Utility sets have always been popular with users and publishers. Following Symantec's success with SUM (Symantec Utilities for Macintosh), Central Point collected a set of its best programs and is selling it as PC Tools Deluxe, the same name it used for utilities packages for DOS machines. However, the seven applications, two DAs, and two INITs included in this package are Mac programs, not ports from other systems. PC Tools Deluxe evolved from Central Point's bestselling Copy II Mac (see Quick Clicks, March '89).

Several of the better programs in Copy II Mac are also included with PC Tools Deluxe.

One of the main reasons to buy a utilities package is to recover crashed disks or deleted files. PC Tools Deluxe uses a pair of applications that are quite good at recovery, if you've taken some preparatory steps before your disk crashes or your files are deleted. The applications are called Mirror and Rebuild. Mirror creates and automatically updates an alternative disk map and directory. Rebuild uses that file to recreate what seems to be gone.

Both have bare-bones interfaces, but that doesn't matter. They're simple to use, and they work. The initial versions of Mirror had a few problems that resulted in unusable files in rare circumstances. Central Point sent free updates to all registered owners as soon as it fixed the problem.

There's still one problem with Mirror: It can't split the files it creates, and if you have 50 or 60 megabytes on a hard disk, the Mirror file will become too large to store on an 800K floppy. Recovery is always easier if you can work from a floppy, since Rebuild doesn't have to painstakingly search the hard disk for the Mirror file.

Deleted files are best taken care of by MacTools and its accompanying CPSDeleteTracking INIT. Again, you need to do some advance preparation if you plan to use this feature: Place the INIT in your System folder and restart the Mac.

MacTools is a powerful and respected Mac utility. It's easy for beginners to use, and it has enough power to satisfy most
“For convenience, flexibility, and speed,...the 45MB removable is the clear winner.”

—MACWORLD, November 1988

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SuperMac standard graphics subsystems. A complete family of graphics cards and monitors for your business and your budget.

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When Apple* introduced the first color Macintosh,* SuperMac™ was first with a large display. The SuperMac 19" color monitor, combined with our 8-bit Spectrum color graphics card, extended the performance of the new Mac. And enabled new users to work more effectively with the sophisticated new wave of color software.

Today, SuperMac gives you even more ways to improve your work. With a new generation Spectrum/8™. And a complete family of color, grayscale, and monochrome subsystems. So you can choose the right graphics card and monitor for your work—and your budget.

And take full advantage of desktop publishing and presentation programs. Databases and spreadsheets. On any Macintosh II or SE system.

The Spectrum/8 (Series II) card for the Macintosh II. Get 256 colors or shades of gray on the most popular monitors. Including ours.

The Spectrum/8 supports all of Apple's standard graphics modes—1, 2, 4, and 8 bit. With up to 256 colors or shades of gray on a 1024 x 768 pixel display, the full area of SuperMac's 19" monitor. For sharp, brilliant images that look just the way they'll print.

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The Spectrum/8 works with SuperMac's 16" and
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SuperView for the Macintosh II family and Macintosh SE. To make the biggest projects as simple as black and white.

Designed exclusively for our 19" monochrome monitor, SuperView™ provides a display nearly five times larger than the Macintosh SE's built-in screen.

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Now there's a Spectrum/8 (Series II) designed just for the Mac SE/30.

We're first again. Supporting Apple's first compact color machine, with the Spectrum/8 for the Macintosh SE/30. Delivering the same high-performance capabilities we pioneered for the Macintosh II. Including the ability to support multifrequency monitors, and industry-standard NTSC monitors and projection equipment.

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See your authorized SuperMac dealer today. And choose the SuperMac standard graphics subsystem that's right for your Mac, your business and your budget.

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Use hardware pan to move instantly to any part of an image. Even if it doesn't fit on screen. And zoom to see your work at up to 2x magnification.

The first. And still champion.

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Everyone should be using version 3.8 or later.

PC Tools would be better if its elements were more integrated (like SUM’s). It doesn’t have the smoothness Mac users have come to expect. Still, every hard disk owner should have and use the hard disk backup and recovery tools that are included. When you consider the price of PC Tools Deluxe and the amount a crash can cost you, it’s a bargain.

— Ellen Hirome

**HARDWARE**

**MicroNet III-620**

Most Mac hard drives are sold by virtue of brand names, but if you look beyond the labels, you’ll find that most of the vendors are buying OEM (original equipment manufacturer) drives, putting them in cases, and packaging them with software drivers.

MicroNet Technology was founded on the principle that the name inside the box (the OEM of the drive mechanism) is as important as the name outside. Company founder Charles McConathy equates changing the drive mechanisms without telling consumers to General Motors’ putting Chevy engines into Oldsmobiles. MicroNet’s commitment to quality ranges from extensive testing of all drives (up to 24 hours for some mechanisms) to complete customer support (company president McConathy maintains an active presence on CompuServe’s MAUG forums). MicroNet also believes in matching drives to processors in terms of speed, so its drives for the Macintosh II are faster and have a larger capacity than the drives for the SE, which are, in turn, faster than the drives for the Plus.

The III-620, an internal drive, is one of the flagships of the company’s Macintosh II line. It’s an Imprimis (Control Data) Wren V full-height 5.25-inch mechanism with an average access time of 16 milliseconds (there are faster drives available, but this speed is quite respectable). The drive is easy to install, requiring only a Phillips screwdriver. (As always, if you’re not comfortable about the prospect of opening your Mac II, have your dealer install the drive for you.)

Once installed, the III-620 is ready to use, since it has been tested and formatted. The III-620 is an outstanding performer with 584 megabytes of available storage. The Wren V mechanism is very fast, and you should notice an immediate improvement in performance, particularly if the III-620 is replacing a low-capacity (20- to 80-megabyte) hard disk.

However, there are some problems with using such a high-capacity hard disk. Because of the way the Macintosh file system works, the minimum allocation unit for the drive is 9K, so even a 1-byte file will use 9K of disk space. There’s another problem with how the Finder manages the Desktop file: The Finder’s Desk
EMACdonald

"Old MacDonald had EMAC. Ee-ey-ee-ey-oh. And with EMAC he had great peripherals. Ee-ey-ee-ey-oh. With a hard drive here and a tape backup there, here a network, there a combo, everywhere a modem. Old MacDonald had EMAC. Ee-ey-ee-ey-oh."

Sequestered away in his little corner of the American heartland, Old MacDonald could have been content surfing those amber waves of grain and hanging out with the barnyard animals. But he set out to make the best darned Macintosh® compatible peripherals instead. A regular cornucopia of products all designed to give the Mac® the ultimate productivity boost. Internal and external hard drives. Tape backup systems with capacities from 20MB to 155MB. A 2400 bps modem. Ethernet® and AppleTalk® network adapters to tie it all together. And everything’s as sturdy as Old MacDonald’s cows, but a heck of a lot easier to operate.

EMAC - A full line of products and support from the company with a history of success.
top file is currently stored as a resource file, which limits how many resources it can hold. The explanation is very technical, but basically it means that you can have only 1,500 to 2,000 files on a disk.

Fortunately, there are ways around both problems. To circumvent the Desktop file problem, you can use the Desktop Manager, which is an INIT that comes as part of AppleShare. Apple has not made it available except as part of AppleShare, although it is rumored to be part of the next major system-software update. The Desktop Manager replaces the standard Desktop resource file with two data files, and it lets you have as many files on the disk as fit.

There are some drawbacks to Desktop Manager. Some users find that they get more "The application is busy or missing" messages when they double-click on document files. And disks cannot always be unmounted (that is, when you drag the disk icons to the Trash can, the icons don't go away).

There is another way to get around the desktop-file problem that also solves the allocation-block problem: partitioning. When you partition a drive, it's divided into multiple, smaller, logical drives. Each smaller drive has a smaller allocation-block size (4.5K for a 300-megabyte drive, 1.5K for an 80-megabyte drive, 1K for a 40-megabyte drive). Since each of the logical drives appears as a different disk to the Finder, they have individual Desktop files, which avoids the problems with large Desktop files. When testing this

drive, we used SilverServer from LaCie as the partitioning software, and it worked very well. Be sure to select software that does true partitioning, because some partitioning software — such as DiskCopy — does pseudopartitioning, which does not decrease the allocation block size.

Overall, the MicroNet II-620 is an excellent value. The drive is very fast, and MicroNet stands behind its reliability. The manual covers the installation process and how to care for the drive, and it even includes a section on how to use HFS (the Macintosh's Hierarchical Filing System) more effectively.

— Robert R. Wiggins

**COMMUNICATIONS**

**Accu-Weather Forecaster**

Everyone is interested in the weather — if only to remember to take an umbrella. Accu-Weather Forecaster brings you up-to-the-hour weather information in a combination telecommunication and weather-analysis package. It provides access to the Accu-Weather database (the same one used by professional news organizations) and displays the information in maps, charts, or text reports.

Forecaster’s primary source of data is the hourly station reports compiled by the National Weather Service. Before calling Accu-Weather, the program asks you to define a data request. A typical query might include local readings for a 24-hour period, the latest reports from stations in your region, and — for the big picture — data from the “top 100” national stations. As you add elements, the program estimates and displays the total connect time (in this case, about seven minutes) for the data package.

At the core of Forecaster is a slick telecommunications routine that minimizes connect time. One command calls out, logs on, downloads the data, logs off, converts the raw data for use by the program, and saves it on disk — all without any user intervention. As the data comes in, you can read it on-screen, although at 2,400 baud that can get hectic.

Forecaster can either display a chart with the 24-hour readings of your local

---

**MicroNet II-620**

**List Price:** $4,995

**Manufactured by:** MicroNet Technology, 13765 A Alton Parkway, Irvine, CA 92718; (714) 837-6033.

**Requires:** Macintosh II with low-profile SIMMs (also available as an external SCSI drive for any Macintosh with SCSI port).
The Right Choice... WriteNow.

"BEST NEW WORD PROCESSOR"
—MacUser Magazine, May 1989

"READER'S CHOICE"
—MACazine, January 1989

"GOLDEN GAVEL AWARD"

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WriteNow is the highest-rated word processor in the Macintosh world. MacUser Magazine said it best—"WriteNow wins best new word processor hands down."

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WriteNow has all the power business users need, including: Mail merge; 100,000 word spelling dictionary; multiple columns; in-line graphics; format accelerators (style sheet equivalents); outline indenting, character and word counting, fixed and flexible line spacing, and much more. As important, WriteNow is the fastest word processor in the Mac world, whether you've got a small Mac 512KE or a loaded Mac IIx.

<table>
<thead>
<tr>
<th>Copy &amp; paste large area</th>
<th>Search for a word</th>
<th>Spell check document</th>
<th>Change indent &amp; double spacing</th>
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<td>3 min. 55.1 sec.</td>
<td>39.4 sec.</td>
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</table>

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DaynaNET is one of the few networks that's 100% AFP and PAP compliant. Which means that it will work perfectly with everything Macintosh. As well as everything else made according to Apple's rules.

Yet as good as it is, DaynaNET can be made even better. By using it with DaynaTALK, the fastest LocalTalk network accelerator on the market. And DaynaMAIL, our top-notch E-Mail system.

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REAL ORK.
Accu-Weather Forecaster's satellite view shows the extent of cloud cover. But a high-pressure mass of cold air over eastern Canada pushes the brunt of the storm out to sea.

**Accu-Weather Forecaster's maps let you study curious weather behavior. The local picture in Boston best illustrates the anomaly. A light snow is falling despite the extremely high pressure reading. However, 20 miles west, in Worcester, the sky is clear.**

Although Forecaster is incomplete as a professional analytical tool, having access to the Weather Service "hourlies" may be worth the price.

Unfortunately, the maps are the weakest part of Forecaster. They lack geographical detail and, most importantly, do not convey information clearly. Pattern shadings are employed to differentiate values. They work best with the satellite cloud-cover views, but the often-indistinct boundaries are inadequate for displays of barometric pressure. Color (for the USA Today look) would help, but the program does not support it. If you overlay numerical values, the small maps get cluttered, and they can't be expanded for large screens.

Weak maps undermine the program's utility as a forecasting tool. I would have loved to see a map with isobars (lines connecting barometric pressure readings), but Forecaster can't generate one. I was reduced to drawing isobars by hand on printouts of maps with numerical labels. Also, the ability to superimpose two or more variables, such as temperature and pressure, on the same map would be invaluable for plotting out frontal systems. Another major improvement would be the inclusion of Canadian data. As far as Forecaster is concerned, the weather stops at the border of the contiguous U.S. — which also omits Alaska and Hawaii.

Better reports (aviation, marine, and such) are available if you access the Accu-Weather database interactively. But that significantly increases your on-line time and cost. Access charges are highest from 5 P.M. to midnight. To get the best rates, you must call between midnight and 5 A.M. — not the most convenient times.

Although Accu-Weather Forecaster is incomplete as a professional analytical tool, having access to the Weather Service "hourlies" may be worth the price of admission for some. I know of no other way to get this data as quickly or as efficiently. It is adequate for those interested in general information, hobby, or educational use, but professional forecasters should look elsewhere.

— Carlos Martinez

**Accu-Weather Forecaster**

*List Price:* $89.95; Accu-Weather Connect Fee, $39.95 (personal), $59.95 (educational), $79.95 (commercial); access rates vary:

- Monthly minimum billing, $10, $20, and $25 respectively; 50 percent surcharge for 2,400 baud.

*Published by:* Metacomet Software, P.O. Box 31337, Hartford, CT 06103; (203) 223-5911.

*Version:* 1.05

*Requires:* 1 megabyte and one 800K drive; 300-, 1,200- or 2,400-baud Hayes-compatible modem. Printer highly recommended.

*Compatibility:* All Macs with 1 megabyte.

*Application Size:* 250K

*Copy Protection:* None
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Specifications:
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__ Apple II version __ DeskMate version
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MODEMS

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<th>Manufacturer</th>
<th>Model</th>
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<td>Abaton</td>
<td>InterFax 12/48</td>
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<td>Best Data Products</td>
<td>SmartOro 2400/1200</td>
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<td>CMS MS2400BXM</td>
<td>Hayes Microcomputing</td>
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NETWORKING SOFTWARE & HARDWARE

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<tr>
<td>MacMOD 2400SE (int. Mac II w/MS Works)</td>
<td>$369</td>
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Puzzle Gallery by Miles Computing

Puzzle Gallery: At the Carnival. The author of The Fool's Errand brings you 40 attractions stuffed with 180 challenging new puzzles, complete with 58 different digitized sounds and Mac II color. Can you survive Hazard Park?... $32.

FINANCIAL/OTHER SOFTWARE

<table>
<thead>
<tr>
<th>Manufacturer</th>
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<td>Supreme</td>
<td>DiskFit 1.5</td>
<td>MAC, PC</td>
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<td>Microsoft Mail-1-4 users</td>
<td>Oldiaviz Software Clip Share</td>
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<td>w/Charter Kiss</td>
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BUSINESS SOFTWARE

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<td>C.A.T.</td>
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<td>MacMail</td>
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<td>THINKMAKER</td>
<td>Individual 101 Macros For Excel</td>
<td>MAC, PC</td>
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<td>Microsoft Excel 2.0</td>
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PRINTERS & DIGITIZERS

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<td>CMS 2400BMX</td>
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ELECTRONIC/CREATIVE SOFTWARE

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<tr>
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<td>Deluxe Music Construction Set</td>
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<td>DRAGON BOX</td>
<td>Dinosaur Discovery Kit</td>
<td>MAC, PC</td>
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<td>EVENMORE</td>
<td>Storybook or Rhyming Notebook</td>
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<td>GREAT WAVE SOFTWARE TOOLS</td>
<td>KidsTime</td>
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<td>MAC II POWER</td>
<td>Crystal Paint</td>
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<td>Individual Typing Encore</td>
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<td>Learning Company Reader Rabbit</td>
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<td>Mindscape Perfect Score SAT</td>
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<td>The Perfect College</td>
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<td>Niles &amp; Associates End Note</td>
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<td>Springboard Top Honors</td>
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<td>Filiberty Metalls or Atlas Explorer</td>
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GOfer by Microlytics, Inc.

GOfer is the ultimate desk accessory for finding hidden facts. Give GOfer a phrase, fact or date and send him looking through floppies, hard disks, ram disks and most networks. Search for up to eight items simultaneously. GOfer allows you to view cut and paste. Multifinder and Hypercard compatible plus AND, OR, NOT and Nearby search criteria. GOfer a real find... $43.
Simply Accounting by Bedford Software

Simply Accounting, for small to medium size businesses, is sophisticated enough to please CPAs but simple enough to allow accounting and computer novices to understand and use the power of a full accounting program. Includes general ledger, accounts payable, accounts receivable, payroll (50 state and federal tax schedules built-in), inventory and jobcost. It received a 7.9 rating from Infoworld and four mice from MacUser. $219.

MAC-101 Keyboard by DataDesk

Replace your Mac’s keyboard with the MAC-101 by DataDesk. The replaceable tactile, firm feel keyboard includes 15 function keys, 6 page control keys, and a T-style cursor pad. Includes 101-key desk accessory software, a powerful macro utility that allows you to exploit the full power of the Mac. Available in ADB and non-ADB versions. $145.

UTILITY SOFTWARE

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<td>Disk Express</td>
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<td>Font/DA Juggler Plus</td>
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<td>A.S.D. FileGuard</td>
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<td>Berkeley System Design</td>
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<td>Beyond Inc. Menu Fonts 2.0</td>
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<td>PC Tools Deluxe Mac</td>
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<td>CE Software</td>
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<td>QuickKeys (Macro Program)</td>
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<td>MultiPackage Plus Utilities</td>
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<td>Fifth Generation Systems</td>
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<td>Insight Development</td>
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<td>MacPrint</td>
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<td>MainStay AntiVirus or ClickPaste</td>
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DATABASE MANAGEMENT

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<tr>
<td>Acuis 4th Dimension</td>
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<td>Activation</td>
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<td>Apple Computer</td>
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<td>Borland Reflex Plus</td>
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<td>Claris</td>
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<td>ProVUE Panorama</td>
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<tr>
<td>Software Discoveries</td>
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Cutting Edge 800K Drive by Cutting Edge

The Cutting Edge 800K floppy disk drive takes advantage of the newest technology to offer high speed, low noise, high reliability in a compact, stylish case. The Cutting Edge 800K floppy drive is compatible with all new RCM Macs including the Mac SE and Mac II. The Cutting Edge 800K would make an attractive addition to many Macs. $149.

MAIL-ORDER POCKET

<table>
<thead>
<tr>
<th>Software Name</th>
<th>Price</th>
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<tbody>
<tr>
<td>Simply Accounting by Bedford Software</td>
<td>$219.00</td>
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<td>MAC-101 Keyboard by DataDesk</td>
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<td>Utility Software</td>
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<td>Database Management</td>
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<tr>
<td>Cutting Edge 800K Drive by Cutting Edge</td>
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**ACCOUNTING PACKAGES**

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<th>Software</th>
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<td>Active TimeMinder</td>
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<td>Actix Payroll Plus</td>
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<td>Rags to Riches Gen. 3-Pak</td>
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<td>Chillar GL, AR, or AP</td>
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<td>Check Mark MultiLedger</td>
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<td>Payor</td>
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<td>Dac-Easy Light</td>
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<td>Intuit Quicken</td>
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<td>Layered Insight OneWrite</td>
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<td>Insight Expert INV or Time Billing</td>
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<td>Insight Expert GL, AR, or AP</td>
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<td>MEGA Managing Your Money</td>
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<td>Monogram</td>
<td>$159</td>
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<td>Business Sense</td>
<td>$159</td>
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<td>Dollars &amp; Sense 4.0</td>
<td>$159</td>
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<td>Peachtree</td>
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<tr>
<td>Back To Basics Professional</td>
<td>$159</td>
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<td>Setor Software Components GL</td>
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<td>Survivor Software</td>
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**COMMUNICATION SOFTWARE**

<table>
<thead>
<tr>
<th>Software</th>
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<tr>
<td>Compuserve</td>
<td>$24</td>
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<tr>
<td>Compuserve Starter Kit</td>
<td>$45</td>
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<td>Compative Navigator</td>
<td>$45</td>
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<tr>
<td>DataViz</td>
<td>$115</td>
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<tr>
<td>MacLink Plus w/ CadCam</td>
<td>$139</td>
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<td>Freesoft</td>
<td>$54</td>
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<tr>
<td>RedRyder V10.3</td>
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<td>Hayes Smartcom II 3.1</td>
<td>$68</td>
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<td>Insigna SoftPC</td>
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<td>Prometheus/MackNOWLEDGE</td>
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<td>Software Ventures</td>
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<td>Microphone II v3.0</td>
<td>$249</td>
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<td>Special 219</td>
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<tr>
<td>Solutions, International</td>
<td>$125</td>
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<td>BackFax</td>
<td>$125</td>
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<td>Synergy Software VersaTerm</td>
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<td>VersaTerm-PRO</td>
<td>$64</td>
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<tr>
<td>Traveling Software LAP-LINK</td>
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**GRAPHICS SOFTWARE**

**3D Graphics**

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<td>Images w/Impact Graphics &amp; Symbols</td>
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<td>Images w/Impact Business 1</td>
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<tr>
<td>Adobe Systems Adobe Illustrator 88</td>
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<td>Pro3D</td>
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<td>Adobe Collector's Ed. 2</td>
<td>$259</td>
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<td>Newsletters</td>
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<td>Forms &amp; Schedules</td>
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<td>Presentations</td>
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<td>ITC Garamond (R)</td>
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<td>Helvetica Condensed (14)</td>
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<td>Stencil, Kobo, Brush (53)</td>
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<td>Life (53)</td>
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<td>Concord (84)</td>
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<td>Gotham 13/Tempo (65)</td>
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<td>Adobe Fonts (Various)</td>
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<td>Aldus Freehand</td>
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<td>Studio 1</td>
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<td>Comic Strip Factory</td>
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<td>Comic Graphic</td>
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<td>Graphisoft Mini CAD +</td>
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<td>Informix Wings</td>
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<td>Residential Construction</td>
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<td>Dreams</td>
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<td>Letraset ImageStudio 1.5</td>
<td>$275</td>
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<td>Macromind MacroMind Director</td>
<td>$449</td>
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**FASTAT by SYSTAT**

FASTAT is a new statistics and graphics package for the Mac that is accurate and easy to use. Use it for graphics, tables, financial projections and surveys. FASTAT has more features and statistical routines than Macstat packages costing over twice as much. Fast help, 3D scatterplots and surfaces, MacDraw-like tools, and color make FASTAT spectacular. ........... $185.

**COMMUNICATION SOFTWARE**

<table>
<thead>
<tr>
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</tr>
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<tbody>
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<td>Freesoft</td>
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<td>Prometheus/MackNOWLEDGE</td>
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<td>Software Ventures</td>
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<td>Microphone II v3.0</td>
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<td>Special 219</td>
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<td>Traveling Software LAP-LINK</td>
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</table>

**FASTAT by SYSTAT**

FASTAT is a new statistics and graphics package for the Mac that is accurate and easy to use. Use it for graphics, tables, financial projections and surveys. FASTAT has more features and statistical routines than Macstat packages costing over twice as much. Fast help, 3D scatterplots and surfaces, MacDraw-like tools, and color make FASTAT spectacular. ........... $185.

**COMMUNICATION SOFTWARE**

<table>
<thead>
<tr>
<th>Software</th>
<th>Price</th>
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<tbody>
<tr>
<td>Layered Insight OneWrite</td>
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<td>Insight Expert INV or Time Billing</td>
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<td>MEGA Managing Your Money</td>
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HYPERMEDIA & LANGUAGES

- Beacon Technology
  - HyperWiki King James
  - HyperBible International
- Borland Turbo Pascal
- Bright Star Technology
- Hyper Animator
- Consulair
- Sony
- Stellaris
- HyperMedia

HYPERMEDIA & LANGUAGES

- Microsoft Quick Basic
- HyperPress Script Expert
- Bright Star
- Borland Turbo
- HyperBible

HYPERMEDIA & LANGUAGES

- HyperWiki King James
- HyperWiki International
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Bulk Mailer & Bulk Mailer Plus by Satori Software

Bulk Mailer ($78) and Bulk Mailer Plus ($199) can run circles around any simple database mailing program. Both powerful mail list management systems have the ability to print labels for up to 90,000 names per list. Each program contains duplication elimination, various sorting capabilities, ability to utilize all of the fonts and styles available with your system, mail merge and envelope printing, and more.

Accessories

**ACCESSORIES**

Cutting Edge
Cutting Edge MK-10SDK
Keyboard w/Quickeys
145.

DataDesk
MAC-101 Keyboard/Beige
(128k/32k & MacPlus)
Special 145.

MAC-101 ADB Keyboard/Platinum
(Mac SE & Mac II)
Special 145.

Ergolton
MouseTrack 360°
15.

MacTilt (Mac SE or II)
68.

Mouse
62.

Parallax
MacRecorder Sound System
(Max SE or Mac II System)
135.

Goldstein & Blair
Macintosh Bible 2nd ed.
20.

Impulse
Audio Digitizer w/ soundware
139.

I/O Design
Mac Luggage in Navy or Oat
54.

MacLuggage Plus Carrying Case
75.

Macintosh SE Carrying Case
49.

ImageWriter II Carrying Case
49.

Dreame (Hard Disk Case)
49.

Kilmar Designs
Backwood Roll-Top Desk Cases
Micro Cabinet (holds 45 disks)
14.

Double Micro Cabinet
(holds 90 disks)
21.

Triple Micro Cabinet
(holds 135 disks)
31.

Kensington
Mouseway (Mousepad)
8.

ImageWriter or ImageWriter II Cover
9.

Macintosh Plus/SE Dust Cover
9.

Apple Security Kit
34.

Anti-glare Polishing Filter
33.

Mac II Stand and Cable Kit
62.

Mac II Monitor Stand
65.

Power Tree Surge Suppressors
(10, 20, or 50)
24.

Printer Muffler Stand (80 & 132)
Printer Muffler 80
43.

System Saver Mac
(Blue or Platinum)
64.

Space Saver Printer Stand
17.

Super Base
34.

System Saver SE
52.

Masterpiece Mac II
105.

New Turbo Mouse (Reg. or ADB)
119.

Universal Copy Stand
22.

Universal Printer Stand
15.

Lynx Computer
65.

Muffles
Fanny Mac QT
60.

Mouse Systems
A+ Mouse (MacPlus)
65.

A+ ADB Mouse
85.

Moustak
MousePad 7" x 9" Size
8.

MousePad 9" x 11" Size
9.

Orange Micro
Orange Micro
20.

Color Ribbon
20.

Grappler Spooler
39.

Grappler C/Mac/GE or Alphabits
79.

Grappler L/O or Grappler L/S
103.

Ribbons
Available in Black, Blue, Brown,
Green, Orange, Purple, Red,
Yellow, Silver & Gold
Available in Black, Blue, Brown,
Green, Orange, Purple, Red,
Yellow, Silver & Gold

Business Sense

Business Sense is serious business software for the small to medium size business. It's easy to use and hard to outgrow. General Ledger, Accounts Receivable, Accounts Payable, Payroll, Invoicing and Budgeting functions are fully integrated in one powerful package. All this power is easy to use. If your business has what it takes, Business Sense from Monogram can take you all the way. $279.

FastTrack Schedule 1.02

Create and update Gantt chart schedules quickly and easily! Draw bars on screen, using your unlimited library of bar types; add graphics and wrap-around text blocks; imports and exports activities, you're in charge! $115.

OUR POLICY

- VISA and MASTERCARD accepted. No surcharge.
- Your credit card is not charged until we ship.
- If we must ship a partial order, the shipment that completes the order is sent freight free.
- All shipments insured; no additional charge.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment.
- No sales tax except orders shipped within CT, add 7.5% tax.
- COD maximum $1000, cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items subject to availability.
- Call us anytime Monday thru Friday 9:00 to 9:00 Eastern Time, or Saturday 9:00 to 6:00 Eastern Time. You can call our business offices Monday thru Friday 9:00 to 5:30 Eastern Time at (203)378-3960.
- Purchase Orders accepted at our discretion, for more information call (203)378-1926, 9:00 to 5:30 Eastern Time.

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- Continental U.S.: Add $3.00 per order to cover Airborne Express Overnight, unless UPS ground delivers next day. Some areas require an additional day.
- All (in-stock items) ordered by 6:00PM Eastern Time Monday thru Friday ship that evening. Barring computer failures or other catastrophes.
- Mail-in orders (especially from foreign countries), please furnish telephone or fax number.
MacPrint 1.1
by Insight Development

Introducing MacPrint 1.1, an easy-to-use software package that lets you use virtually any Mac application on alternative printers. Including HP LaserJet, Series II, IID and compatibles and the HP DeskJet and DeskJet Plus. Use MacPrint 1.1 for true WYSIWYG performance. Four Compugraphic font families are included with point sizes from 9 to 96. Completely transparent after installation. .... $79.

DISK DRIVES/HARD DISKS/UPGRADES

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<tr>
<th>Model</th>
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<td>CMS MacSnap 548E (512e to 2MB)</td>
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<td>SD Ser. MacStack SD/20 (Mac+/SE)</td>
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<td>Cutting Edge Cutting Edge Wedge 800k Drive</td>
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<td>Cutting Edge Wedge XL 30</td>
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<td>Plus SCSI Hard Drive</td>
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<td>Cutting Edge Wedge XL 45</td>
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<td>Everest</td>
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<td>Dolphin Systems Flipper 44</td>
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<tr>
<td>Integra Series 20-80</td>
<td>Special Call Multiscreen Video Card</td>
<td>349</td>
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MicroPhone II V3.0
by Software Ventures

This stunning new version of the top telecom software for the Mac offers the most comprehensive collection of file transfer protocols including ZMODEM: unmatched power in scripting, color, sound and support for XCMDs and XFNCs. ......... $219.

Data East Super Hang On
Discovery Software
Ancorag
Electronic Arts
CheatMaster 2100 or Hunt for Red October
Chuck Weaver Flight Simulator or Life & Death
Smartsoft I
One-On-One, Pinball Construction Set, Seven Cities of Gold, Skybox, or Pillion vs Rommer
Epyx
Sub Battle Simulator (Mac or MacII)
Hiden Software
Bang on N
Hyper Press Silver Screen
Infinity Software, LTD.
Go or Grand Slam Tennis

ENTERTAINMENT SOFTWARE

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<td>Leather Goddesses of Phobos</td>
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<td>Beyond Zero or Hitchhiker's Guide</td>
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<tr>
<td>Zork Trilogy or Quarterstaff</td>
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<td>Zork I, II, and III</td>
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<td>MicroPro Pirates</td>
<td>32</td>
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<td>Microsoft Flight Simulator 1.02</td>
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<td>Miles Computing Inc. (Harrier Strike Mission II or The Fox)</td>
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<td>Practical Computer Applications</td>
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<td>Lunar Rescue</td>
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<td>MacCourses</td>
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Go Master & Joseki Tutor
by Toyoyo, Inc.

Go, the oriental strategic board game. Go Master ($49): world's strongest playing program, "one of the most extraordinary automated aids to Go instruction developed" (MacWorld June '89). Joseki Tutor ($30): advanced corner-opening study.

C•A•T
by Chang Labs

C•A•T lets you organize and keep track of the Contacts, Activities, and Time that are crucial to the effective operation of your business. C•A•T features data sharing within work groups, twelve changeable sorting categories, versatile custom report formatting and import/export capabilities for a wide array of Macintosh programs. C•A•T eliminates clerical drudgery with mailmerge, labelling and calendar functions. .... $229.

Smart One 2400XMAC
by Best Data Products

The Smart One 2400XMAC — a complete package for the Mac. Includes free communication software, free cable assembly, free access to CompuServe and Compuserve Professional Information Network. 100% Hayes compatible. Two year warranty. .... $189.

SMS MacSnap
DISK DRIVES/HARD DISKS/UPGRADES

1 Meg SIMMS Call MacSnap 548 (10/2M) | 459 |
CMS MacSnap 548E (512E to 2MB) | 549 |
SD Ser. MacStack SD/20 (Mac+/SE/II) | 595 |
MacSnap 548S | 589 |
SD Ser. MacStack SD/20 (Mac+/SE/II) | 786 |
MacSnap Plus 2 (MacPlus to 2MB Non Expandable) | 439 |
Cutting Edge Cutting Edge Wedge 800k Drive | Special 1,499 |
Cutting Edge Wedge XL 30 | 1,099 |
Plus SCSI Hard Drive | 539 |
Cutting Edge Wedge XL 45 | 669 |
Plus SCSI Hard Drive | 899 |
Dolphin Systems Flipper 44 | Special 1,129 |
Integra Series 20-80 | Special Call Multiscreen Video Card | 349 |


Software: MacPrint 1.1. This stunning new version of the top telecom software for the Mac offers the most comprehensive collection of file transfer protocols including ZMODEM: unmatched power in scripting, color, sound and support for XCMDs and XFNCs.


Programs Plus.


Programs Plus.

Clearly in a class by itself.

That’s how MACazine judged the MAC-101; our advanced keyboard for the Macintosh.

It’s not hard to see why.

With the MAC-101, you can work the same fast, simple way your mouse works—without leaving your keyboard.

And turn functionless function keys into a major resource.

It’s the only keyboard that works with every model Macintosh.

It’s also the only one Microsoft recommends for Word 3.

The only one Aldus recommends for PageMaker.

The only one Ashton-Tate recommends for FullWrite Professional.

And the only one Letraset recommends for Ready, Set, Go!

Function is as function does.

Since the function keys on an Apple Extended Keyboard don’t relate to most Macintosh software, their only real function is to take up space.

But MAC-101 can find them a real job. By using our MasterStrokes enhancement software to assign them dozens of mouse or keyboard commands.

Even functions that would otherwise need numerous keystrokes—

or mousestrokes—can now be assigned to just one key.

Feeling is believing.

Obviously the MAC-101 is great news for every Mac user.

But for IBM* types who are feeling their way around on the Mac, the news is even greater.

Because our keyboard is laid out in a standard configuration that’s identical to the IBM PC.

Which means that anyone who’s used to an AT or PS/2—or a Selectric—for that matter—will instantly know the MAC-101 like the back of their hand.

And type on it accurately, with the confident touch that comes only from tactile, positive-response keys.

…”Superb.”

That’s how PC Magazine sizes up the MAC-101. While MacWEEK calls it “the most important accelerator you can buy for a Macintosh.”

You can buy it for under $195—software included.

And since it carries a two-year warranty, you’ll be enhancing your piece of mind right along with your Mac.

So call 800/826-5398 (in California 800/592-9602) and find out where you can lay your hands on the MAC-101.

Once you do, you won’t let go.

DataDesk
7651 Haskell Ave, Van Nuys, CA 91406 • (818)780-1673
FAX (818)780-7307
All individual trademarks and copyrights are acknowledged.
r. Sculley is fond of pointing out that this is the Age of Information. In this, as in his concern for the fate of the Amazon Rain Forest, Sculley is probably right. (Remember, you read it here first.) If you quibble with that characterization, just take a look at the recent-nonfiction table at your local bookstore. Every other title seems to include information — how to get it, what to do with it, how to keep it, why you want it. The Whole Earth people have come out with Signal: Communication Tools for the Information Age (edited by Kevin Kelly), and there’s even a book called Information Anxiety (by Richard Saul Wurman).

Of course, Sculley is not the only person to belabor this point, nor is he the first or last. (I would like to be the last, but that’s a faint hope at best.)

When this claim comes up at an Apple press event, the audience just rins — some in agreement, some in their sleep. Those of us who attend such things have heard it so often that we don’t really bother to think about it. We should.

What exactly do we mean by “The Age of Information”? Well, children, the answer to that lies in the dim and misty past of the computer industry. The full implications of the answer lie somewhere in our future.

It’s not as if somewhere early in the late 20th century there was an information explosion, and suddenly there was more information. Ultimately, the amount of information is constant; there’s everything there is to know and there’s what we’ve managed to uncover of it. The most radical change is in how we access information, rather than in the size of the database.

Which brings up interesting questions about the means of access and often-uncomfortable questions about who has that access. If access is limited only to those who “know” computers, we have a particularly insidious form of elitism. And elitism is no better just because you expect to be a member of the elite. Almost before computers first arrived, in all their behemoth glory, and pundits were predicting that personal computers were a chimerical pipe dream, people were already touting their virtues as information machines. In fact, there were two main attitudes toward computers from the beginning. They were going to usher us into a genuine brave new world of technological advances and universal social benefits and advancement. They were also going to put a lot of people out of work.

The plain facts of the matter are that we’ve seen very little of the first, while the truth of the latter has been forced on a significant number of people. I started out working on newspapers in the southern United States that were still using what we called hot type. Large ingots of lead were melted down and fed into typesetting machines; one man, one machine. Shortly afterwards, punch tape came into play: one man, many machines. Then came “cold type,” what we use today and call repro. No one was needed on the typesetting machines; it was a whole new ball game, requiring new skills and training. You’d be very hard-pressed indeed to convince those typesetters that computers benefitted society.

But in order to realize the social-benefit potential of computers, that’s exactly what we have to accomplish: convince just about everyone that there’s a solid, legitimate reason for putting up with the short-term difficulties of making computers a func-

The Soul of a New Society

How we access information — not the size of the database — is what’s really changing.

By Louise Kohl
GOOD NEWS FOR SUITCASE USERS

HOW TO JUGGLE THE MOST FONTS FOR THE LEAST MONEY

ALSoft's NEW MasterJuggler 1.5 gives you amazing resource handling power with unprecedented access to an unlimited number of fonts, DA's, F-Keys and sounds. Now, you can open up to 120 resource files instantly—that's 20% more files than with Fifth Generation's Suitcase™. MasterJuggler 1.5 also has FontDirector™, the remarkable new feature which automatically eliminates all font NFT numbering conflicts without resorting to utilities which modify your fonts. Suitcase can't even touch that. Not at any price. Plus, only ALSoft's new MasterJuggler 1.5 lets you handily open applications or documents and switch between multiple applications from within any application. But just because you have Suitcase, doesn't mean you have to be stuck holding the bag.

HOW TO GET THE NEW MASTERJUGGLER 1.5 PACKAGE

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<td>Suitcase</td>
<td>Photocopy $25.00 + $3.00</td>
<td>Customer</td>
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<td>Photocopy $25.00 + $3.00</td>
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<td>1.5 Update Only*</td>
<td>Registered $10.00 + $3.00</td>
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</table>

Whether you're in a large network, or you're one person juggling hot projects with a Mac and a mouse, the new MasterJuggler 1.5 will make a big difference.

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

Paper mill town in the Blue Ridge Mountains—sort of a suburb of Appalachia. Not far from where I lived, neither of these was in great supply.

The realization of the full potential of computers is not simply a matter of better interfaces and CPUs; it's not even a matter of more-intelligent and more-global networks. It is a matter of education and social responsibility. The "Macintosh community" is not some specially blessed alternative world to society as a whole. All of us who make up the Mac community and the computer industry are first members of society. So if your answer is that "it's society's (or the government's) job," it might be time to realize that society—and the government—is just us, just people, not some separate magical entity. Although it may make some (but not much) sense to ghettoize ourselves as the Mac community, separate from the DOS world, this is an arbitrary and imaginary division, like national boundaries on the map. Actually we are all card-carrying members of an exclusive group: Homo sapiens. And a certain responsibility comes with the job description.

We can take pride in being members of the Macintosh Revolution, as we take pride in being members of, say, the Democratic party or the National Honor Society or the Software Publishers Association. No more, no less. And this pride cannot replace responsibility to the greater community out there. We've been living with the dream and experiencing the reality for a long time now; it's time to bring them together and make the dream reality.
Imagine importing live video from a variety of sources directly into a window on your Macintosh II. Personal Vision™, the new video digitizer card also known as PV™, integrates video with the text and graphics of your favorite desktop publishing or presentation programs. The “film clip” can also be interactive video managed through an expanded HyperCard™ or SuperCard™ stack.

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We couldn’t claim that **NEW FASTBACK II** is the most powerful backup system on the market ...unless we had some powerful data to back it up.

<table>
<thead>
<tr>
<th>Feature</th>
<th>FASTBACK II</th>
<th>DiskFit 1.5</th>
<th>Redux 1.5</th>
<th>HD Backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back up to any HFS device</td>
<td>YES</td>
<td>*</td>
<td>*</td>
<td>NO</td>
</tr>
<tr>
<td>Data compression</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Auto-formats without time tags</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Restores backups from PC</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Built-in macros</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Scheduled macros</td>
<td>YES</td>
<td>NO</td>
<td>#</td>
<td>NO</td>
</tr>
<tr>
<td>Multiple setup files</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Prints labels (ImageWriter &amp; LaserWriter)</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Speed: 1 mg/min Mac SE</td>
<td>1 min.</td>
<td>6 min.</td>
<td>3.75 min.</td>
<td>5 min.</td>
</tr>
</tbody>
</table>

* Most require a separate driver.
# Allowed to save preferences, not multiple setup files.

And these are merely a few of the many exclusive features that make new **FASTBACK II** the fastest, easiest and most powerful backup software for the Mac you can buy. Only **FASTBACK II** gives you data compression and compatibility with virtually any HFS device. And you'll have data security features that assure the safest backup you can make. You'll have maximum file selection flexibility with powerful backup and restore options so you can easily tailor the process to your own particular needs. In short, you'll finally have a system that ensures regular backup, **FASTBACK II**, specifically created for the Mac, and designed to fit smoothly into your corporate computing environment.

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Getting It Right

Knob's now how sometimes something just feels right? A good mountain bike, maybe; or a favorite fountain pen; or a jacket that fits perfectly when you try it on? Or maybe a software program that follows the Mac interface so perfectly that you really did know how to run it the minute you booted it, and you still haven't cracked the manual?

Computers can be like that — once in a very great while.

The best example for me of the just-right computer — and the only example until recently — is Toshiba's T3100, a powerful MS-DOS laptop that appeared about three years ago. That was when the now-creaky Intel 80286 chip was riding high and IBM's PC AT was King of the Hill in the DOS world.

PC ATs, of course, are very much desktop computers — about the size of Mac IIs but heavier and clumsier. Only Paul Bunyan would try putting one on his lap, much less toting it around. But for their time they seemed very powerful, so we put up with their size and weight, and when we left the office we used something feeble, such as the Radio Shack Model 100 or Toshiba's early, klutzy T1100.

Then came the T3100. It was small — it fit into an attache case, though it also filled that attache case — and black and sleek. It had a dazzling, wiry-sharp electroluminescent display that made me forget about color. It had an internal hard disk. An internal modem. A great keyboard.

From the minute I saw the machine, I loved it. From the minute I worked with it, I knew I wanted one. And from the minute I got one — a month later — I began traveling with it. It now has about 500,000 miles on it, and I use it still.

It was the first personal computer that was absolutely right.

Why am I rhapsodizing about a three-year-old DOS computer? Because that quality of rightness is so rare in comput-
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slot design of the IIcX CPU box exploits what has become an important Mac II-series advantage: you don’t have to fill the machines up with add-in cards, because so much is built in by Apple.

Naturally, you can also get color monitors and video boards for the IIcX, and a bigger, two-page, Apple-labeled monochrome monitor as well. But that screws up the equation. That lovely little box, with the width-matched tall-screen monitor on top, is the best office computer I’ve ever used.

Apple even got the little things right. For example, the power and video cables provided with the monitor are more than six feet long—long enough to allow you to put the CPU unit on the floor or on an adjacent bookshelf. And there are even Apple Desktop Bus connectors for the keyboard and mouse on the monitor itself, so you don’t have a maze of wires running everywhere.

In the midst of this paen to one of the two best computers I’ve ever used, I now have to spill a little acid. Because Apple, still held in thrall by John Sculley’s single-mindedness about gross margins über alles, has committed another serious pricing mistake. At about $9,000 list for a reasonable configuration, the IIcX is too expensive by at least a third. At exactly the wrong moment—just before the OS/2 wave breaks and just before Microsoft finally gets it together with Windows; just before the OPEN LOOK/Motif UNIX-graphical-interface wars break out into the open; just before Sun’s incredibly aggressive SPARCintosh onslaught hits the stores; just before the NeXT people ship real computers, not “version 0.9” machines; just before the Chips & Technologies and other Mac-clone wars begin—Apple has gone for margins rather than market share.

That’s a stupid gamble for Apple: this is the moment it should be extending its reach, building market share, locking customers into Apple-brand solutions. The box is just right. If Apple can fix the front-office problems of the IIcX, it can become the most important computer Apple has ever built.
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For powerful, affordable solutions, call Microtech. We hear you.
longtime readers may find the title of this column vaguely familiar. In the July '87 issue of MacUser, my column title was "Word 3, Users 0." That column was a thorough condemnation of the extremely buggy original version of Microsoft Word 3.0. "Word 3, Users 0" was one of the first negative pieces on Word 3 (the early reports were unanimously positive because most of the writers worked with beta-test versions and expected all the bugs to be ironed out before it shipped), but it wasn't the last.

Microsoft quickly released a bug-fix version, 3.01, but it failed to squash all the bugs, and it wasn't until release 3.02 that Word 3 was really stable enough to use. By that time, the damage to Microsoft's and Word's reputation had been done. In its haste to avoid the numerous shipping delays experienced by competitive products such as FullWrite Professional, Microsoft had committed the worse sin of shipping an unfinished and unstable product.

After the debacle of Word 3, though, something truly amazing happened: Microsoft changed. From the bottom of the company to the top, people paused to examine the situation. High-level executives went out into the real world and talked to their customers and members of the press to find out what was needed to make Word better. Programmers considered new ways of doing things. As a company, Microsoft learned from its mistakes and vowed not to repeat them.

When the January '89 Macworld Expo rolled around, everyone expected to see the new, improved Word 4.0. "Not just yet," said Microsoft. "We're still debugging." More months went by, and still there was no Word 4.0. In anticipation of Word 4, Microsoft stopped shipping Word 3. The delay in finishing Word 4 meant that retail channels began to clear out, and Microsoft's sales began to fall, which meant lower earnings that, in turn, contributed to a drop in the company's stock price. But still Microsoft didn't waver. Never again was it going to let a short-term quest for immediate profits cost it the long-term loyalty of its customers.

New products would ship when they were ready, and not until they were fully debugged.

When Word 4.0 finally shipped in April, it was well tested, well documented, and well debugged. Microsoft has learned its lesson and deserves congratulations for having the courage of its convictions. But the fact that Word 4.0 was so thoroughly tested is only half the story. Word 4 is also a giant leap forward meaning that Word 4 is completely flexible. The most significant change, from an interface perspective, is Page View, which makes Word WYSIWYG for the first time, although you can still have the speed of the old Draft mode if you prefer. Word 4 at long last has a standard Font menu, but the Format Character dialog box is also available. No longer are there functions or commands that can be performed only from the keyboard; every function (including indexing and table-of-contents notation) has a menu option. In fact, Microsoft has carried menu management to new heights, allowing you to completely customize which commands appear on which menus. Using this command customization, you can actually make Word 4 look like other word-processing programs.

A few areas in which Word was already strong still had room for improvement. One of Word 3's most powerful features was side-by-side paragraphs that let you create irregular columns, but that power came with some drawbacks. Word 4.0 replaces this mechanism with an even more useful table feature. A Word 4 table allows you to have access to a spreadsheet in the middle of

If you've become one of the Word schizoids who have a love/hate relationship with the program, take a look at Word 4.

By ROBERT R. WIGGINS
ROLL OVER BEETHOVEN.

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Word. Each column of a table can be formatted independently, which is how it replaces side-by-side paragraphs. And tables are WYSIWYG even in the Draft mode.

Word 4 also adds some little touches that Word users have long desired, such as a word counter. There's a lot more to Word 4 than there's room to cover in a column. This is not a review (but the title hints how I would rate the program if it were). For an in-depth review, you'll have to look back a month to "The Latest Word" in the July issue. And you should read an in-depth review. If you're like me, Word 3, with all its problems and shortcomings, was enough to turn you off Word forever. Or perhaps you've become one of the Word schizoids who have a love/hate relationship with the program. If you fall into either of these camps, you really should take a look at Word 4. It's come a long way, and you may find that your pet peeves were addressed, as mine were.

PINSTRIP

Pinstripe Picks

Some other word-processing-related products you may want to look into for use in your business:

Thunder II (Electronic Arts). A spelling checker in a cede. Can be automatically enabled in selected applications and offers both real-time and after-the-fact checking. Supports multiple dictionaries and glossaries and even checks for some capitalization and punctuation errors.

QuickLetter (Working Software). A letter writer in a desk accessory that makes dashing off letters quick and easy. Supports multiple open documents, default stationery, automatic vertical centering, address books, and PICT letterheads. Produces envelopes, too, including special messages.

MacWrite II (Claris). The original word processor for the Macintosh has been improved enough to move it into the intermediate word-processor category (see review in this issue). Substantially different from the old MacWrite, with features such as mail-merge and spell checking. Worth a look if you don't need all the power of Word.
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Need to reach out and touch some ones and zeroes? Here's help in choosing telecommunications software that fits the bill.

If you're ready to enter the vast world of telecommunications, you need to choose from a dizzying array of programs with a wide range of power and features. You can buy an off-the-shelf application that practically runs itself and meets your everyday needs perfectly. If you need a customized telecommunications tool that simplifies a complex interface or enhances a simple one, you can find special programs that help you develop your own.

At the top of the heap is a handful of popular commercial telecommunications packages for general-purpose communications. They all have several features in common, such as emulation of a plain-text Teletype-style (TTY) terminal as well as the popular VT52 and VT102 terminals from Digital Equipment. All of them can exchange files, using the Xmodem and Ymodem protocols; all can save text from the screen to a file; and all offer a method for recording your actions (or some desired chain of events), usually with a scripting language.

These popular programs can operate in the background under MultiFinder, exchanging remote data while you do something else. Typically, if you're also running a processor-intensive program such as a big recalculating spreadsheet, or if you're searching a database, during file transfers you may have time-out problems, which are caused by a current limitation of the Mac's operating system.

In addition to the top commercial offerings, there are some well-executed but less-powerful programs. Some are installed as DAs and are always available, and some are freeware or shareware. Their features are presented in our comprehensive features chart.

By Daniel J. Rosenbaum
MicroPhone II 2.0

MicroPhone II, one of the best-selling communications programs for the Mac, is replete with features, logically laid out, well documented, flexible, and reasonably easy to use. It supports most major file-transfer protocols: Xmodem with MacBinary, CRC or checksum error checking, and blocks of 128 bytes or 1,024 bytes; Ymodem or Ymodem-G (putting the error-checking burden on your modem); and a configurable Kermit. Text transfers are also highly flexible.

Like most of the other programs, MicroPhone II lets you save communications parameters such as baud rate and word size in special files that you can name; one file may contain settings for MCI Mail, while another may hold settings for a mainframe session. Unlike most other programs, MicroPhone also keeps modem commands in editable files. If your modem is slightly or (like the Telebit Trailblazer) vastly incompatible with the Hayes standard, MicroPhone lets you tweak the modem file until everything is satisfactory. You can use a modem-command file with any communications-settings file for full flexibility.

At the heart of this flexibility is MicroPhone’s scripting capability. Other programs may have more powerful scripting, but few combine their power and ease of use as gracefully. The scripting is menu-driven; every command, conditional phrase, and function name in the entire scripting language can be obtained from a series of context-sensitive scrolling fields that appear as you need them. You need to type only specific variable data that customizes expressions and conditional statements. The power-to-typing ratio is very high, which minimizes your chances for error.

In many cases, you can bypass the scripting language altogether and use the Watch Me mode, which records your mouse clicks, menu selections, and typed entries, and develops a script for you. That script can be edited like any other text-based MicroPhone script. A scripted procedure can be invoked in several ways: It can be assigned to a Command key or function key, placed in the Scripts menu, or triggered by a button at the bottom of the screen. You can change the button layout during communications sessions. Although the scripting language has limited support of dialog boxes and is entirely text-based, it offers far more capabilities than most users will need.

MicroPhone balances power and simplicity; it is well suited to mundane daily communications tasks but also packs the ability to automate some complicated jobs. It combines general-purpose utility and programming at its best.

Red Ryder 10.3

If it seems as if Red Ryder has been around forever, it’s because it has. For most of its lengthy and distinguished life, Red Ryder has been shareware. In fact, its shareware version 9.4 is still in circulation, but version 10.3 is distributed commercially. Much like MicroPhone II, it is a full-featured, general-purpose communications program with a comprehensive scripting language.

Terminal emulation in Red Ryder is limited to TTY, VT52, and VT102, but the manual boasts about the accuracy of these emulations. The program features a utility that lets you use the Mac’s numeric keys to simulate the keypad of an emulated terminal.

Red Ryder puts a wide range of controls at your immediate disposal. Scroll controls and communications parameters are icon-based and merely a mouse click away, as are screen archiving and printing. The program includes a timer linked to the cost of using an on-line service, so you can watch your money trickling away as you telecommunicate (it would be nice if the feature could be shut off).

Red Ryder includes a nicely implemented phone book, where you can keep numbers, passwords, and procedures for any number of services. The phone book can be password-protected, but watch out — if you forget your password, forget about the phone book too. You can define 30 buttons for macros and display the buttons 10 at a time. If you’re using VT100 emulation, you can show a special status bar that emulates the four LEDs on the terminal’s front panel.
On-line Business-Information Services

Getting business information with your Mac is simple. All you need is a telecommunications program and a modem. You can access hundreds of business-oriented databases directly, or you can use a gateway system such as Western Union's Informator. If you go direct, you'll need to pay subscription fees and learn each database's syntax. Through Western Informator, the cost can reach $200 an hour, depending on your search.

**Trade and Industry ASAP**
Focuses on 125 industry and trade magazines. Provides the full text of all articles in these publications — a necessity for staying abreast of the competition.

**Mainframe**

- **Telecommunications program instructs modem to establish communication with the on-line service's modem.**
- **Front-end program simplifies the process of viewing and copying on-line data.**
- **Retrieves desired data from mainframe and sends it to the Mac.**

**Dun's Marketing Services**
The venerable Dun & Bradstreet credit reports on more than 700,000 U.S. businesses, as well as a directory of million-dollar-plus sales companies. Great for checking credit or estimating the size of a company.

**Investext**
Electronic copies of stock analysts' reports on more than 7,000 U.S. companies and 1,500 foreign companies. Provides a Wall Street view of potential investments.

**LC MARC**
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**Magazine ASAP**
The full text of articles from more than 80 general-interest magazines. Excellent source for background material.

**Standard & Poor's Register**
Biographies of more than 72,000 prominent business executives. Discover the background of the most prominent business-people in the United States.

**ABI/INFORM**
More than 300,000 business articles from more than 660 business and management publications worldwide. Especially useful for background research. Covers everything from accounting to z-scoring for bankruptcy.

**Annual Reports Abstract**
Summaries of annual reports of publicly held U.S. corporations. The database is compiled from filings with the Securities and Exchange Commission. Excellent for reviewing the history and direction of a company.

**Business & Industry News**
Abstracts of news items from more than 1,200 trade and business journals covering all major industries. Sources are as varied as The New York Times, Business Week, Computerworld, and Women's Wear Daily. A great way to keep on top of what's happening.

**Dow Jones News/Retrieval**
The most popular database in the world. Covers the stock, futures, and bond markets; provides Dow Jones business news and full text of The Wall Street Journal, as well as other business publications. Also provides several investment-analysis databases. The one-stop shop for any investor.

Sound too expensive? Not really. Every hour on-line is often equivalent to a full day's research in a library, and, even better, you can get information without ever leaving your Mac. Here is a short list of a few of the major business databases and their features:

**Business & Industry News**
Abstracts of news items from more than 1,200 trade and business journals covering all major industries. Sources are as varied as The New York Times, Business Week, Computerworld, and Women's Wear Daily. A great way to keep on top of what's happening.

**Dow Jones News/Retrieval**
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The most popular database in the world. Covers the stock, futures, and bond markets; provides Dow Jones business news and full text of The Wall Street Journal, as well as other business publications. Also provides several investment-analysis databases. The one-stop shop for any investor.
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Major database operations are from 10 to 100 times faster. More importantly, new functionalities, such as report and label generators, scripts, automatic file relationships, data entry into multiple bidirectional files, automatic button actions, high speed printing, and over 85 new commands save you hours.

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Whether a first time user or an expert, the clear and superior 4th DIMENSION workspace releases your creativity and maximizes your efficiency. If you are in a hurry, just point-and-click to create stylish reports, quick mailing labels, or enlightening business charts. If you are a database professional, optimize your procedures with pointers and enrich your SQL interfaces by taking advantage of elaborate array management.

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Custom Calling

One of the enhancements to the commercial version of Red Ryder is an integrated telephone book. It lets you specify the settings and procedures for a service, but you have to embed the modem commands in a dialing string.

Red Ryder includes a full scripting language that gives detailed control over every parameter and gives fair access to dialog boxes. Like MicroPhone II, Red Ryder offers a recording facility that builds a script based on menu selections, icon clicks, and text entries. Manual scripting is not generally easy. Red Ryder includes a shareware version of CE Software’s MockWrite DA— a mini–word processor with which you’re supposed to develop what Red Ryder calls procedures. The procedure language is thoroughly documented, but while you’re composing your script with the text editor, you have no scrolling command lists or icons to help you.

Red Ryder requires you to compile your procedures before they can be executed. Syntax errors can be caught during compilation, but the business of writing, compiling, debugging, recompiling, and so on may be a hindrance to writing simple procedures. The advantage of compiled procedures is that they execute quickly, and their encoded nature after compilation prevents unwelcome eyes from extracting passwords or special log-on procedures from your scripts. The scripting philosophy, however, focuses on speed and protecting procedures and passwords rather than on painless development.

Many people swear by Red Ryder; others swear at it. Once you are on-line, Red Ryder is a pussycat, especially with its well-designed status bar — the problem is getting on-line. When you tell it to dial a telephone number, Red Ryder requires both the number and the modem command to dial it, and you must repeat the procedure for every number. Using Red Ryder is a good way to learn the Hayes command set, but the program is hardly friendly. It has many exotic features, but the length and complexity of its menus are daunting. It could benefit from an option like Word’s Full/Short Menus preference, which hides the complexity when you don’t need it.

If there is one place that Red Ryder shines, it’s in its value. It’s significantly less expensive than the competing programs. It does what it is supposed to do — perform a wide variety of communications tasks. Other programs, however, seem to do it more elegantly.

Smartcom II 3.1A

Smartcom II is the communications software from Hayes, the 3,000-pound canary of the communications-hardware business. Version 3.1A of the program is a significant step in its steady improvement. Until recently, only Hayes modems worked with Smartcom II. Not even Hayes “compatibles” worked well. With the new version, however, the Georgia giant has finally acknowledged the existence of the rest of the industry, and that small step will help the company sell lots of copies of this fine program.

What’s striking about Smartcom is the length to which its designers have gone to make it iconic but not cryptic.

A bar of large icons at the bottom of the screen allows you to dial, print, upload, and download files; type preentered text sequences; and even draw pictures on the screen of a remote Mac that’s also using Smartcom II. The icons are large, and not many can be displayed simultaneously, but the icon bar is context sensitive, and an appropriate icon set is shown as needed. The icons can be replaced by 128 user-defined buttons to which you can attach scripts or program functions. The icon bar can be moved or hidden. Smartcom’s complete on-line help is convenient too.

Hayes calls its scripts autopilots, and you develop them by clicking on a series of icons and working through dia-
E-Mail Front-End

With several keystrokes, remote electronic mail (E-mail) services can put you in touch with thousands of people. These services are hosted on mainframes, which have vast storage capacities. They receive, store, and route messages and files for their users.

There are several E-mail services, each with its own set of commands, benefits, limitations, and costs. Some services charge by the byte, others by the connection. Some can transmit only text. Some can be called directly with a general-purpose communications program and a modem. Some require you to run a special program that simplifies your transactions with the system. Generally you can benefit by purchasing E-mail interface software, even though it may not be required.

Desktop Express
Desktop Express may be the most common front-end E-mail software on the Mac. It's published by Dow Jones, which also publishes The Wall Street Journal and Dow Jones News/Retrieval.

MCI Mail can normally handle only text, but Desktop Express lets you transmit spreadsheet data, word-processing documents, and databases — any file at all. Binary files sent with Desktop Express are also compatible with Lotus Express, a similar package for MS-DOS computers.

Desktop Express has shortcomings. Its interface is clunky, and it's full of windows that can't be resized or moved. It's also much slower than MCI Mail itself. Still, the flexibility because AT&T Mail is designed to handle data and text.

You can define as many as ten keyboard macros and use them in lieu of the address book, which is curiously omitted from Access. With its built-in scripting language, you can write your own log-on and hang-up scripts.

While you're in Access, all application icons appear generic and all disk icons turn into floppies, but it doesn't seem to harm anything. Access has the overall feel of a tightly written program — compact and quick. A financial advantage of using Access: AT&T charges $20.

E-mail: It's

Although its screen looks a bit odd, Access III handles the task of interfacing with AT&T Mail efficiently and simply, or $.45 for every message you create on-line.

The fee, which can add up if you're a heavy user, is waived if you write your messages in Access III.

Navigator
Navigator is published by, and used for, CompuServe. It does far more than automate your E-mail. It manages your entire CompuServe account. Its chief purpose is to minimize on-line time, which costs a hefty $12.50 per hour at 1,200 or 2,400 baud, plus communications surcharges.

It performs the time-consuming functions off-line that you'd normally do on-line, such as selecting previously received E-mail and forum messages and writing new ones. You can also select the forum messages you'd like to see when you go on-line. Navigator logs on, downloads messages, and scans and summarizes forum messages and program libraries.

Version 2.1 of Navigator doesn't include an address book, occasionally gets stuck unpredictably, doesn't automatically upload to forums, and can't automate some gateway services such as the Official Airline Guides. Version 3.0, expected to be available by the time you read this, will include an address book and upload capability and will presumably be more stable.

Navigator automates most CompuServe sessions, where time is money. Although version 2.1 doesn't automatically upload files, a new version is expected to.

If your usage pattern remains the same, Navigator can reduce your CompuServe bill by 50 percent.

MacNet
MacNet is the only on-line service that requires dedicated front-end software. You simply cannot use Connect's MacNet without it. When you first start MacNet, you work through a maze of icons and folders set up for specific services before finding the information you want. You can, however, put your frequently used icons into the first window, so you can go to those services directly.

MacNet is much easier to use than similar on-line service/software combinations. You can set the program to poll the service and set regular log-on times. The program is able to run in the background, but it slows other processes tremendously.

To log on to MacNet, you need this dedicated software, which uses a folder-and-ic on metaphor to navigate through the service.

MacNet is much more limited as a service than the big ones such as CompuServe, and its need to download the files makes for slow operations. But it's an innovative service that can only improve with time. If you find on-line services too hard to understand, MacNet may be for you.

— Daniel J. Rosenbaum
Custom Calling

Telecommunications Glossary

- **Baud** — A unit of measure for the speed of data transmission that is essentially but not always exactly equivalent to bits per second.

- **BPS** — Bits per second. A unit of measure for the speed of data transmission.

- **Checksum** — A method of detecting transmission errors, based on the sum of a discrete packet of transmitted data. It’s not foolproof.

- **CRC** — Cyclic redundancy check. A method of detecting transmission errors that is more reliable than checksum error detection.

- **Kermit** — A widely used communications protocol with excellent error-checking features that generally links microcomputers to mainframes. It has a set of standards that can be followed, but custom implementations exist.

- **MacBinary** — A standard information-exchange format initially established for Mac-to-Mac communication but usable with other systems that store files exactly as they’re received or transmitted. Any type of Macintosh file can be transmitted in MacBinary format.

- **Parity** — A method of detecting transmission errors based on the consistent odd or even sum of the bits in each transmitted byte of information.

- **Scripts/macros/procedures** — Programs that automatically perform simple to complex activities triggered by a button, menu selection, keystroke, time-based event, or the contents of a variable. They can be text-based or symbolic. You produce scripts or macros by describing actions in text form, making choices from menus or with buttons, or going through the steps while working in a recording mode.

- **Terminal emulation** — The ability of a device, such as a computer equipped with special software, to mimic the functions of a dedicated terminal. Emulation includes acting and reacting as a specific kind of terminal would with both the host computer and the user. Some terminals can emulate other terminal types or models.

- **Transfer protocols** — Rules by which information is exchanged between transmitting and receiving devices. There are several popular protocols. The transmitting and receiving devices must follow the same protocol at any given time.

- **TTY** — Teletype. A basic terminal that handles only text, one line at a time, with a carriage return following each line.

- **VT52, VT100, VT102, VT220, VT240** — Various terminal models from Digital Equipment. Higher model numbers mean increased functionality. The VT100/102 is a common reference for terminal emulation, offering a good balance of text-based capabilities for most telecommunications needs. VT220 and VT240 are useful for graphics.

- **Xmodem** — Originally a program for transferring data from one microcomputer to another. Only its protocol and error-checking method are now known by that name, and they have been incorporated into a wide variety of telecommunications software.

- **Ymodem/Ymodem-G/Zmodem** — Communication protocols with enhanced abilities such as larger-sized data packets and transmission of multiple files.

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log boxes. The autopilots are flexible; they can ask which file to send, which to receive, what to type, what to print, and what to dial. The scripting process lets you copy steps from one autopilot to another and change from one to another. You can launch a HyperCard application and then return to Smartcom II, which puts all of HyperCard’s strengths at your service, for either preprocessing or postprocessing your telecommunicated information.

You can save an autopilot by name, execute it, or retrieve it later for editing. Although autopilot script is basically text that can be reviewed and easily understood, all autopilots are edited through icons and prompted responses, thus isolating you from direct access to your script — and possible blunders. Overall, Smartcom II’s scripting is not as powerful as MicroPhone’s or Red Ryder’s, but it’s clear and easier to use, with help always available.

In fact, Smartcom II is the easiest of the general-purpose programs to learn and use. Aside from the icons, its functions are clearly labeled and logically laid out. If you need a program that can jump through hoops, you should look elsewhere, but if your needs aren’t elaborate, you’ll find Smartcom a solid and worthy performer.

**DynaComm 1.02**

DynaComm has had almost as many names as the Jefferson Airplane. First it was InTouch; then it was sold as InTalk. Now it’s called DynaComm, but for all the names and some impressive features, it still feels incomplete.

Terminal emulation is one of the brighter spots of the program. Besides TTY, VT52, and VT100, DynaComm emulates the VT220, ADDS VP/60, IBM 3101, Televideo 925/950, and CompuServe Vidtext. The list is a strong clue to the program’s apparent intent: providing connectivity with corporate minicomputers. Its strength is its detailed programmability and its ability to customize the user interface with dialog boxes, scrolling fields, and buttons.

DynaComm is capable of a range of file-transfer protocols as impressive as its selection of emulations. Besides the standard Xmodem, Ymodem, and MacBinary, the program speaks Kermit, Crosstalk, YTerm, the Connect protocol supported by Control Data mainframes, and its own proprietary format (compatible with MacTerminal 1.1). Another unusual (and welcome) touch is its support for non-Hayes-compatible modems, including the Telebit Trailblazer and Multitech’s MNP line. DynaComm makes it simple to customize modem commands: You
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The Second Quarter of 1990 saw Articulate Designs strengthening its position as the leader in marketing communications in the Bay Area. The most significant event was the completion of negotiations with the Oakland Rebels, a new football franchise, that will have Articulate Designs create the complete team image for the club—logo, uniforms, tickets, and marketing materials. The $5 million deal calls for the consulting and design work into the mid-1990's.

The company posted profits of $1.5 per share this quarter, on $244,568 of revenue, marking the third quarter in a row that profits have been increased. The acquisition of PeachTree Printing in the Fourth Quarter 1989 boosted profits to pay dividends, as the in-house production facility controls printing costs in house.
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Entitlements have become increasingly burdensome as a percentage of total government outlays. As a result, funds for social services have been reduced.

1989 Outlays: $1,023 Billion

- Defense: 3.9%
- Entitlements: 15.6%
- Services: 32.6%
- Net. Interest: 47.9%
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### Key Telecommunications Program Features Compared

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<th>DynaComm 1.02</th>
<th>FrontEnd 2.0b3</th>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sends all incoming data directly to a printer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Size of screen buffer</td>
<td>variable</td>
<td>none</td>
<td>300K</td>
<td>user-selected</td>
<td>variable</td>
<td>512K</td>
</tr>
<tr>
<td><strong>Protocol transfers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kermit</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MacTerminal 1.1</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supports MacBinary file format for all protocols</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Xmodem</td>
<td>✓</td>
<td></td>
<td></td>
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<td>Xmodem with 1K blocks</td>
<td>✓</td>
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<td></td>
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<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Interface control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to get user input during scripting</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User-definable menus</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigns a script/macro to a Command key</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigns a script/macro to an FKey</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Assigns a script/macro to an on-screen button</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supports the Extended Keyboard</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Automation/scripting features</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic script/procedure generation</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Prescheduled connection/unattended operation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Script/procedure debugger</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Script/procedure editor</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graphics features</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copies text as graphics</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sends, receives, and displays graphics</td>
<td>✓</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sets the default background and foreground color</td>
<td>✓</td>
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<td></td>
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<tr>
<td><strong>Miscellaneous</strong></td>
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<td></td>
</tr>
<tr>
<td>Built-in text editor</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finds text in buffer</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Line-by-line send</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Multiple simultaneous sessions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>MacLine</td>
<td>MicroPhone II</td>
<td>QuickLink II</td>
<td>Red Ryder</td>
<td>Smartcom II</td>
<td>Telescope Pro</td>
<td>TextTerm+ Graphics</td>
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<td>3.0</td>
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<td>3.1A</td>
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<td>$145</td>
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<td>$195</td>
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<tr>
<td>✓</td>
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<tr>
<td>19,200</td>
<td>57,600</td>
<td>19,200</td>
<td>57,600</td>
<td>38,400</td>
<td>9,600</td>
<td>57,600</td>
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<tr>
<td>✓</td>
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<td>✓</td>
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<td>✓</td>
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</tbody>
</table>

Available memory: 19,200 bytes
Available memory: 256 bytes
Disk space: up to 2,300 lines
Custom Calling

DynaComm’s greatest strength is its emulation of an extraordinary number of terminals and support for numerous file-transfer protocols.

can define 32 buttons for frequent commands or text strings, and eight buttons can be displayed simultaneously across the bottom of the screen. DynaComm includes a full-featured scripting environment that is almost as complete as Red Ryder’s but is presented differently. It provides you with five kinds of dialog boxes, three kinds of buttons, and a scripting language that’s not iconic — or like HyperTalk — but is manageable. Like Red Ryder, DynaComm requires you to compile your scripts before you execute them. Unlike Red Ryder, DynaComm includes a built-in text editor that you can keep on-screen during a terminal session.

There’s a lot of power in DynaComm, if you can get at it. For example, to put up a button or a dialog box, you need to specify its corner points numerically; you can’t just create it, drag it to size, and place it as you would with HyperCard. Like MicroPhone, DynaComm has a utility (actually a DynaComm script) that guides you through the creation of scripts, although it’s not context-sensitive or nearly as easy to use as MicroPhone’s.

Despite its considerable capabilities and power, DynaComm generally seems incomplete. When you pull down a menu, the lines that separate sections of the menu can be highlighted with the mouse. To get on-screen help, you need to execute a script that uses DynaComm’s scripting powers to present a scrolling hierarchical topic set, but it’s an inconvenient two-step procedure that

**VersaTerm-PRO: Tektronix in a Mac**

For most people, character-based terminals suffice — even VT100 emulation may be more than necessary. Folks who work primarily with graphics systems, though, should check out VersaTerm-PRO, because it emulates the Tektronix 4105 and 4014 graphics terminals. Aside from providing Tektronix emulation, the program also works in the standard VT modes and can emulate a Data General DG D200, which is handy if you’re dialing into an installation running DG’s popular CEO office automation system. If Tektronix emulation is what you need, there’s no choice but to get VersaTerm-PRO.

The Tektronix 4105 is a color terminal with some built-in graphics-rendering intelligence, which VersaTerm-PRO programs into the Mac, enabling it to convert Tektronix-specific graphics commands into Macintosh-compatible graphics commands. On a Mac II, VersaTerm-PRO shows Tektronix plots in either Tektronix or Mac colors. On monochrome Macs, VersaTerm-PRO assigns Mac patterns to Tektronix colors. This color-to-monochrome translation is straightforward, although you may have to play with the color-conversion tables to get an optimum compatible image. This procedure lets you interact graphically with a host system and then save and print your work locally.

The operation of VersaTerm-PRO is unfamiliar but ultimately not difficult. The needs of graphics-based emulation are different from those of text-based emulation, so the layouts of menus and a couple of icons initially appear odd, but they eventually become familiar. The program may feel slow, especially in Tektronix modes, but that’s more a function of the demands of the terminal than a fault of the program. Tektronix screens often require far more data than do simple text screens, so the plots may seem slow to appear. The faster your modem, of course, the less onerous the problem.

One of VersaTerm-PRO’s drawbacks is that setting communications parameters requires several menus. VersaTerm-PRO is the only program in this roundup that lacks a full scripting language. It can record and play back simple macros, but it can’t be instructed to make decisions based on current conditions. It has substantially less automation capability than MicroPhone II or Red Ryder, but its main strength is not programmability. If you need to talk Tektronix, however, VersaTerm-PRO is your program; after all, a Mac equipped with this program is much cheaper and multipurpose than a dedicated Tektronix terminal.

— Daniel J. Rosenbaum
Best Performer!

FoxBASE+/Mac: The Most Celebrated Mac DBMS
Now Includes a Powerful Report Writer!

New FoxBASE+ / Mac Version 2.00 is here—and stealing the show! In its first year, FoxBASE+/Mac won more awards—both in the U.S. and Europe—than any other DBMS ever created for the Macintosh! And Version 2.00 is faster and more powerful than ever—packed with innovative new features and language enhancements!

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FoxReport lets you create virtually any columnar or free-form report—without any programming! FoxReport includes:

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- **Report Layout Window**: Define the different areas within your report, using FoxReport’s new “band” system. Start with the default bands: Page Header, Body, and Page Footer, then bring in other bands like Title, Summary, Column Headers and Footers, etc.
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Perrysburg, OH 43551 Telex: 650304827 Fox

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Whether you're designing the next generation of a product or drafting the plans for a new building, you need to keep the whole project in mind. And now you can keep it in view as well, thanks to the Truevision HR Graphics card. The HR card lets your Mac® II display a sharp 1280 x 960 pixel image, 400% more than a standard Apple® monitor and 56% more than other 'high resolution' 1024 x 768 displays. Its 256 colors (from a 16.7 million color palette) give you tremendous flexibility for engineering drawings, scientific visualizations, or 3D modeling for prototypes. And the HR supports a virtual desktop up to 2048 x 2048 pixels, allowing you to pan over large drawings in real-time, horizontally and vertically.

The HR card is QuickDraw™ compatible*, which means that you can run with virtually all Macintosh® software. And you may select the monitor of your choice from manufacturers like JVC, Philips and SONY®. There are two Truevision HR cards available: the HR 2M ($3995) addresses a virtual desktop of up to 2048 x 1024 pixels, and the HR 4M ($5995) addresses up to 2048 x 2048 pixels. Get precise images and view large format drawings with the Truevision HR Graphics card. Take a test drive soon by visiting your Authorized Truevision Reseller, or call us at 800/858-TRUE for more information.

The HR Graphics Card works with the Macintosh II, IIX and IICx.

*All graphics cards with more than 1MB of memory require 32-bit QuickDraw. QuickDraw is a trademark of Apple. Macintosh and Mac are registered trademarks of Apple Computer, Inc. SONY is a registered trademark of Sony Corporation of America. Image courtesy of Electric Image.
<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Phone</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge 1.0</td>
<td>1684 Fuller Road, P.O. Box 65580 West Des Moines, IA 50265</td>
<td>(515) 224-1995</td>
<td>$49.95</td>
</tr>
<tr>
<td>Prometheus</td>
<td>1311 Gregg St, Petaluma, CA 94952</td>
<td>(707) 765-9200</td>
<td>$150</td>
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<tr>
<td>Blast 8.1</td>
<td>1900 W. Park Drive, Suite 280 Westboro, MA 01581</td>
<td>(508) 888-3300</td>
<td>$2,000</td>
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<tr>
<td>Mac 3000 3.2</td>
<td>Columbia University, 612 W. 115th St, New York, NY 10025</td>
<td>(212) 854-3703</td>
<td>$20</td>
</tr>
<tr>
<td>MacLine 3.0</td>
<td>909 Electric Ave, Seal Beach, CA 90740</td>
<td>(213) 598-7746</td>
<td>$145</td>
</tr>
<tr>
<td>MicroPhone II 2.0</td>
<td>Software Ventures Corp., 2907 Claremont Ave., Berkeley, CA 94705</td>
<td>(415) 644-3232</td>
<td>$295</td>
</tr>
<tr>
<td>MockTerminal 4.4</td>
<td>CE Software, 1854 Fuller Road, P.O. Box 65580 West Des Moines, IA 50265</td>
<td>(515) 224-1995</td>
<td>$49.95</td>
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<td>Prometheus</td>
<td>1311 Gregg St, Petaluma, CA 94952</td>
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<td>(415) 644-3232</td>
<td>$295</td>
</tr>
</tbody>
</table>

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Create PostScript fonts with existing Macintosh artwork imported from Encapsulated PostScript or PICT formats.

"To stay contemporary, you need contemporary design tools. I have found Fontographer to be that. It's uniqueness is in the control you have over every aspect of the character... It's the same with FONTastic Plus - it has that flexibility."

- Simon Tuckett

**FONTographer®**

Professional PostScript typeface and logo design editor.

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Bitmap font editor for the Macintosh.

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Suggested Retail: KeyMaster - $99.95
Fontographer - $395.00
FONTastic Plus - $99.95

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**A Picture or A Thousand Words!**

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- Simon Tuckett

**FONTographer®**

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Fontographer - $395.00
FONTastic Plus - $99.95

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**Communication is the key to making an impact!**

Whether its with a picture or a thousand words, use KeyMaster, Fontographer, and FONTastic Plus to create the best possible impact using graphic images and type.
"We put the Jasmine DirectDrive through hell, but it got us through 'The Abyss.'"

"Fifteen months ago, we started working on a new underwater adventure movie called The Abyss. We needed a hard drive that could stand up to the worst possible circumstances. So we got two Jasmine DirectDrives." And immediately, we put them in the worst possible circumstances.

"We took them down to a hot, dusty place called Gaffney, South Carolina, where the majority of the film was shot. We put them in dirty rooms. We ran them almost 24 hours a day for over a year. They were dropped, they were covered with dust, they were bounced from location to location, they were used and abused—and they still worked great. We put them through as much hell as we went through. If anybody could break a drive, we could, and we didn't. They really performed for us.

"Often, we wouldn't have time to back everything up, so we just had to rely on the Jasmine drives to run properly all the time. And, even when they were really put through the ringer and we thought we were going to lose everything, the Symantec Utilities for Macintosh that come with the drives really saved us.

"We basically had the entire movie on those Jasmine drives. They were used to store storyboard scans, script changes, animation tests, and various files covering every aspect of the film. This took up hundreds of megabytes of disk space, because the storyboards that we scanned into our Macintoshs were constantly being revised and updated, and we couldn't afford to throw anything away during filming.

"The drives are still working great. We figure they'll probably have a long career in this business! And because they held up so well under pressure, so did we."

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doesn’t conform to Apple’s interface specifications.

DynaComm appears poised on the edge of greatness. The interface needs to be cleaned up and the product polished. Clearly, its features could put it into the custom-telecommunications majors, but the presentation still seems somewhat bush-league.

**Acknowledge 1.0**

Acknowledge is less a communications program than a development environment for automating and customizing communications. Using it to log on to bulletin boards is like using an F-15 to hop over to the corner grocery store. The program helps you build graphic and icon-driven interfaces and hide every nut and bolt of the communications session from the user. The typical Acknowledge user will be an in-house specialist who needs to develop a customized stand-alone communications application.

Terminal emulation is not Acknowledge’s claim to fame. Besides providing the standard fare, Acknowledge emulates Minitel and Prestel terminals, two ubiquitous European standards that are all but unknown in the States. The emulations appear to have been chosen for their commonality, not for any particular functionality. But to dismiss Acknowledge on the basis of a feature checklist would be a tremendous mistake — the program simply has no equal on the market.

At the heart of the Acknowledge program is TAL, the Telecommunications Access Language. TAL is a Pascal-like development language that enables you to design your own menu systems and dialog boxes — an entire user interface for a communications application.

TAL is not particularly easy to use for novices. It is a development system; if you are not comfortable programming or if you don’t want to immerse yourself in interface issues, stay away. If your job is to support many users with special needs, you should give Acknowledge careful consideration.

One of the sample applications that comes with Acknowledge demonstrates its flexibility. It consists of a U.S. map divided into regions, each with a check box. Users can click on the region for which they want information and click on OK, and Acknowledge dials a remote computer and downloads data about that region. The users don’t have to know anything about communications; the program does all the work.

**Which Program Is Right for You?**

It depends on whether you need special or general-purpose capabilities. For a customizable interface and connection to a wide range of minicomputers, DynaComm is a likely selection. As a communications-program development system for custom applications, Acknowledge is your program.

More difficult is choosing among MicroPhone II, Red Ryder, and Smartcom II. Any of these general-purpose applications will perform well, provided that it’s used within its range of capabilities. If you want power but you’re cost-conscious, Red Ryder is a good choice. For harnessing your programming wits and the intelligence of the automated script recorder, MicroPhone II comes out on top. If you need a medium degree of automation and easy, iconic scripting, go with Smartcom II.

---

**On the Horizon**

At this writing, these events were in flux:

- The publishers of Acknowledge announced MacKNOWLEDGE, a fully functional communications program written in Acknowledge’s Telecommunications Access Language (TAL). MacKNOWLEDGE comes with scripts for accessing information and E-mail services. Moreover, MacKNOWLEDGE lets users create scripts with E-Z TAL, a simplified subset of TAL, for friendlier but less powerful scripting.
- MicroPhone II 3.0 was in the final stages of development. Its new features will include support of non-Hayes-compatible modems, ZSerial protocol, the ability to use XCMDS, a buffered keyboard, the ability to search the screen buffer, support of the full Macintosh 8-bit character set, the ability to set background and foreground colors, an on-screen timer and billing meter, and extended scripting power.

— Salvatore Parascandolo

---

Daniel J. Rosenbaum is a contributing editor to *MacUser* magazine and has a monthly communications bill he’s too embarrassed to reveal.

---

A full-blown development system, Acknowledge is meant for designers of custom front ends. Its programming language, TAL, is reminiscent of an extended BASIC.
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.

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Measure for Measure
Is Finale all you’ll ever need in a music program? Not unless what you need is a lot of aggravation.

When Finale was announced nearly two years ago by Coda Music Software as “the last music program you’ll ever need,” hope and skepticism ran equally strong in the computer-music community. Here was a program, the advertising said, that would integrate the highest quality of PostScript notation with MIDI recording and playback. It would be that Holy Grail of computer music, a program that could take a performance from a

By Paul D. Lehrman
keyboard or other instrument and instantly transcribe it into music notation that was not only readable but also publishable. It would provide composers with powerful music-processing tools like those of the most advanced MIDI sequencers, with a front end based on true music notation, not numerical lists or cold graphic objects. Its $1,000 price seemed almost modest, considering how the program promised to revolutionize the process of making music.

Industry veterans had heard these stories before. The history of computer music is littered with programs that promised to be all things to all musicians but tripped up on the complex task of generating music notation that was faithful to the subtleties of performance and the conventions of notation. So there were many who, while hoping that Finale could live up to its hype, weren’t holding their breath (see “The Right Staff,” October ‘88, for a review of other music programs).

Finale’s release in late ‘88 did little to change anyone’s mind. Its proponents hailed its amazing feats of notation generation, while its critics noted its confusing user interface, disappointing documentation, and inordinate bugginess. Some were willing to spend months buried alive with the program to figure out how to use it, and others gave up in disgust after a few days or weeks.

After four months and five versions of the program, I agree that Finale has some remarkable, unique features that should be incorporated into every music program from this day forward. I also think the program is poorly designed and implemented, however, and for now would recommend it only to people with immediate specific needs that other programs can’t meet.

Taking Notes

First the good news: Finale really can transcribe a keyboard performance better than any other program I’ve seen. One of the keys to this success is a floating quantization function (see Figure 1), which keeps notes that are played a little too short or late from ending up as a morass of dots, ties, and microscopic rests while fast notes get lumped together as chords — sins many notation programs are guilty of. Furthermore, you can choose from among several quantization algorithms, so the subdivisions of a beat can be determined either by the number of notes played in that beat or by the absolute timing of those notes.

Another key feature is the ability to record a passage in free time, without a metronome, and then assign beat and measure time tags for notation purposes (see Figure 2). In this way, the most florid rubato improvisation can be transcribed clearly. Since the program keeps the recorded MIDI data separate from the transcription, the original performance, with all its subtle dynamic, durational, and timing information (which, if it were to show up in the notation, would likely render it unreadable), can be recalled and played back anytime.

Finale can also do wonderful things with chords. You can write a lead sheet, insert guitar-chord symbols, and then play it back while the program automatically generates all the notes of the chords (on their own
MIDI channel), using voicing and rhythm that you specify. If you play chords on a keyboard, the program can recognize them and print chord names at the appropriate places in the score.

You can write lyrics in an external word-processing program and import them into Finale via the Clipboard. Once it's there, each word or syllable can be tagged to a specific note; when that note is moved, the corresponding lyric goes with it. The program automatically spaces notes to accommodate syllables of different lengths.

Finale handles page layout and supports the most bizarre time and key signatures.

The user interface is utterly nonintuitive and un-Mac-like. For example, functions are accessible from a palette of tools at the left of the screen. Some, such as the Measure Add tool, which simply appends an extra bar onto the end of the piece, are simple; others, such as the Mass Mover tool, are complex, with many options and functions. Unfortunately, each tool behaves completely differently, and a large part of learning the program is remembering, once you've chosen a tool, whether you're supposed to click on a note, a measure, or something else — or double-click, Option-click, or do some combination thereof.

For example, say you want to change a dynamic marking. Using the Staff Expression tool (everything in Finale has a Name), you can try double-clicking on the marking, but if it's above or below the staff, that won't work. Instead, you click on the note the marking is associated with, which may be nowhere near it. But if the note is on a ledger line, that won't work either — you have to click on the area of the bar where the note would be if it weren't on a ledger line. Then you click on the dynamic marking and edit it if you want.

Once you've figured out how to use a tool, you'll find all of its functions in dialog boxes. But these are not ordinary dialog boxes. Clicking on a check box or radio button in a dialog box yields unpredictable results — it may set up an option, open a new box, or actually execute the chosen option as a command and close the box. Click the wrong button inadvertently, and you end up performing an unwanted major edit on your music that you are powerless to stop. Worse still, Undo undoes almost nothing.

Figure 3: Pressing the Delete key won't do what you think it will — it will eliminate not only the measure selected but also the same measure on all of the staves above and below it. It is not Undoable.
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Boxes nest inside each other, sometimes a dozen deep, and getting out of them can make you feel like a rat in a maze. Trying to remember in which dialog box a function showed up and how you got there is like driving around Paris with a map of Rome. When you do stumble on the right dialog box, any settings you made it previously have been wiped out, and the default settings they’ve reverted to are rarely anything you can use.

Even when you aren’t fighting with dialog boxes, Finale makes many tasks unnecessarily difficult. Common editing tools that you find in any sequencer program are missing or are so convoluted as to be unusable. Shifting a track in time by any amount less than a measure is impossible, as is any kind of quantization, except when you’re transcribing a MIDI performance. What you play as a string of eighth notes can easily get transcribed as sixteenth notes followed by sixteenth rests. If you want to change these to eighth notes, you have to find and turn on a function called Float Quant in the Note Mover (it’s on the Options submenu of the Special menu), use the Note Mover tool to copy the notes from the staff they’re on to a blank staff, and then copy them back — and you can do this only one measure at a time.

Then there’s my favorite maneuver: select the Mass Mover tool and click on one measure on one staff. Press the Delete key. That measure is gone, as is the same measure in every staff above and below the one you selected (see Figure 3). And I mean gone. You can close your eyes, clap your hands, and choose Undo until you get blisters on your fingers, but they ain’t coming back.

**Poor Docs**

You’d think that well over 300 pages of documentation would give you the kind of help you needed to learn Finale, but in reality this gorgeous three-volume manual is for the most part a tool glossary. The writers seem to have taken the designers’ specification for the program, given it a pretty typeface, and put it into a nice binding. Basically, the manuals are totally useless if you’re stuck in the middle of a task and don’t know where to do next.

Essentially the only way to learn Finale is to read the manuals from cover to cover, trying out every tool, dialog box, and button as you go — not trying to actually accomplish anything — and hope that you retain enough that when you attempt to do a real project with the program, you will remember where to find the information you need each time you get stuck. Yes, there’s an impressive-looking index, but it’s actually done quite poorly and rarely leads you in the right direction.
Shaky and Slow

Adding to my dissatisfaction with Finale is its distinct lack of robustness. Although the latest version (1.2.4) does not have as many bugs as the initial release (more than 100 were reported), it still has enough problems that while I was preparing this review, I uncovered a new anomaly or inconsistency nearly every day and crashed the program about twice as often. Things tend not to work the way they’re supposed to, and you never know whether it’s because you’re doing something wrong, some obscure invisible variable got reset inadvertently, or the program is just screwing up.

Even if you ignore the bugs, the program feels shaky, thanks to its plethora of little habits that add to the annoyance factor. For example, you access certain functions, known as Meta tools, by holding down a number key while clicking, but unless you let go of that key at just the right time, the field in the dialog box fills up with the number you’re holding — so if you’re not careful, you’ll transpose that passage by 6,666 half-steps (and it’s not Undoable).

With the amount of data being displayed, it’s understandable that Finale occasionally takes a while to redraw the screen, but the program has a habit of redrawing at the slightest provocation when you don’t want it to. You can shut off the automatic redrawing, but then every time a dialog box appears and disappears, you lose a large portion of the screen. The program has a function that gets the screen to draw somewhat faster. It is called, for some reason, Display Lists On, and you may be lucky enough to stumble across it in the manual. Accessing it is about as obvious and predictable as everything else in the program: you hold down the Option key while choosing About Finale from the Apple menu.

In general, Finale is not a fast program. On a Mac II with 2 megabytes of RAM, just changing the clef on three bars of one staff of a four-minute film cue, 143 measures long and using 12 staves, took an astonishing seven minutes. Changing the key signature in the first 12 bars of that same piece likewise took seven minutes. Unless you never write anything longer than “Mary Had a Little Lamb,” you don’t want to even think about running the program on a Mac Plus or an unaccelerated SE. Despite the company’s claim that Finale runs on anything from a stock Plus on up.

**MIDI**

Finally, the MIDI implementation of Finale is terrible and has problems that every other MIDI-software designer solved years ago. If you stop playing a file before it ends, notes and controllers are left hanging. There is no MIDI echo function unless you are actually recording a track, so testing a phrase or sound on any synthesizer besides your main keyboard is impossible. Recorded MIDI data other than notes cannot be edited — only erased, and to accomplish this you must eliminate all the non-note data in the entire bar.

Getting a file to play back over MIDI can be a nightmare of dialog boxes, buttons, and windows. Some Meta tools are available for playback, but they don’t include all the important playback features, and they are not programmable.

As mentioned earlier, the program can import MIDI files, but there is no floating quantization when it does so. All but the simplest (and most highly quantized) transcribed MIDI files end up looking like chicken scratches. A separate utility program, Finale PowerPlus, which does the actual conversion of MIDI files, is incredibly slow: the four-minute

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Figure 6: The Shape Designer window — difficult, treacherous, and poorly documented.
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piece just described took 33 minutes to convert. Setting up which staves in a score go to which MIDI channels involves not one confusing screen, but two (which look like they should work identically but don’t), and every time you start a new piece, you have to do it all over again.

Are We Having Fun Yet?

All the foregoing results in a program that, although capable of amazing things, is a major drag to use. The inconsistencies in the tools, the poor documentation, the fragility of the code, and the near-total lack of Undos make it impossible for anyone to learn Finale by exploring or fooling around with it—which puts it at odds with much of the philosophy behind the Macintosh and is the kiss of death for a program that is supposed to enhance creativity.

There is just no straightforward, satisfying way to get started with Finale. All the program’s functions, regardless of how useful or obscure they are, get equal attention, so users have to learn an awful lot of extraneous information before they can accomplish even the most elementary task. Ironically, the program can be made much simpler and faster by using libraries and templates (some good examples of which are included in the package), as well as by customizing the tool palette in various ways, but these techniques are buried in the manual. By the time you’ve come across them, you’ve already had to deal with far more jargon and silly dialog boxes than you ever wanted to.

Customizing Finale with a macro utility such as QuicKeys can certainly go a long way toward easing the pain of its use, but, again, you have to know the program very well before you can begin to take advantage of this possibility. It would help if Coda bundled a program such as QuicKeys with Finale, with a complement of preset keyboard shortcuts.

Fortunately, the current development team at Coda is aware of Finale’s problems and is working hard to ameliorate them. As of this writing, there have already been two upgrades since the initial release, which have eliminated many bugs and cleared up some particularly

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**Update**

At press time, Coda had announced plans to release Finale 2.0 in late ’89, featuring a new menu-driven interface (cutting down on the dialog box chase) and new features (including an Undo command that can be used while editing), as well as completely new documentation.
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onerous design mistakes. Promised upcoming versions will pull some of the more commonly used functions out of deep dialog boxes and put them onto menus, where they will not only be more accessible but will also remember how you set them up, from one minute to the next. An editing module that will address MIDI data directly is also being promised, and two books that contain some of the tutorial information so sorely lacking in the manuals may be available (separately) by the time you read this.

Until it becomes clear that the program will be successfully redesigned, I can recommend Finale only to orchestral composers who haven’t got the money to hire a copyist to write out individual parts (but do have the money for a Mac II with lots of RAM, a LaserWriter, and the program) and to composers who need to automatically transcribe performances into notation. Everyone else should save their sanity and blood pressure and stay away for a while.

Paul D. Lehrman is a MacUser contributing editor, who lives, breathes, eats, drinks, and sleeps music software. He even hopes to come across a program he likes someday.

Finale

Follows Mac Interface 1
Printed Documentation 2
On-Screen Help 2.5
Performance 4.5
Support 4
Consumer Value 2.5

Comments: The most powerful music-notation program for the Mac yet, with MIDI input and output. Has features that set standards for all music programs but is very frustrating to learn and use.

Best Features: Lets you accomplish almost any notational trick you want; transcribes keyboard performances better than anything before it.

Worst Features: Apoplexy-inducing user interface; lovely but almost useless documentation.

List Price: $1,000. Published by Coda Music Software, 1401 E. 79th St., Bloomington, MN 55425-1126; (800) 843-1337. Requires Mac Plus or later and hard disk; Mac II or SE/30 with 2 megabytes RAM very highly recommended. Version 1.2.4 reviewed. Not copy-protected.
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Resources

What's INIT for You?

INITs and cdevs can work so well in the background that you might forget you have them. But without them, you and your Mac would be lost.

By Ted Landau

Have you ever wondered what all those files in your System folder do? In addition to basic files such as System, Finder, MultiFinder, printer drivers, and DAs, you're likely to find files named General, Map, and Startup Device. Although these files come from Apple, you'll find them explained in only the most recent version of the company's documentation. Similar files from other sources can add to the confusion — Suitcase, Findswell, and SuperClock, to name a few. Looking at the file types, you find that these items are either INITs or cdevs.

So why do you want these files in your System folder? What do they do? Here are some answers.

The Early INITs

An INIT is an initialization resource — a System resource that is loaded into the part of the Mac's RAM called the System heap and run as part of the normal startup procedure. You can buy INITs commercially or download public-domain INITs from a bulletin-board service (BBS). INITs are generally neither menu- nor Command key-driven; they are designed to function automatically.

Part of the Macintosh System from
the beginning, INITs were buried among the many resources within the System file. They performed a variety of low-level functions. Although some of these early INITs still exist in the System file, most have evolved to perform more general functions. Screen savers, for example, automatically darken the screen after a designated period of inactivity. This prevents burn-in damage to your screen if you should leave it unattended for a long time.

Several screen-saver DAs exist, but they share a common problem — the user has to remember to select the DA to activate the screen saver. To avoid this obstacle, developers looked to INITs. An INIT screen saver activates automatically when the Mac is turned on.

System Subject to Change

When INIT-based utilities first appeared, there was no way for the average user to install them into the System file. Developers invented their own installation methods, and some neglected to provide a way to remove INITs when they were no longer wanted. What users needed was an INIT equivalent to Apple’s Font/DA Mover.

Responding to this need, Apple released INIT 31. It worked at startup, searching the System folder for any files of type INIT and loading the enabled ones it found. You could simply drag an INIT into the System folder and INIT 31 would do the rest.

Because INIT 31 executes only at startup, the Mac must be rebooted before a new INIT becomes active. To disable an INIT, simply remove the file from the System folder and reboot. The INITs that are active in your System file will usually display a small square icon at the bottom of the screen during startup.

Inside the Control Panel

With System 4.0, Apple introduced the cdev (Control Panel device). You place cdevs in the System folder like INITs, but you can access and activate cdevs through Apple’s Control Panel DA. To view the cdevs, select the Control Panel from the Apple menu. All the active cdevs in the System folder will appear as icons in the scrollable column on the left. Clicking on any of these will change the Control Panel display to match the cdev.

Many cdevs will function without rebooting when they are placed in the System folder. However, another class of cdevs have INIT resources within them, and rebooting is necessary to load the INIT into RAM. These cdev-INITs provide a convenient way for users to modify INIT preferences without developers having to write separate Preferences application or DA. An example of a cdev-INIT is the freeware program Vaccine, with which you can choose whether the icon will appear at startup, for instance. For the change to take effect, however, you must reboot the Mac.

The Chooser displays device drivers — PRERs and RDEVs. The PRERs drive output devices such as Laser-Writers and fax modems; RDEVs, which may contain...
A No-Rules System

Some users mistakenly believe that because INITs, cdevs, and RDEVs come with the Macintosh, they must remain in the System folder for the computer to work properly. In fact, there's no reason why you shouldn't remove a particular INIT or cdev if you don't need it. When you update the System files, however, make sure you have updated all your currently used INITs and cdevs.

In System version 6.0 or later, the Finder lists INITs as startup documents, cdevs as Control Panel documents, and RDEVs (together with other file types that appear in the Chooser) as Chooser documents. These names are found in the Get Info window of a file or in the Kind column when files are displayed in a nonicon view.

Extra Time . . . Extra Space

If you grow impatient watching the "Welcome to Macintosh" message at startup, or if you frequently reboot your computer, then you experience a disadvantage of INITs. Because each INIT loads automatically at startup, it adds to the time you must wait before the startup is over. This extra time adds up if you have several INITs, although it is rarely more than a couple of minutes.

Another potential problem is that all INITs take up disk space. Since most INITs are small, their space requirements are not likely to cause a problem for a user with a hard-disk drive. But floppy-disk users will probably have to limit the number and type of INITs they place on their startup disks.

A much bigger INIT problem is that you may not be able to use all of your INITs because each one, after loading at startup, occupies some of the limited space in RAM. Depending on the nature of the INITs you use and how much RAM they require (they range from about twenty to several hundred kilobytes), you may find that there isn't enough memory left to run large applications such as HyperCard. Sometimes the problem isn't the amount of RAM involved: It is the location of the RAM being used. Some games, for example, use the region of RAM normally occupied by INITs — making the game unusable unless the INITs are disabled. This situation creates a problem of juggling INITs and RAM, which can be resolved by using an INIT manager.

Taking Care of Overkill

Inevitably, one INIT will conflict with another INIT or application. As a result, a program may malfunction, or the entire system may crash. Until now, trying to locate the problem INIT required tediously dragging each INIT from the System folder and rebooting the computer. INIT managers, a group of utilities that are also INITs, provide an easy and flexible solution. Holding down a specified key when the "Welcome to Macintosh" box appears interrupts the normal startup procedure and launches the INIT manager, allowing you to determine which
INITs to use. This isn’t the only way to activate an INIT manager, however. You can run them after startup, but to activate the changes, you must reboot the Mac.

The first commercially available INIT manager was CE Software’s Ask, which was part of the upgraded MockPackage Plus Utilities. It is a cdev-INIT that displays the icons and names of all the INITs currently in the System folder. It lists all the cdevs that, like Ask itself, contain INIT resources. To turn an INIT off, click on its icon, and an X will appear over it. Click on the icon again, and the X disappears. Ask has buttons that simultaneously turn all the INITs on or off. To make changes that will remain in effect as a default, you can access Ask from the Control Panel at any time. Selecting Ask at startup provides the option of making temporary changes (changes that are in effect only until the next restart). Ask also shows the amount (or an approximation, which is designated by a question mark following the amount) of RAM each INIT occupies, which can help you decide which INITs to turn off if you’re low on memory.

INITPicker is a cdev that functions like Ask. Instead of displaying icons, it presents a scrollable list of the names of all the INITs in the current system. By clicking to place or remove check marks next to each name, you determine which INITs to run. Like Ask, INITPicker can be invoked at startup, where changes can be either temporary or permanent. For added convenience, holding down a Command key at startup either runs or skips all the INITs directly, bypassing the INITPicker screen altogether. INITs normally boot in alphabetical order, but with INITPicker, you can alter the order in which they boot by drag-
saving the name of the INIT to a new location on the list. This option helps resolve INIT conflicts that arise because of boot order; otherwise, the only way to do this is to change an INIT’s name.

With INITPicker, you can open a Get Info window that shows vital statistics (such as creation and modification dates) for each INIT. This information would otherwise be available only from the Finder or other special utilities. Unfortunately, this feature occasionally crashes the system. Microseeds says that crashes occur only when INITPicker attempts to get information on a file containing a color icon resource. A fixed version of INITPicker should be available by the time you read this.

Not Like the Others

Unlike Aask or INITPicker, Inix is a combination of INIT and INIT. This dual-file arrangement makes installing Inix less convenient than installing Aask or INITPicker. Inix works like the Font/DA Mover. You enable or disable INITs by moving them between the on and off lists. What’s really different about Inix is that it can create separate startup sets. One set, always designated as the current set, is the default file used at startup. By invoking Inix at startup, you can alter what the current set will be, or you can edit the existing one. Unfortunately, Inix does not have the temporary-change capability of the other programs, and it lacks any run-all or skip-all commands. Saving or opening Inix sets is less convenient than using the other programs’ automatic saves. The final straw is Inix, at $79.95, is the most expensive of these programs.

There is a freeware INIT manager called INIT-cdev. It is a cdev that presents a scrollable list of INITs that you turn on or off simply by clicking on them. Although INIT-cdev can be accessed at startup, like Inix, it cannot make temporary changes. Those are basically all its features. Nothing fancy, but it works, and it’s free.

An Overall Look

All the INIT managers except INITPicker use the same basic mechanism to turn an INIT on or off. The INIT’s file type is altered so that the operating system no longer recognizes it as an INIT — it is identified under the Finder as a document rather than as a startup document, and it loses its unique icon. While this feature is unlikely to cause problems, I found it a bit disturbing. INITPicker lets you turn on an INIT and doesn’t change the file type, which I prefer.

All of these programs are fundamentally similar, and each does an adequate job. My top recommendation, however, goes to INITPicker, with Aask a very close second. Aask has the most pleasing and simplest interface to use — with its icon display and X technique for turning INITs on and off. Aask is also the winner in terms of size — at 11K, it is the smallest program reviewed.

INITPicker is slightly less pleasing to use but compensates with its added features. I especially like its ability to re-sort the INITs’ boot order. The only thing missing from
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What's INIT for You?

INITPicker is the list of each INIT's
RAM requirements. INIT-cdev
should be your choice if cost is the
primary consideration. Inix, despite
its unique ability to create sets, is
simply too inconvenient in its im-
plementation to compete with the
other programs.

Ted Landau is a professor of psychology at
Oakland University in Rochester, Michigan.
When not teaching or researching, he is ei-
ther using his Macintosh or writing about it.

INITPicker 1/2

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value
Comments: Has a simple and easy-to-use
interface; consumes little hard-disk
space. Best Feature: Lists the approxi-
mate RAM requirements of each INIT in
the System. Worst Feature: Has a small
list instead of an icon display, which lets
you determine the loading order of the
INITS. Best Feature: Has an easy way
to turn INITS on and off. Worst
Feature: Scrolling list of INITS makes it
difficult to determine which INITS are on
or off. List Price: $39.95. Published by:
Microseeds Publishing Inc., 7030-B W.
Hillsborough Ave., Tampa, FL 33615;
(813) 882-8635. Requires a Macintosh
Plus or later and System 6.0. Version 1.0
reviewed. Not copy-protected.

Inix 1/2

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value
Comments: Because Inix is a combi-
ation of DA and INIT, installation is less
easy to use. Best Feature: Lets a user
combine different INITS as startup sets.
Worst Features: Doesn't permit changes
for only one use (before next restart),
and making any modifications to INIT
order is awkward. List Price: $79.95.
Published by: Natural Intelligence Inc.,
86 Richdale Ave., Cambridge, MA 02140;
(617) 266-7858. Requires a Macintosh
512KE or later. Version 1.1 reviewed. Not
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Aask 1/2

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value
Comments: A simple and easy-to-use
interface; consumes little hard-disk
space. Best Feature: Lists the approxi-
mate RAM requirements of each INIT in
the System. Worst Feature: Relatively
slow in scanning the system for
INITs. List Price: $49.95 ($15 for upgrade).
Published by: CE Software Inc.,
(1854 Fuller Road, P.O. Box 65580, West Des
Moiness, IA 50265; (515) 224-1995.
Requires a Macintosh 512KE or later.
Version 1.0 reviewed. Best Feature: List
Price: $49.95 ($15 for upgrade). Pub-
lished by: CE Software Inc.,
(1854 Fuller Road, P.O. Box 65580, West Des
Moiness, IA 50265; (515) 224-1995.
Requires a Macintosh 512KE or later.
Version 1.0 reviewed. Not
copy-protected.

INIT-cdev 1/2

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value
Comments: Freeware manager that does a
pretty good job of managing INITS
relative to its competitors. Best
Features: Simple to use and it's free.
Worst Features: No support available, no
easy way to modify a setup. List Price:
Free (available on Genie and Compu-
Serve). Published by: John Rotenstein,
P.O. Box 165, Double Bay, NSW 2028.
Australia. Requires a Macintosh 512KE
or later. Version 1.0 reviewed. Not
copy-protected.

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Now you can treat any Group III fax machine in the world as a remote printer for your Mac. With the Abaton InterFax, you can print letters, reports, and memos in Los Angeles, New York, London, and Tokyo, even if your office is in Peoria.

And all your documents will look as good off the fax as they would off an ImageWriter. No blotchy letters, streaky lines, or dirty smudges like normal faxes. With the Abaton InterFax, even your fine print is perfectly legible.

And the InterFax gets your fax out fast. MacWEEK rated it the fastest fax for the Mac. That's because the friendly InterFax software compresses your file first, then sends it out. So it takes less time to transmit.

You can also use the InterFax as a Hayes-compatible data modem to communicate with other asynchronous devices. Which makes it a great deal as well as a great tool. But that's not the only way it saves you money. With the InterFax, you can schedule when faxes are sent—like right before a telephone conference, or after hours when the rates are lower. And because the InterFax receives as well as it sends, you can screen faxes before you commit them to paper.

Since the InterFax works in background—with or without Multifinder—you can continue working in PageMaker, Excel, Word, or most other Macintosh applications while you're sending or receiving faxes. Which makes you even more productive.

If you want to know why The Macintosh Buyer's Guide rated the InterFax 9.3 (out of a possible 10), call Abaton at 1-800-444-5321. We'll fax or mail you more facts about the InterFax. Then you can start faxing (and printing) all over the world.
What you want may be just what you get in the midrange word processors MacWrite II and WriteNow.

The battle in word-processing Middle Earth continues. With great fanfare, Claris has unleashed MacWrite II. Not simply an upgrade of the venerable MacWrite, MacWrite II is a totally new program, rewritten from scratch to be the word processor for the rest of us.

Last October, T/Maker released version 2.0 of WriteNow for Macintosh, bringing this speedy word
processor up to date (see Quick Clicks, May '89). MacWrite II and WriteNow are now formidable midlevel word processors that are poised to compete head-on.

Both programs offer WYSIWYG editing of documents, which can have multiple columns, headers and footers, footnotes, and different margins for facing pages. Several documents can be opened concurrently, each in its own window. Both programs include spelling checkers and mail-merge capabilities. Both give you precise control over line spacing and let you use any font size. Neither includes the very-high-end features—automatic generation of indexes and tables of contents, glossaries, style sheets, drawing tools, and sophisticated page-layout facilities—that are found in more-expensive word processors such as Microsoft Word, Nisus, or FullWrite Professional. But for day-to-day word processing, either one has all the features you are likely to need.

Which is the better word processor? MacUser staffers Russell Ito and James Finn worked with both products, chose sides, and drew battle lines.

— Laura Johnson
The biggest change in MacWrite II is single-ruler formatting.

Just over a year ago (June '88), I eulogized MacWrite version 5.0 as the VW Beetle of Mac software: a simple, familiar package that hadn’t kept up with the times. Well, as expected, Claris undertook a major retooling, and the result isn’t a Super Beetle: it’s an Audi. MacWrite II equals — and in many ways surpasses — WriteNow, its immediate competition, and makes a bid for consideration among high-end word processors such as Word 4.0, FullWrite, WordPerfect, and Nisus.

Forget about comparing MacWrite II with its forerunner — this is a new program. In addition to multiple windows, MacWrite II’s features include single-ruler formatting, a powerful Find/Change function, mail-merge, multiple columns on-screen, time and date stamping, automatic hyphenation, facing pages, gutter margins and headers and footers on odd or even pages, footnotes and endnotes, color support (the eight standard QuickDraw colors), a Revert to Saved option, a stationery feature for preserving commonly used formats, and the ability to save files in up to seven formats. And these aren’t all the new features. In short, MacWrite II has made a move up in class that puts it several steps ahead of WriteNow.

Built-in Luxuries

Aside from the incorporation of multiple windows, the biggest change in MacWrite is single-ruler formatting. Instead of having a separate ruler for every paragraph,

By Russell Ito
First there was MacWrite, the software accessory to the 128K Mac, a dazzling concept crippled by early limitations and neglected for years.

Into this vacuum came T/Maker’s WriteNow. Even version 1.0 seemed the very model of a basic word processor. It was fast, powerful, intuitive, and — almost unheard of in a first release — bug-free.

Early users were vocal, however, about several shortcomings in WriteNow 1.0. It lacked mail-merge, and you couldn’t import or export documents without running a separate application. Version 2.0 responded to these complaints and more, adding dozens of useful new features while maintaining the original program’s speed and simplicity.

Claris has finally updated the old MacWrite. Its progeny, MacWrite II, while a fine program, is nevertheless too little, too late.

Claris is being very cunning. MacWrite II costs more than WriteNow, and Claris is using that as a selling point, claiming that MacWrite II is more powerful and that the extra features justify the higher cost. The initial press coverage and reviews have bought this claim hook, line, and word processor.

But it just ain’t so. The reality is that MacWrite II and WriteNow have different feature sets, each providing capabilities the other lacks. And features tell only part of the story. WriteNow is still the most solid and comfortable word processor for the Mac. Its functioning is clean, and you rarely find

By James Finn
MacWrite II

MacWrite II uses a single ruler that shows the paragraph’s settings based on the current cursor position. (Microsoft adopted this technique way back with Word 1.05.) The ruler, which can be hidden, can be used for most of your document’s formatting, including indents, tabs, line spacing, and alignment. It also shows the currently available writing area, with a dotted line extending from the left to the right indent markers.

The ruler also packs a number of well-implemented shortcuts. Instead of restricting you to the usual click or click-and-drag formatting, MacWrite II offers dialog boxes (accessed by a double-click) for increased speed and greater precision. For example, double-clicking on an indent marker brings up the Paragraph dialog box, where you can enter indents and line spacing. You can even hide the tab, line-spacing, and alignment icons, while leaving the rest of the ruler visible. The tabs and line spacing are good examples of MacWrite II’s power. Tabs can be left, right, centered, or aligned, and leading tabs are also supported. You can choose the leading character (dashes, periods, whatever), and you can even choose the character you want to align on.

Line spacing is similarly flexible. You can click on the line-spacing icons for single-spaced, one-and-a-half-spaced, and double-spaced lines, or you can add or delete spacing half a line at a time.

Doing similar formatting in WriteNow is nowhere near this easy. WriteNow can’t support alignment on any character without the insertion of an invisible character (a soft hyphen), and line spacing can be set only one point at a time. What’s more, WriteNow’s ruler resides in a separate window, so accessing it deactivates your document window. As a result, you can access the Font, Size, and Style menus or the tab, indents, and margins but not all of them at the same time. MacWrite II’s Find/Change function is so powerful that WriteNow can’t even begin to touch it. You have complete control to search and replace based on font, size, and style from within a single dialog box — the only attribute you can’t operate on is color (see Figure 1).

You can also create custom styles. So if, for example, you wanted to have an 18-point Helvetica, bold, shadowed, underlined, blue font continually available, you could create, name, and save it. It would then appear on the Style menu. (MacWrite II also automatically assigns keyboard equivalents to the first nine styles.) Unfortunately, custom styles aren’t available in the Find/Change dialog box, and if you change or delete a custom style, text where that style has already been applied is not automatically updated.
What Claris Didn’t Tell You

The “less powerful” WriteNow can do many things that MacWrite II can’t. WriteNow lets you use as many headers and footers as you want; each can appear on odd pages, even pages, or both. With MacWrite you are limited to just one header and footer (although you can have a different header and footer for facing odd and even pages).

WriteNow lets you select lines of text that should be kept together on a page, so that page breaks won’t fall in awkward places. MacWrite doesn’t. WriteNow’s character styles include condensed and extended text; MacWrite’s don’t.

A WriteNow menu command converts selected text to uppercase or lowercase, or just capitalizes words. WriteNow supports fractional-width spacing on high-resolution printers, making documents look more professional. It permits multiple levels of superscript and subscript and even lets you adjust the offsets in 1-point increments. WriteNow saves the two most recent versions of your document: not only can you revert to the last version saved, but you can also recover the version before that. MacWrite II can do none of these things.

WriteNow also contains unique tools for document formatting. As with other word processors, you can select a series of paragraphs and then go to the ruler and make changes that are applied to all selected paragraphs. But WriteNow adds options that are a power user’s dream. If you hold the Shift key down, ruler changes apply only to rulers identical to that of the first paragraph in the selection (see Figure A). This gives you most of the power of Microsoft Word’s style sheets. You can easily reformat, say, all subheads as a group, without affecting paragraphs that are formatted differently. MacWrite II has nothing even remotely equivalent to this.

That’s just the beginning. If you hold down the Command key, WriteNow’s ruler changes become relative. For example, dragging the paragraph indent half an inch to the right while pressing the Command key adds half an inch to the indentation of all selected paragraphs. Using this tool, you can reformat a document and your indented quotations will keep their relative indentation. To make life even easier, WriteNow has menu commands that increase or decrease the indentation of selected paragraphs by the distance of one tab stop.

Even without these features, it is simple to format all footnotes as a group (see Figure B). Although footnotes display on-screen as they will print, you edit them in their own view, making it a snap to select them all for formatting. The same is true for headers and footers. The more expensive MacWrite II does not have this formatting muscle. It lets you copy and paste rulers (as does WriteNow); that’s about it.

Many small items help make WriteNow a pleasure to use. It can display a border on-screen showing the physical area of the
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Studio/1 is a trademark of Electronic Arts. HyperCard, Macintosh, and Apple Scanner are registered trademarks of Apple Computer Inc. PostScript is a registered trademark of Adobe Systems, Inc. Requirements: Macintosh® Plus, SE, SE/30, II, IIfx, IIE or 2 disk drives or 1 disk drive plus a hard drive. System software 6.0.2 or later. Times represent animation renderings on a Macintosh SE. Other times may vary.

Please circle 128 on reader service card.
MacWrite II Added Features

The implementation of mail-merge in MacWrite II may be the most elegant available on any current Mac word processor. After creating a tab-delimited data document, you create a form letter. To insert data fields into that letter, you open the data file, using the Open Merge Data File command, and you're presented with a scrolling list of field delimiters and all the field names in your data document (see Figure 2). All you have to do is position the cursor in the letter and then double-click on the field name. Bingo, MacWrite II pastes in the field — surrounded by the proper delimiters. Conditionals are handled the same way.

WriteNow's mail-merge uses the Microsoft model, a paradigm of ugliness that requires comma-delimited fields that force you to surround any text containing a comma with quotation marks and to use international quotation marks (« ») for the field delimiters.

After mail-merge, the most commonly requested feature for a retooled MacWrite was probably multiple columns. It's easy to set up a multiple-column document in MacWrite. You select the Page command from the Format menu and enter the number of columns you'd like (up to ten) and how far apart you want them. MacWrite II calculates the width of each column and reports that size to you at the bottom of the box (see Figure 3).

It isn't just the ease and elegance of MacWrite's multiple columns that are so pleasing — they're smart too. For example, if you designate a title page in a page on which your printer is capable of printing, so you won't place text where it can't be printed. A menu command gives a fast count of words, characters, and paragraphs in the entire document or in just the current selection. The spelling checker is simple and fast (see Figure C). It remembers what parts of the document it has checked and which words you told it to skip, so subsequent spelling checks go even more quickly.

Truth and Beauty — Beyond Features

Much of WriteNow's virtue is aesthetic. The program generally feels right, which unfortunately is not always the case with MacWrite II.

WriteNow runs on any Mac and is very fast in all operations on all machines, while MacWrite II needs at least a Mac Plus.
**MacWrite II** multiple-column document, not only does MacWrite II prevent headers and footers from appearing on the first page, but it also prevents multiple columns from appearing on the title page. If you paste a graphic that's wider than a column into a document, MacWrite II automatically scales that graphic to fit. You can resize it vertically, but you can't stretch it across columns.

WriteNow, on the other hand, restricts you to a maximum of four columns, and setting the intercolumn spacing is such a convoluted process that it's almost painful. As for inserting graphics, WriteNow initially pastes in a cropped version of the graphic, which you then have to double-click on to scale automatically.

MacWrite II offers three major functions that WriteNow doesn't: on-line help (HyperCard-based), a Font menu that displays the font names in the actual typefaces, and a thesaurus (Microlytics' WordFinder). The Font-menu display is a nice touch, but I wish it were switchable as a preference. Showing dingbat fonts such as Cairo can be a problem. And if you have a lot of fonts, it can take a long time to launch the program.

MacWrite II also offers some powerful hyphenation options — WriteNow doesn't even have automatic hyphenation. MacWrite II lets you specify whether and where a given word should be hyphenated, and these specifications can be kept in an active list for use whenever you hyphenate a document.

What's more, you can't get a word count without a spelling check.

MacWrite II's ruler has no invisible grid for positioning tabs and paragraph indents. If you drag a tab near the the 2-inch mark, that's where it will wind up; near the 2-inch mark. To place it there exactly, you either have to type the position into a dialog box or possess unusual mouse dexterity. WriteNow's ruler snaps tabs and indents to an invisible grid that you can turn off when necessary.

There are other irritations. MacWrite II doesn't delete the space after a word unless you use the Cut command; deleting a word with the Delete key leaves the space. And documents created with earlier versions of MacWrite must be opened from within the application and translated; you can't double-click on them and have them launch MacWrite II.

WriteNow has a few quirks of its own. There is no quick way to set line spacing to one-and-a-half- or double-spaced. Setting up multiple-column documents is more difficult than necessary.

**WriteNow has a few quirks of its own. There is no quick way to set line spacing to one-and-a-half- or double-spaced. Setting up multiple-column documents is more difficult than necessary.**

![Figure 3: MacWrite II supports up to ten snaking columns in a document. You set the number of columns and intercolumn spacing in the Page dialog box. MacWrite II automatically scales a pasted graphic to fit within a column. The greatly improved ruler has a dotted line at the top that shows the available text area. The black triangles are indent markers. The icons are for tabs, line spacing, and alignment.](image)

**Figure 3: MacWrite II supports up to ten snaking columns in a document. You set the number of columns and intercolumn spacing in the Page dialog box. MacWrite II automatically scales a pasted graphic to fit within a column. The greatly improved ruler has a dotted line at the top that shows the available text area. The black triangles are indent markers. The icons are for tabs, line spacing, and alignment.**

**Figure C: WriteNow's spelling checker is simple and very fast. Here it offers suggestions for the misspelled word *single*. It remembers which words you decide to ignore and which parts of the document you have already examined, which speeds up subsequent checks.**

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MacWrite II

Power, Not Speed
But MacWrite II isn’t perfect. On 68000 machines, everything is slow — there’s nearly a 2-second lag before a pulled-down menu appears. The spelling checker in MacWrite 5.0 was pretty awful, and this one isn’t any better. It’s still slow, and it doesn’t let you turn the suggestions list off. You also have to do a spelling check to get a word count.

MacWrite II has other minor shortcomings. There’s no option to keep lines together, so you can’t prevent a paragraph from being split. It doesn’t delete the space after a word unless you use the Cut command. And you can’t double-click on documents created in earlier versions and have them open right into MacWrite II. Another drawback is Claris’ unresponsive tech support.

Claris has brought MacWrite a long way, and if it weren’t for its poor performance on 68000 machines, I’d rate it much higher. I’d still recommend it over WriteNow. It has a more powerful feature set and a superb interface — including the best implementation of pop-up menus I’ve seen in any Mac program. With a few improvements, MacWrite may yet challenge Word and the other BMWs of word processing and leave the midsize models like WriteNow in the dust.

Russell Ito is the reviews editor at MacUser. He knows his Thomas Aquinas (the seven angels, etc.), and Jim, to your credit, you’re no Thomas Aquinas.

WriteNow

Why Not the Best?
Overall, WriteNow is faster and simpler than anything else around. I rarely have to look anything up in the manual. There are few complex dialog boxes; most commands are right there in the menu bar. And its novel feature set packs extraordinary power.

T/Maker will give you Sample WriteNow for evaluation. When you print, Sample WriteNow prints an identifying message on each page; otherwise it is identical to WriteNow. You can try it and decide for yourself.

Claris did a respectable job of updating MacWrite, but, for my money, MacWrite II has a long road to travel before it can claim to be better than second-best.~~

James Finn, senior technical writer, is developing a wordless processor and, if successful, may forget his name.

MacWrite II

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value

Comments: Powerful, easy-to-use mid level word processor that outclasses its competition.


Worst Feature: Poor performance on 68000 machines.

List Price: $249. Published by Claris, 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168; (408) 987-7000. Requires Mac Plus or later, 1 megabyte RAM, two 80K drives or hard disk. System 6.0 or later; hard disk recommended for thesaurus, stationery, and help. Not copy-protected.

WriteNow 2.0

Follows Mac Interface
Printed Documentation
On-Screen Help
Performance
Support
Consumer Value

Comments: Elegant, powerful, and extremely fast midlevel word processor.

Best Features: Speed, WYSIWYG editing, flexible “format accelerators.”

Worst Feature: Multiple-column setup is unnecessarily complicated.

Fax-Modem Comparison

By Gordon McComb, Owen W. Linzmayer, and the MacUser Labs staff
The Fax Factor

Today's fax modems have many admirable features. But wait — great stuff is just around the corner.

The biggest news in communications equipment today is the facsimile (fax) machine. By combining the immediacy of the telephone with the dissemination power of the photocopier, the fax machine has established an unshakable foothold in millions of offices worldwide. Never mind that your best excuse for being late — "I mailed that report three days ago" — no longer holds water. Fax means instant gratification and no more little white lies.

Until recently, these machines could communicate only with each other. Then along came the fax modem, and overnight every fax machine in the world was transformed into a low-end, 203-dot-per-inch (dpi) printer that your Mac could access just as easily as the ImageWriter on your desk.

Unfortunately, at this time, the marriage of the fax modem and the Mac has resulted in a small crop of imperfect products. MacUser Labs torture-tested the three Macintosh fax modems available at press time: Apple Computer's AppleFax (both with and without BackFAX, Solutions International's replacement software), STF Technologies' FAX-st., and Abaton's InterFax'12/48. We judged each fax modem on its transmission speed, document conversion efficiency, image fidelity, ease of use, and printing speed.

Some of these units proved to be an adequate substitute for a stand-alone fax machine. Although fax modems are relatively inexpensive ($495 to $699) and offer features not available in traditional fax machines, they do have inherent disadvantages that may not be obvious to prospective buyers (see "Weighing the Fax" sidebar).

If you want to get your money's worth from the fax modems currently available, most of the documents you send should already exist as Mac files, and you shouldn't expect to receive many faxes. On the other hand, if you can wait a few months, you'll be generously rewarded with some promising new products (see "On the Horizon" sidebar).

In this first look at Macintosh fax modems, we discuss the features to look for, what's wrong (and right) with the current products, and what's coming down the pike. Once the technology has matured, we'll be back with a more comprehensive evaluation of fax modems.

A Short History of Fax

The idea of transmitting pictures through wire from one location to another was first proposed in 1842 by Scottish psychologist and author Alexander Bain, and the first working facsimile machine appeared in 1854. Despite gradual improvements in the technology, the concept languished for more than a century, until the mid-1980s, when it caught on like brush fire.

Why the sudden reawakening of fax? Digital transmission. Early fax machines were hamstrung by antiquated analog
transmission. But in the early 1980s, a digital-communications standard called Group 3 was established by CCITT (an international standards committee based in Geneva), and corporate communications has never been the same since.

The Group 3 protocol is a vast improvement over previous fax standards. With its data compression and maximum speed of 9,600 baud, it lets fax machines transmit a full page in less than a minute, which is several times faster than the analog-transmission rates of the Group 1 and 2 standards. Furthermore, Group 3 offers greater resolution (203 x 98 dpi in standard mode or 203 x 196 dpi in fine mode), yielding sharper images.

An even more advanced protocol, Group 4, has already been established, but its widespread implementation must wait until the world’s phone lines are upgraded to ISDN, a high-speed, all-digital standard. It’s estimated that such a system won’t be available in the United States until the late 1990s.

Suffice it to say, when most people talk about fax, they mean Group 3 fax. Many modern stand-alone fax machines are compatible with the older standards, however. Among the fax modems we tested, only the AppleFax can communicate with most Group 2 machines. The other two units are Group 3-compatible only.

How Fast Fax?

Like a regular data modem, a fax modem is a hardware device that sits between the Mac’s serial port and a telephone jack. But instead of sending data from one computer to another, a fax modem trades documents with other fax
stations, they fax modems or machines (see “How It Works” sidebar).

Although fax modems are surprisingly similar to data modems both in appearance and functionality, they aren’t interchangeable, because of differences in their communications standards. (The Interfax 12/48, however, is a double-duty unit that combines a 1,200-baud Hayes-compatible data modem with a 4,800-baud fax modem.) While the most popular data modems lumber along at 1,200 and 2,400 baud, Group 3 fax modems typically operate at 9,600 baud (see Glossary).

Of the three Macintosh fax modems we tested, only one — the AppleFax — is capable of 9,600-baud operation; the InterFax 12/48 and FAXstr have a maximum speed of only 4,800 baud. Although the latter are initially less expensive, their slower transmission speed can mean higher phone bills. Consider this scenario: You send a four-page document each business day from San Francisco to New York. At approximately 25 cents per minute (AT&T’s standard daytime rates), you’ll spend more than $500 annually in long-distance calls with a 4,800-baud fax modem. This expense could be substantially reduced by substituting a 9,600-baud fax modem.

Software Does It All

Unlike fax machines, whose features are built into the hardware, Mac fax modems differ from each other mainly in their software, which handles tasks such as automatic dialing, group distribution, and polling (see “Fax-Modem Features” table). Early adopters needn’t worry about their modems’ quickly becoming obsolete, since improvements in features and performance involve software revisions rather than expensive hardware upgrades.

The software for all three fax modems shares a common thread: The programs send faxes from within applications, using fax-modem drivers that come with the software package.

After you’ve copied the driver file to the System folder, you can select the fax modem with the Chooser DA, as if it were an ImageWriter or any other printer. Then from within any standard Macintosh application, you simply “print” the document — whether it is straight text or a sophisticated DTP manuscript replete with illustrations — to the fax modem, and a special dialog box appears in which you specify options such as telephone number, page range, and quality (either standard or fine resolution). The receiving fax station can be thought of as a printer located at another site, with the telephone lines providing the physical connection.

All this is well and good if everything you want to send exists as electronic files. But what about sending paper documents? These can be transmitted only if they are first digitized by a scanner (see “Gray Expectations,” June ’89). But don’t purchase a scanner for this purpose alone, since the combined cost of a scanner and fax modem easily outstrips the price of a well-outfitted stand-alone facsimile machine, which does the job much more conveniently.

Covert Actions

Fax modems don’t simply take a MacPaint document, for example, and

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**Fax Transmission Costs**

Although initially less expensive, 4,800-baud fax modems can rack up higher phone bills in the long run.

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**Weighing the Fax**

**Advantages**

- **Low cost.** At roughly half the price of comparably equipped stand-alone units, fax modems are a good buy for individuals and small businesses.

- **Convenience.** If the documents you want to send already exist as computer files, there’s no need to print a copy just to run through a fax machine. Also, if you must send additional copies in the future, it may be easier to pull the file from disk than to locate a printed original.

- **Security.** Unlike documents sitting in the output trays of traditional fax machines, documents received by a fax modem are stored on disk, hidden from prying eyes.

- **Low maintenance.** Unlike fax machines, fax modems have no breakable moving parts and no paper that might run out or jam.

- **High-quality transmissions.** Faxed documents are clear and crisp. Even when received by a thermal-printing, stand-alone fax machine, your Mac-generated faxes resemble LaserWriter output.

**Drawbacks**

- **Long print times.** This is perhaps the biggest bane of fax modems. Printing just one ten-page document may take up to an hour. Without a print spooler, work on your Mac comes to a halt.

- **Network incompatibility.** None of the modems reviewed are accessible by multiple users on a network. Without this capability, a separate modem is required for each workstation, or one Mac must be dedicated for fax use.

- **Huge files.** Fax documents consume roughly 100K of disk space for each page. Makers of fax modems “suggest” a hard disk. In reality, a hard-disk drive is mandatory.

- **Lengthy conversion times.** Prior to or during transmission, a document must be converted to the Group 3 fax format, a process that ties up your Mac.

- **No built-in scanner.** Fax modems are great for sending Mac-generated documents but not printed originals. To send originals, you must add an optical scanner to your system, at significant expense.

— Owen W. Linzmayer
spit it out over the phone line. Behind the scenes, the fax driver first converts the QuickDraw description of the document to the standard data format specified by the Group 3 protocol. Only then can the fax file be transmitted.

With Abaton's InterFax, after the document is converted into a compressed fax file, you regain control of the Mac and can continue to work while the transmission occurs in the background (you don't need MultiFinder). This ability to send and receive faxes in the background is vital; otherwise your Mac can be tied up for hours.

The software that comes with the FAXstf and AppleFax modems lacks this backgrounding capability. You must wait until the entire fax has been sent (or received) before you regain control of the Mac. This problem is exacerbated in the case of the AppleFax by the fact that the driver performs its conversion to Group 3 format "on the fly" as the document is sent. Since you pay for the total time the telephone is off the hook, you wind up paying for the conversion. This serious

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**On the Horizon**

MacUser Labs received several new fax modems too late to test for this report. Several other manufacturers also have fax modems scheduled for release by the time you read this (or shortly thereafter). We'll have a complete report in a future issue; meanwhile, here are some products to watch for.

By August, Abaton plans to ship the InterFax 24/96, a double-duty unit combining a 2,400-baud data modem with a 9,600-baud fax modem. We liked its predecessor, the 12/48 (reviewed this month), lamenting only the slow 4,800-baud transmission speed; the new hardware addresses this shortcoming. New software features for the 24/96 will include generation of cover pages, insertion of page headers in fax transmissions, and spooling of inbound faxes to a designated folder. It will also support the Apple and Abaton scanners and be able to save fax files in uncompressed TIFF format.

Most importantly, the new software will offer limited networking capabilities, allowing access to a single modem by multiple users. The entire package (modem and software) will retail for less than $700. A nominally priced software upgrade will give registered owners of the InterFax 12/48 all the functionality of the 24/96, excluding the 9,600-baud capability.

Solutions International, publisher of BackFAX, will release its FaxGATE software as soon as version 2.0 of Microsoft Mail ships. Working in conjunction with BackFAX and Microsoft Mail, FaxGATE lets you send a fax via the mail server, which handles the transmission with an AppleFax-compatible modem. Only one fax modem is required for the entire mail network. No price has been set at press time.

Ricoh is poised to release the DX-1, a 9,600-baud fax modem that can connect to a stand-alone fax machine for use as a low-end Macintosh printer and scanner. The DX-1 is an intelligent device that baby-sits the fax machine and Mac. For example, if the fax machine runs out of paper, the DX-1 shunts inbound faxes to the computer for storage on a hard disk. It also offers full polling and a digital interface to all Ricoh fax machines. The DX-1 will retail for less than $900, including unspecified OCR software.

The Tefax RA-2110 from Relisys is a stand-alone, 9,600-baud fax machine with thermal printer, scanner, and telephone handset that can communicate with a Mac or PC via the serial port. Shipped with software for both platforms, the Tefax lists at $1,595. The current version of the Mac software does not use the print method to send faxes. Instead, documents are either imported to the Tefax application in PICT format or created with the built-in editing tools. In August, Relisys will begin shipping the Tefax with BackFAX software.

At press time, Cypress Research planned to release FaxPro in June with a price of $995. This double-duty unit combines a 9,600-baud fax modem with a 2,400-baud data modem. A beta copy of the software appeared to be comprehensive and easy to use. Like BackFAX, it allows transmission and reception in the background without MultiFinder. The FaxPro from Genius is a 9,600-baud fax modem with sufficient internal memory to receive and store an eight-page document, even if the Mac to which it is connected is turned off. Priced at $1,295, the FaxPro will be bundled with BackFAX and should be available late this summer.

Computer Friends is currently distributing Lightspeed's LightFax, a double-duty modem with 9,600-baud fax and 2,400-baud data communications capabilities. The software we saw had limited background reception, similar to that of the FAXstf reviewed this month. The LightFax software does not use the printing metaphor to transmit a fax from within any standard Mac application. Instead, documents must be created within the supplied fax editor. Computer Friends promises that software using the printing metaphor will ship in fall of 1989. The LightFax costs $799.

By the time you read this, Circuit Research should be shipping its double-duty unit, the FlexFAX. Priced at $985 and bundled with BackFAX, the FlexFAX combines a 2,400-baud data modem with a 9,600-baud fax modem. It's completely compatible with the AppleFax hardware, allowing it to transmit data at 9,600-baud to AppleFax and other FlexFAX modems.

Orchid's MacFax is a 9,600-baud fax modem that's also compatible with the AppleFax. Bundled with BackFAX, MacFax was slated to ship in June with a list price of $599.

— Stephan Somogyi
Compatibfe

The SupraModem 2400 is 100% compatible with industry-standard, intelligent "AT" commands and all commonly used protocols (including Bell 103/212A, CCITT v.22, and CCITT v.22bis). Since the SupraModem operates asynchronously at 300, 600, 1200, and 2400 baud, you can communicate at whatever rate you need to. All these features let you use the SupraModem 2400 to connect with most modems being used today.

Affordable

In addition to its low price, the SupraModem 2400 will save you money by letting you communicate at 2400 baud, thus decreasing your on-line time. The SupraModem 2400 incorporates the advanced Intel 89024MS chip set. This design utilizes fewer parts, assuring operation long after the one-year warranty period.

Easy to Use

The SupraModem 2400 is very easy to use. It features autoanswer and autodial (tone and pulse) for performing phone tasks, and it has a programmable-volume speaker for monitoring call progress. Storing phone numbers and user configurations is also simple because of the modem's programmable nonvolatile memory.

These features and others are explained thoroughly in the comprehensive SupraModem 2400 Operator's Manual. Once you understand the basics, the modem's quick-reference card makes finding command descriptions and other modem information quick and simple.

And to make it even easier to begin telecomputing, the SupraModem 2400 comes with introductory packages for several popular on-line services.

Special package available for Macs!
The SupraModem 2400MC combines the standard SupraModem 2400 package with popular telecommunications software and a Peripheral-8 to RS-232 cable for connecting the modem to your Mac. $249.95.

Supra Corporation
1133 Commercial Way / Albany, OR 97321 U.S.A.
Phone: (503) 967-9075 / Fax: (503) 926-9370
Telex: 5106005236 (Supra Corp)

Available at your local dealer or call
(800) 727-8772
Orders Only

Introducing the Exciting New
SupraModem 2400

ANOTHER SUPRA VALUE!
Suggested Retail
$179.95

SupraModem 2400™ is a trademark of Supra Corp. Macintosh™ is a trademark of Apple Computer.
Fax-Modem Comparison

Fax-Modem Features

<table>
<thead>
<tr>
<th>Company</th>
<th>AppleFax 1.2</th>
<th>BackFAX 1.02</th>
<th>FAXstf 1.0.3</th>
<th>InterFax 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$699</td>
<td>$245</td>
<td>$695</td>
<td>$495</td>
</tr>
<tr>
<td>Speed (baud)</td>
<td>9,600</td>
<td>NA</td>
<td>4,800</td>
<td>4,800</td>
</tr>
<tr>
<td>Size (W x L x H, inches)</td>
<td>4.75 x 8 x 2</td>
<td>NA</td>
<td>3.5 x 6 x 1</td>
<td>5.75 x 8 x 1.25</td>
</tr>
<tr>
<td>Warranty</td>
<td>90 days</td>
<td>90 days</td>
<td>90 days</td>
<td>1 year</td>
</tr>
</tbody>
</table>

Transmission features

- **Background operation**
  - AppleFax 1.2: No
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: No
  - InterFax 1.0: Yes

- **Cover page**
  - AppleFax 1.2: No
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: No
  - InterFax 1.0: Yes

- **Phone directory**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Group distribution**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Enveloping**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Scheduled transmission**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Auto-redial**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **LO fonts provided**
  - AppleFax 1.2: Times, Helvetica, Symbol, Courier
  - BackFAX 1.02: None
  - FAXstf 1.0.3: None
  - InterFax 1.0: SWA Swiss, SWA Dutch

Reception features

- **Auto-answer**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Polling**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: No
  - InterFax 1.0: Yes

- **Activity report**
  - AppleFax 1.2: Yes
  - BackFAX 1.02: Yes
  - FAXstf 1.0.3: Yes
  - InterFax 1.0: Yes

- **Magnification (percent)**
  - AppleFax 1.2: None
  - BackFAX 1.02: None
  - FAXstf 1.0.3: 50, 75, 200, 300
  - InterFax 1.0: 5-1,000

- **File formats (non-CITT)**
  - AppleFax 1.2: None
  - BackFAX 1.02: PICT, TIFF
  - FAXstf 1.0.3: None
  - InterFax 1.0: PICT, TIFF, MacPaint (G3), MacPaint

**Glossary**

**activity report** — A log generated by the fax software and saved to disk that lists all documents sent to and received from fax stations, including any problems that are encountered.

**auto-answer** — The modem picks up the phone when it detects a signal and then establishes a connection with the remote modem.

**auto-redial** — The modem repeatedly dials a busy number until it gets through.

**background operation** — A multitasking feature that lets you continue to work in an unrelated application even as the fax software uses the modem to send and receive documents.

**baud** — The speed of data transmission, roughly corresponding to bits per second. All other things being equal, the higher the baud rate, the faster the transmission. The standard speed for Group 3 transmissions is 9,600 baud.

**CCITT** — The International Consultative Commission on Telephone and Telegraph, a commission charged with establishing standards for telephone communications, including facsimile transmission.

**cover page** — Typically the first page in any fax document. It contains such information as total number of pages, date of transmission, sender's name and phone number, recipient's name, and instructions to be followed on receipt.

**enveloping** — Transmitting multiple files as a single fax document. For example, a MacWrite manuscript and a MacDraw illustration can be placed in an "envelope" and transmitted as a single fax.

**fall back** — To decrease the rate of transmission, usually to accommodate a slower receiving fax machine or to compensate for excessive noise on the telephone line.

**Groups 1, 2, 3, 4** — Transmission standards initially set by manufacturers in the early days of facsimile and eventually codified by the CCITT. Groups 1 and 2 are essentially extinct analog protocols. Group 3 is a digital protocol that incorporates automatic compression and is the current worldwide standard for fax transmissions. A more advanced standard, Group 4, is likely to supersede Group 3 sometime in the late 1990s.

**group distribution** — The capability of transmitting the same document or envelope to multiple fax stations. Groups can be defined in customized telephone directories.

**phone directory** — A databases-like list of the names and phone numbers of the people to whom you commonly send faxes.

**polling** — Making one call and both sending and receiving a fax, or calling a remote fax location and requesting a transmission.

**scheduled transmission** — Unattended sending of documents at some later time, typically late at night when phone rates are lower.
Take this simple test to qualify for a great deal on MacWrite II.

Do you own Microsoft Word?  Yes  No
Do you own Microsoft Works?  □ □
Do you own Microsoft Write? □ □
Do you own FullWrite Professional? □ □
Do you own WriteNow? □ □
Do you own Word Perfect? □ □
Do you own MindWrite? □ □
Do you own any version of MacWrite? □ □

If you answered yes to any of the above questions, you qualify (not exactly rocket science, was it?). And you can get MacWrite II (a $249 value) for only $75, or $65 for registered MacWrite 5.0 owners. To find out more, follow these simple steps: look at the number below, pick up your phone and dial.

Trade-in hotline 800-544-8554.
drawback diminishes the cost advantage of 9,600-baud transmission.

Fortunately for AppleFax owners, Solutions International offers BackFAX, a $245 replacement software package for the AppleFax modem that, among other things, sends and receives in the background and performs document conversions off-line prior to transmission.

Midnight Caller

Another important feature of some fax modems is the ability to schedule transmissions to begin at a later time or date to take advantage of lower phone rates. With the InterFax and BackFAX units, as long as the Macintosh is turned on at the specified time, the fax application will kick in and send the document automatically in the background, even if you are working in a different application — pure elegance in contrast with the Apple and STF software.

To schedule a transmission with Apple's software, you must save a QuickDraw description of the document, using the fax driver; quit whatever application you are in; launch the AppleFax application to specify when to send; and then be sure to leave the AppleFax application running at the designated time. This rigid procedure leaves the dirty work to you instead of to the Mac.

The FAXstf software is marginally better, in that you needn't launch the fax application and leave it running. Instead, you can have it running in the background under MultiFinder. When it's time to transmit, the application comes into the foreground and doesn't relinquish control until the fax has been sent.

Better to Give Than to Receive

Ideally, when it comes to receiving faxes, fax modems should mimic fax machines — sit obediently in the background waiting for inbound faxes, that is. When the phone rings, answer it and accept the fax. The InterFax and BackFAX packages do just that. As a document is received, it is unobtrusively stored to disk. Your work continues uninterrupted.

In contrast, the AppleFax application must be running to receive a fax. Either you dedicate a Mac as a fax station (an expensive proposition), or you restrict inbound faxes to a time when you won't be using your Mac (inconvenient for sender and recipient). Furthermore, the AppleFax software receives at only 4,800 baud instead of at its 9,600-baud sending rate. Since the AppleFax program has no backgrounding ability, your Mac is tied up longer while receiving inbound faxes.

Like AppleFax's, the FAXstf software can't work in the background, so it must be running if you expect to receive a fax. If you use MultiFinder, however, it can lurk unobtrusively behind whatever you're currently doing. Once it detects an inbound fax, it immediately takes control of the computer until the entire document has been received.

Examining the Fax

One advantage that fax modems have over stand-alone machines is that inbound faxes are stored on-disk, away from prying eyes. No need to worry about office snoops looking at confidential material sitting in the output tray of the fax machine. It should be easy to examine saved fax documents on-screen or print hard copies at your convenience — but it's not.

Since faxes are received and stored in Group 3 format, you must use a fax-modem application to display them, and you need patience as the fax file is converted to QuickDraw for screen display. If you use InterFax or BackFAX, however, you can redisplay documents in a variety of graphics formats (such as PICT) that paint and DTP applications can recognize. If a fax you've received is pre-

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The E-Mail Connection

Even without a fax modem, you may be able to send faxes from your Mac and not even know it. The major information systems and E-mail services now offer subscribers the ability to send faxes to any Group 3 fax station in the world. You can send text only, you can't receive anything, and it's a bit more expensive than the long-distance telephone call you make to send a conventional fax. Still, it beats sinking hundreds of dollars into a fax station of your own. It's even less than half the price of sending documents via the mail.

Many of these on-line services, including MCI Mail, AT&T Mail, Compuserve, EasyLink, The Source, and Connect (via MCI Mail), feature a fax option. Price, ease of use, and performance vary, but all the systems do the same thing — they let you send a fax about as easily as you send electronic mail.

For the most part, you either compose or upload your message just as you do regular electronic mail. When you're finished, you indicate that the document is to be sent to a fax station rather than to another subscriber's E-mail box. You enter the recipient's fax number, and away your document goes.

Speed is not an obvious issue with E-mail faxes until something doesn't show up on the far end. AT&T and MCI transmit their faxes almost instantaneously. EasyLink takes a few minutes, and Compuserve has been known to take several hours.

Pricing is the thorniest issue of all, if only because it is the most complex. Besides the price of the transmission itself, you need to factor in annual fees, monthly minimums, and connect-time charges. All this makes comparison shopping for E-mail fax services about as easy as preparing your tax return with an abacus.

In general, MCI turns out to be the cheapest for short domestic faxes, followed by AT&T. EasyLink and Compuserve cost the same and are the most expensive. For longer domestic messages, MCI is cheapest by a wide margin, and AT&T becomes slightly more expensive than Compuserve and EasyLink.

International faxes are another matter. If the message is going overseas, AT&T is the cheapest service, followed closely by MCI. EasyLink is in third place, and Compuserve can cost almost twice as much as the cheapest service.

Which service should you use? Whatever one you currently subscribe to. Unless you're sending a lot internationally, the price and service differences are not substantial enough to warrant changing your on-line service.

If you're new to telecommunications and want to send faxes this way, check out AT&T Mail. For overall price, ease of use, and service, it generally comes out ahead of the competition.

— Daniel J. Rosenbaum
Capsule Reviews

AppleFax
With a maximum transmission speed of 9,600 baud, this fax modem has the potential to be the fastest of those reviewed, but not with Apple's software. Pros: Speedy hardware; clean interface; trades binary Mac files with other AppleFax units; enveloping; LO fonts provided; pass-through port for additional serial devices. Cons: High price; no background operation, even with MultiFinder; 4,800-baud reception; slow printing; no screen magnification of received documents; polls only other AppleFax units; can't save in other file formats.

Apple Computer
20525 Mariani Ave.
Cupertino, CA 95014
(408) 998-1010
$699

BackFAX
Third-party replacement software for the AppleFax that puts Apple's application to shame. Pros: Full background operation, even without MultiFinder; fast conversion to fax format; cover pages; saves in multiple file formats. Cons: Expensive option for an already pricey fax modem; makes you reenable send and receive after every reboot; no enveloping, magnification, or polling.

Solutions International
30 Commerce St.
Williston, VT 05485
(802) 668-5508
$249

FAXstf
This pocket-sized fax modem costs as much as the AppleFax, but it's only half as fast and offers few features. Pros: Easily portable; convenient carrying case; manual-send option. Cons: 4,800-baud operation; slow conversion and printing; pseudo-background capability; poor user interface; no enveloping, LO fonts, or polling; can't save faxes in other file formats.

STF Technologies
P.O. Box 247
Higginsville, MO 64037
(800) 426-1678 or (816) 584-7727
$695

InterFax 12/48
Offering the best price/performance combination of the units tested, this is also the only fax modem with a built-in, 1,200-baud, Hayes AT-compatible modem. Pros: Background operation; intuitive user interface; lowest price; fast conversion and printing; enveloping; variable screen magnification; LO fonts provided; saves in multiple file formats; one-year warranty. Cons: Top transmission speed of 4,800-baud; can poll only after transmitting page.

Abaton
48431 Milmont Drive
Fremont, CA 94538
(800) 444-5321 or (415) 683-2226
$495

dominantly text-based and you want to convert it into a word-processing file, you'll need optical-character-recognition (OCR) software such as Caere's OmniPage (see Quick Clicks, March '89). With AppleFax and FAXstf, all you can do is read or print a fax. There are no options to save in any other file formats, so you can't convert their faxes for use in graphics or text applications.

Because their resolution is higher than that of the Mac's 72-dpi screen, most faxes with small type are illegible on-screen. To read a fax, you must magnify it with the fax-modem software if possible. InterFax and FAXstf offer screen magnification of received documents; AppleFax and BackFAX don't. Moreover, without a large screen, you may not be able to display a full page. And if you want to pan around freely to see the entire document, you'll need lots of memory. The apparent solution to all these problems is to print faxes and look at them on paper.

Unfortunately, printing faxes can take an incredibly long time, for two reasons.
The first is not the fault of the fax application: The documents exist as bit-mapped images, and PostScript printers are not designed with such images in mind. (The ImageWriter, a dot-matrix printer, can easily handle bit maps, but its impact print mechanism is inherently slow.) Second, with the exception of the InterFax, the fax applications use inefficient printing routines (see "Printing" chart).

**Test Results**

MacUser Labs developed a series of benchmarks to test not only the performance of the four fax-modem/software configurations but also the document quality they provide. For comparison purposes, we created a typical two-page document in PageMaker that contained both graphics and text and then performed all the benchmarks on a Mac II running MultiFinder. All faxes were sent to a Ricoh Rapiom 205, a 9,600-baud Group 3 stand-alone machine.

**Background Operation.** The first test concerns the “hassle factor” — the time between initiation of a fax transmission and the instant you can resume work on your Mac. The AppleFax and FAXstf applications — lacking background capability — are the losers here, since they don’t relinquish control until the fax has been transmitted (see “Regain Control” chart). BackFAX requires only a brief interruption to convert QuickDraw to Group 3 format and then lets you get on with your work as it transmits unobtrusively in the background. Solutions International has years of experience refining QuickDraw conversion techniques for its Glue products. Its BackFAX application is more than twice as fast as InterFax’s, which also runs in the background.

**Off-Hook.** Most important for calculating variable costs is the time spent off-hook while the fax modem is communicating over the phone lines. At 9,600 baud, the AppleFax modem is faster than both the 4,800-baud InterFax and FAXstf modems (see “Off-Hook” chart). For best performance, add the BackFAX software, which has an edge over Apple’s because it converts documents before initiating the call.

BackFAX, the fastest of the lot, required 139 seconds to transmit our two-page document. The second is not the fault of the fax application: The documents exist as bit-mapped images, and PostScript printers are not designed with such images in mind. (The ImageWriter, a dot-matrix printer, can easily handle bit maps, but its impact print mechanism is inherently slow.) Second, with the exception of the InterFax, the fax applications use inefficient printing routines (see “Printing” chart).
A full-featured Mac fax station costs much more than a stand-alone unit.

Even when received by a thermal-printing, stand-alone fax machine, Mac-generated fax documents resemble LaserWriter output. The image on the left is an enlarged sample of our test document as printed on a LaserWriter INTX from PageMaker. The other images show the same document as sent by BackFAX to a Ricoh Rapicom 205 fax machine. At 203 x 96 dpi, standard resolution provides an acceptable document, and fine resolution (203 x 196 dpi) is virtually indistinguishable from the LaserWriter output.
Executive Summary

After examining the current crop of fax modems, we came to one inevitable conclusion: This is not the ideal time to buy a fax modem for the Mac. Granted, fax modems are relatively inexpensive compared with fax machines, and they offer convenience, security, and high-quality transmission in a low-maintenance peripheral. The products reviewed are plagued by slow transmission and printing speeds and network incompatibility, however.

If you must have a fax modem now, the InterFax 12/48 offers the best price/performance trade-off. At $495, it’s the cheapest modem we tested, yet it comes with a built-in, 1,200-baud, Hayes-compatible data modem. The software is intelligently designed, with a nice feature set and a smooth, intuitive user interface. The InterFax can send and receive faxes in the background, and it has the fastest printing times. Regrettably, the software is reined in by the 4,800-baud hardware, which slows transmission times.

The AppleFax/BackFAX combination offers the best of both worlds: good software and fast hardware (9,600 baud). But you pay dearly — the combined cost is $944. If price is no object, however, this package is hard to beat.

The software that comes with the AppleFax and FAXstf modems needs serious refinement. Both products desperately need background operation and improved print routines. STF Technologies is poised to release version 2.0 of its FAXstf software, but neither of these problems will be addressed.

Overall, it may be prudent to wait for the second generation of Mac fax modems. Many of the problems that afflict the fax modems reviewed here are likely to be resolved in the near future. The most promising newcomers are fax modems that can be shared across a network.

Once these units reach the market, the long lines at the communal, stand-alone fax machines may become a thing of the past in Macintosh offices.

Although not as performance-oriented, Apple’s software also has a clean user interface with familiar metaphors, such as putting multiple documents into an envelope. BackFAX makes you work harder — for instance, you must explicitly enable its send-and-receive capability after every reboot. Last is the FAXstf software, whose unintuitive interface requires a series of convoluted steps for even mundane operations such as sending a fax.

Future Faxes

Without a doubt, the fax modems examined in this report represent only the first wave of an emerging technology. New fax modems will soon be flooding the market, and the current contenders will have to beef up their software to compete. In any event, the 4,800-baud FAXstf and InterFax 12/48 will be hard-pressed to compete with the performance of newer fax modems, which are all likely to be 9,600-baud units (see “On the Horizon” sidebar).

Trends to look for: fax modems for multiple users on a network; double-duty units containing both fax and data modems; stand-alone fax machines, controlled through the Mac’s serial port, that can be used as fax modems and low-end printers and scanners; and software with more performance-efficient transmission and printing routines as well as refined user interfaces.

Considering the foibles of the current crop of Macintosh fax modems, you may be better off waiting for the next generation. In the meantime, you should take a look at “The E-Mail Connection” sidebar to find out about some low-cost alternatives to fax modems that are worthy of investigation.

Gordon McComb writes frequently about computers and high technology. His latest book is Working with Word, Second Edition (Microsoft Press). Owen Linnmayer, formerly the technical editor of A+ magazine, is currently doing time as a MacUser associate editor.

Kudos

MacUser Labs would like to thank the members of our advisory panel: Tom Evisin of Solutions International, Doug Troxell of STF Technologies, and especially Rich Blanchard and Glenn Vologhin of Cygnet.
Bill's experiencing deja vu.

He hates deja vu.

APC's 110SE uninterruptible power supply for the Macintosh™ assures that you won't waste time recovering from the effects of power loss.

Common power disruptions like spikes, sags, and surges may cause you to spend needless hours rekeying lost data, unscrambling files, and just finding your original starting point. Hardly good use of your time.

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110SE UPS is recommended for use with Macintosh SE (all models), Plus, 512K, including systems with Apple or compatible external hard drive.

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Backup is easy and fast. Bernoulli lets you make disk-to-disk copies in as little as 3 minutes for 44 megabytes. And since Bernoulli Disks are removable, you can organize your projects on individual disks and keep all of them under lock and key.

Now your data can really go places, too. Bernoulli lets you share files between your Mac and PS/2®‘s, PC’s and compatible computers,* and with Bernoulli’s ruggedness you can send disks across the office or around the world without concern. And whether for growth or sharing, the 44MB Bernoulli lets you add additional storage for under $3 per megabyte.**

Those are a few reasons why Bernoulli is the overwhelming leader in removable mass storage, with over 400,000 drive systems and 2.75 million disks in use worldwide. More important, 95% of those users recommend Bernoulli. So see your nearest Iomega Authorized Reseller, or call 800-453-3394 for complete benefits and specifications.

*Made possible with Iomega Bernoulli Disk Exchange software. **Based on $125 U.S. retail price for 44MB Bernoulli. Bernoulli and Bernoulli Disk are trademarks of Iomega. Macintosh is a registered trademark of Apple Computer, Inc. PS/2 is a trademark of IBM.

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This month Fine Print offers practical tips on avoiding font problems when dealing with service bureaus. Desktop Reviews focuses on clip art: We review eight collections of EPSF and TIFF graphics, most of them with a business flavor. If your graphic embellishments look too flat, check out our appraisal of Clip3D—a sophisticated editable 3-D clip-art system.

**Between the Lines**

**Elastic Fonts on Demand**

Apple has announced a new outline-font technology and format, and a new System capability for scaling such fonts to any point size smoothly, in print as well as on-screen. Apple isn't going into the type business, however; it will provide only a core set of fonts in the new format. Unlike Adobe's encrypted-font technology, Apple's format is published and completely open, inviting third-party font suppliers to develop or convert their own typeface offerings freely.

The current Macintosh font-display process depends on the existence of bit-mapped versions of each font in each size you use. If you use a point size for which you have no bit map, the system resizes the closest available one. With Apple's new font system, text will always be rendered at the full resolution of your screen, free of the jaggedness that was typical of resized bit maps. Apple says the new fonts will print at the best resolution of a given output device and will contain embedded information for optimizing the appearance of individual characters at various printer resolutions and in small point sizes.

The new format is optimized for speed by the Mac's new System 7.0 (the shipping date of which had not yet been announced at press time). Every Mac from a Plus on up and every printer currently supported by Apple will be able to reap the benefits of Apple's new font philosophy, in which existing bit-mapped and PostScript fonts are handled the way they are now.

A week before the Apple announcement, Adobe Systems announced its Adobe Type Manager (ATM), an INIT file that offers part of the functionality of Apple's newly announced outline-font system. ATM's main purpose will be to provide on-screen display of PostScript outline fonts automatically and transparently, in any size. ATM's operation will be transparent to both applications and users, but it will work only with typefaces produced with Adobe's own fonts (more than 400 and counting) or with Adobe-licensed encrypted-font technology (coming soon from companies including Compugraphic, Monotype, and Varityper).

Although ATM focuses on screen type, its font-sizing benefits will extend to ImageWriter printing as well. Technically, even high-resolution non-PostScript printers can benefit, but some licensing issues are still unresolved. For ATM to work properly, your System folder must contain the downloadable PostScript outlines of the specific fonts you intend to use, even if they're fonts that normally reside in your PostScript printer. ATM is slated for wide distribution at a moderate price and is expected to ship by the third quarter of '89.

—— Salvatore Parascandolo

**A Font Strategy of Another Type**

Quark has also been busy enhancing its approach to fonts. With QuarkXPress' upgrade to version 2.1, PostScript fonts are rendered smoothly on the screen at any point size, regardless of whether the bit map for the specified font size is available. Quark's implementation works...
only for nonencrypted fonts, however; Adobe's fonts don't benefit. Kerning tables can now be created and edited within QuarkXPress. A Hyphenation and Justification menu item has been added, as have a tracking editor and automatic baseline alignment. The upgrade is free to owners who purchased QuarkXPress after March 13, 1989.

— Aileen Abernathy

With Apple's, Adobe's, or Quark's type managers you can use large fonts at any time, and they'll look smooth on-screen in all sizes. This was rezised by a prototype of Apple's new System software. Note that the jaggedness doesn't increase as the character is enlarged.

**Clippings**

**Freedom of Press**, a purely software PostScript-compatible interpreter, will soon enable Macintosh applications such as Adobe Illustrator 88 and Aldus FreeHand to output to several families of non-PostScript devices in full 24-bit color and high resolution. The product should provide a cost-effective PostScript printing and imaging solution. Its abilities have already been thoroughly exercised on PC, Sun, and high-end graphics systems. The Macintosh II version should be available in August. Among the devices it drives are the Howtek PixelMaster inkjet color printer; the Montage FR1 film recorder; Seiko's CH303 thermal color printer; and Hewlett-Packard's LaserJet, DeskJet, and PaintJet printers. Like other non-Adobe interpreters, Freedom of Press won't work with Adobe fonts, but it will ship with equivalents of the 35 fonts

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We believe that nothing in life should be more difficult than it has to be. And that doubly applies to computers. By adding the right tools, you can make your work both easier and more productive.

The Curator™ manages your art collection and converts artwork into different file formats. Different paint and drawing programs store graphics in a number of ways. And unless your program speaks that file's particular language, it can't read it. EPS, PICT, TIFF—we shouldn't have to memorize this alphabet soup. The Curator simplifies life for you by acting as a multi-lingual interpreter.

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found in the LaserWriter. The $495 package requires no dedicated hardware, and it should generate a large high-resolution ripple in the output-peripheral market. Contact Custom Applications, Inc., Building 8, 900 Technology Park, Billerica, MA 01821; (508) 667-8585.

Treacyfaces, a new digital-type foundry, shipped its first PostScript-compatible typefaces, TF Habitat and TF Forever, in March, with half a dozen more faces scheduled for release this year. Each $170 package contains an original typeface in four style types (roman, bold, italic, and bold italic). The scalable outline fonts and bit maps range from 10 to 24 points, and bit maps for 36 and 60 points are included for better screen display at larger sizes. The faces come with kerning tables containing more than 300 kerning pairs per style.

For each typeface, Treacyface provides a graphics file that can be opened in Illustrator 88 or FreeHand. The entire character set, including control points, can be displayed and manipulated to create logos and other special type effects. In essence, Treacyfaces is giving away its font outlines. You can get the fonts and a free newsletter from Treacyfaces, 111 Sibley Ave., Second Floor, Ardmore, PA 19003; (215) 896-0860.

Kerningware is a two-part product that applies permanent kerning adjustments to your fonts—useful if your layout tasks involve lots of manual kerning. Part One of the package is a set of preconstructed kerning tables, readable by all major DTP packages. With these in your System folder, your fonts will automatically kers every time. Part Two is an editor that lets you create new kerning pairs or edit existing ones, saving your changes. The editor’s interface has both numeric and graphic tools. Kerningware costs $250 and comes with kerning tables for all LaserWriter Plus, NT, and NTX fonts. For $850, you get the editor and tables for Adobe fonts up to volume 39; $1,050 gives you tables for the full Adobe font set; and $1,200 buys a lifetime subscription to kerning tables for all future Adobe fonts. The prices are for site licenses (up to ten Macs). Contact Kerningware Marketing, Inc., 61 Sorlyn Ave., Toronto, Ontario M6L 1H7 Canada; (416) 247-7976.

Savin’s Prism I is a full-color copier that may have a significant impact on desktop publishing. How? By heating color printers at their own game. Color printers are expensive, and each printout costs 50 cents and up. Savin’s Prism I is $17,000, but it produces striking color copies for 10 to 15 cents each. It reproduces highly detailed photographs as

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Let’s say you’ve just finished a layout and submitted it for approval. You send your supervisor an electronic printout (a computer file that looks exactly as if you printed it). After review, they make comments directly on the SuperGlue file (using a computer version of Post-it® notes).

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S martScrap picks up where the Apple scrapbook left off, with multiple scrapbooks, scroll bars, a visual Table of Contents, and Marquee and Lasso. The Clipper provides cropping and scaling tools to any program you’re using.
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and fragile surface common to thermal
printer output. This copier could be an
economical choice for short print runs.
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7.5 copies per minute; in one-color mode,
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Composition Toolbox, developed by
Stonehand, is an integrated set of text-
formatting routines for incorporation into
other programs. The package rapidly per-
forms complex functions such as irregu-
lar wraparound, column flow, kerning,
hanging punctuation, hyphenation and
justification, vertical justification, initial
don characters, and much more. This
impressively speedy product should sig-
nificantly accelerate the development of
text-based products and result in more
stable applications. Contact Stonehand,
Inc., 118 Magazine St., Cambridge, MA
02139; (617) 864-5524.

QuarkEd is a new training program
for QuarkXPress. Each $995 module
guides ten users through an eight-hour
course. Training materials include manu-
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QuarkXPress plus a trainer's guide. Module
I is a hands-on introduction to
QuarkXPress and design theory; Module
II is a more advanced look at the pro-
gram’s design features. Quark’s at 300 S.
Jackson, Suite 100, Denver, CO 80209;
(800) 356-8363 or (303) 934-2211.

Page Designs Quick! is a set of 120
layout templates for PageMaker 3.0x.
The layout templates have pre-sized and
prepositioned picture zones, and text col-
umns are laid out and ready for your
immortal prose. The package comes with
a pictorial directory and how-to manual,
including layout and printing tips. Con-
tact PAR Publishing Co., 6355 Topanga
Canyon Blvd., Suite 307, Woodland Hills,
CA 91367; (818) 340-8165.

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Interesting, Distinctive, and Inexpensive.”
John Dvorak

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2 Sans Serif Family
3 Ritz & Right Bank
4 Monterey Family
5 Regency Script & Calligraphy
6 Prelude Script Family
7 Coventry Script & Zephyr
8 Gregorian & Doronver~
9 Кириллица (Cyrillic)
10 Bodoni Ultra Family
11 Sans Serif Bold Family
12 Sans Serif Extra Bold
13 Gatsby Light
14 Micro Family
15 Micro Extended
16 Galileo Family
17 CAMPAILE & BROAD
18 Alexandria Family
19 Jott Family
20 Gazelle, Kelts, Madsen
21 Palatino, ABILENE
22 COLLEGIATE

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QuarkXPress, electronic publishing software, is a complete publication design and production environment. It combines all the tools you need to create truly professional-quality publications on the desktop.

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To find out more about QuarkXPress, and where to reach an authorized dealer near you, call toll-free: (800) 356-9363.
The Law of the Letter

You've produced a document with one of the popular page-layout programs. You've used several spectacular fonts, your layout looks great on the screen, and LaserWriter proofs confirm that all is well. You're now ready to have it produced at typeset quality on the Linotronic of a perhaps distant service bureau. The process is often seamless and painless. Unfortunately, misconceptions, miscommunications, and misadventures can occur. Font selection is one of the main reasons that the output you've so carefully designed and printed on your system can produce different printed results on another. Here's how to smooth the transition and get what you expect.

First, provide your service bureau with a copy of the finished laser output. Many service bureaus complain that customers don't do this. Without such proofs, they have to work blind, guessing at what you want. They can easily run your job without error indications and yet get output very different from what you expect.

Give the personnel at your service bureau a list of the font names and styles of all type in your document. It lets them check that all the fonts are present and available on their system. It also alerts them to potential font-numbering conflicts; bureaus familiar with such problems can take steps to prevent them. Many keep a list of problem fonts, particularly those created with duplicate font numbers, and can advise you on how to organize and harmonize your own fonts (see "Fonts by Number," July '89).

For any PostScript fonts you use, install screen fonts that match them. Many service bureaus can provide screen versions of the type styles they offer. Alternatively, most font manufacturers—including Adobe and Bitstream—provide screen fonts either gratis or at a nominal charge.

Fonts such as New York, Chicago, Geneva, and Monaco have been designed for legibility on a 72-dot-per-inch screen, but they're bit-mapped screen fonts with no PostScript equivalents. On a LaserWriter, if you choose Font Substitution, Helvetica, Courier, and Times PostScript will be substituted for Monaco, and New York. These surrogates will print at the size(s) you've specified, but because their printed word spacing exactly matches their on-screen word spacing, the results will be either too dense or too sparse—and generally ugly.

With all other font choices, whether or not you've selected Font Substitution, if the LaserWriter has no corresponding resident font and your system has no matching downloadable PostScript font, you'll get a replica of the screen font that will be as jagged as what you see on-screen. If the service bureau doesn't have a PostScript font that you've specified in your document, its system will issue an error message and substitute Courier, which is seldom the best alternative but helps ensure detection of the error. To be doubly safe, always use PostScript fonts and always disable Font Substitution.

Here are two sure ways to avoid service-bureau font problems: When your document is final and perfect, go through the normal printing steps but press Command-F before clicking on the final OK in the Print dialog box. Instead of hard copy, you'll get a PostScript text file that your service bureau can print without the need for either the application that produced your document or its fonts. That information is all embedded in your PostScript file. If your proofing printer is something other than a LaserWriter, however, you must be sure to have the LaserWriter and Laser Prep drivers in your System folder, and you must have selected the nonexistent LaserWriter as your printer in the Chooser for this procedure to work. Unfortunately, this insurance has its cost, because your file will be huge if it includes even a few PostScript fonts other than the 35 built into most PostScript-compatible printers. If you foresee possible last-minute edits at the bureau, include a copy of your document in its native format, because there's no simple way to edit a pure PostScript file.

If this approach sounds inappropriate to you, try the next method.

Use Font/DA Mover to transfer all but the mandatory four fonts from your System file into one suitcase that your System uses automatically on startup, using either Suitcase or MasterJuggler. Give your service bureau both your document and your font suitcase. The people there will know to print your file with only your suitcase open. If you use PostScript fonts that your service bureau doesn't have, you must include these font files in your electronic package.

David Holzgang is an author/consultant who specializes in electronic document processing. Salvatore Parascandolo is a very long name belonging to our graphics specialist.
Thousands of people just like you have put their heads together to form one of the world's most advanced data processors—CompuServe's Mac® Forums. And they'd like you to join them.

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Clip art comes in several formats, each with its desirable traits, but Clip3D may well be the most versatile of all. This clip-art series from Enabling Technologies consists of 3-D color images in Pro3D format, bundled with a powerful editing program. Each Clip3D object is a true (electronic) solid, not a frozen picture. With the editor, you can collect objects from your libraries and position and edit them to build a unique scene. The editor does everything imaginable except create new objects. In addition to importing the included clip art, it reads any images created with Easy 3D or Pro3D.

You begin with a blank 3-D world and insert objects from your collection, progressively fine-tuning your layout. You can examine and manipulate your world from the left, right, back, front, top, or bottom, or in any simultaneous combination of three views. A Camera view can be at any distance and angle from your objects. That view is exactly what prints onto another object's surface. Thus, the enlarge/reduce tool can act as there's no need to select each object individually and delete it. For protection, you can save before importing.

Clip3D's output quality is exceptional. On a LaserWriter, you get excellent halftones. With film recorders, Clip3D prints in a spectacular range of colors. It can also export scenes in MacPaint, object-oriented PICT2, halftone TIFF, or EPSF formats. The Save EPS output option lets you set the precise size of the final output and scales the image accordingly. It then produces a PostScript file, but (ouch) without an attached image you can display on-screen. When you include its EPSF files in layouts, they print quite beautifully, but all you see on-screen is a gray placeholder box with an identifying filename.

Each Clip3D art pack has a theme. The Fonts package contains five well-executed graphics fonts as individual letters and special characters. Accents has arrows, frames, chart elements, piping, and dingbats. Both of these art packs are excellent investments because they can enrich any type of graphic. Geography has a global map as well as outlines of individual nations, U.S. states, and continents. Business contains icons for business and stock-market activities, office furniture, currency, computers and peripherals, and more. Among the other packages are Lifestyle, Messages, People, and Recreation.

The entire Clip3D collection is also available on CD-ROM. Since it's far more than a cut-and-paste product, you'll need a few sessions with it to get used to its 3-D nature and become productive. But the flair that Clip3D can add to your graphics is definitely worth the fuss.

— Salvatore Parascandolo

**Clip3D**

*List Price: $99 per package, including Clip3D editor.*  
*Published by: Enabling Technologies, 600 S. Dearborn, Suite 1304, Chicago, IL 60605; (312) 427-0386.*  
*Version: 1.0*  
*Requires: 1 megabyte RAM.*  
*Compatibility: Mac II and MultiFinder friendly, except that DAs don't activate on a Mac II while Clip3D is active.*  
*Format: Pro3D*  
*Application Size: 222K*  
*Copy Protection: None*
Even the best business document can seem pretty dull when it's gray, gray and more gray.

But everything looks smart when it's printed on the ColorQuick, the first color printer designed for the Mac. This 216-dpi ink jet printer works on your desk. Quickly, quietly, no fuss no muss. It prints all Mac colors or those from any other palette. And you get smooth, beautiful backgrounds, graphics and type with bright, true colors. On transparencies or paper, up to tabloid size.

The ColorQuick.

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The best and the brightest.
The clip-art boom continues unabated, thanks to the Mac’s incursions into the business world. Most packages have a business flavor and are distributed in Encapsulated PostScript Format (EPSF), which provides high-quality output on printers from the 300-dot-per-inch (dpi) LaserWriter to the Linotronic. EPSF images can also be customized — reshaped, shaded, or colored — in Illustrator or FreeHand for maximum effect.

This month, Desktop Reviews covers eight clip-art packages that have appeared in recent months. The offerings range from simple EPSF borders and dingbats to full-fledged EPSF artwork to sophisticated TIFF images. Whatever your needs, you’ll probably find them answered here.

Don’t strike these packages from your wish list just because you use applications that can’t import EPSF files (Microsoft Word, for example). Using a PostScript utility such as Postility, you can separate the PICT portion of an EPSF file and save it as a distinct file. Illustrator also provides an option for importing EPSF files into “hostile” programs (see Between the Lines, March ‘89).

**Collector’s Edition I**

It would be surprising if the company that sprang PostScript on an unsuspecting world didn’t produce some sort of EPSF clipart. Adobe’s first incursion into this lucrative market is unsurprising and unsurprisingly good.

**Collector’s Edition I** contains 280 graphic shapes, 65 borders, and 2 sets of font outlines. The graphics include squares, circles, crosses, arrows, stars, polygons, text boxes, and dingbats. The borders consist of continuous-line, dashed-line, and block types. The serif and sans-serif alphabets have all the punctuation marks (including some snazzy ampersands) and come in two forms: a regular set plus one constructed so you can use the letters for special effects such as drop shadows and multiple outlines.

The manual contains a pictorial index of all the graphics and describes numerous techniques for manipulating them, using sample business cards, menus, and brochures. The use and modification of borders receives special attention. The step-by-step instructions should facilitate border creation if not actually make it simple.

I recommend this collection to anyone who needs professionally drawn graphic accents, but there are two caveats. First, it helps to have some grounding in Illustrator or FreeHand in order to squeeze every drop of usefulness from this package. Generally speaking, the graphics are just not interesting enough as is — they cry out for manipulation.

Second, be forewarned that the files are saved in Adobe’s proprietary Illustrator format. You’ll need Illustrator or Aldus FreeHand to open and save them in EPSF for use in page-layout programs.

**Images with Impact!**

3G Graphics’ latest Images with Impact collection, Business I, maintains the same high standards of quality and EPSFinesse that graced its predecessor, Graphics & Symbols I (see “You Gotta Have Art,” August ‘88).

The 175 images are grouped into 14 categories: Equipment, Hands at Work, Financial/Success, People, Communication, Computer Networks, Dingbats, Occupations, Public Service, Aerospace, Framers, Desktop Publishing, Phrases, and Travel. There’s an excellent assortment of computers, including Macs, IBMs, and even a laptop. The Phrases category is unique to this collection: it includes 12 graphic words and phrases (such as “Agenda”), ready to enliven reports, memos, or invoices.

All the images are opaque, which means they block out anything that’s behind them instead of having the background showing through white areas. The images are grouped, and many can be ungrouped and separated into individual elements with Illustrator or FreeHand.

For example, the media collage can be split into six pieces: a camera, microphone, film reel, filmstrip, and two slides. The documentation includes a visual index and a booklet that shows you how to modify the images, and it provides creative, striking examples of the images being used in a variety of printed matter.

Images with Impact!, Business I, contains superbly realized computer clip art. It’s progressive, sharp, and imaginative. Several of the collections reviewed here are marked, to some degree, by this same professionalism, but what sets 3G Graphic’s clip art apart is the extra “oomph” the company’s artists put into their work. The collection’s bear symbol (for your Wall Street types) not only looks like a bear, but it also has a slouch — an extra touch that lets the viewer know just what the bear symbolizes.

3G Graphics has surpassed itself in this second entry in its growing family of EPSF clip art and sets the standards against which similar products should be judged.

**Cliptrix**

Dream Maker Software has produced two collections of business-oriented EPSF clip art thus far, with varying results. Volume I, Business Images, is nothing to write home about. The collection of 148 images is organized into nine categories: People, Cartoons, Credit Cards, Hands, Objects, Tools, Transportation, Graphics, and Symbols. The images were cre-
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at ed in Illustrator, and 94 are opaque.

There are the usual hard-to-explain inclusions, including a variety of hand tools that seem better suited to a collection titled “Trades Images.” Many of the images have a cartoon flavor that may not appeal to everyone. The booklet has a visual index and provides users with a few modest hints but no examples of the clip art in place on business cards, brochures, or newsletters — which would help get the creative juices flowing.

This collection is professional and well done, if not outstanding. Women are not inevitably depicted in supportive or subservient roles, but everyone does seem to be Caucasian.

Volume 2 of Business Images is a real treasure trove for anyone who needs high-quality clip art for professional purposes. The files include 216 primarily opaque images neatly divided into six categories: Silhouettes, People, Cartoons, Graphics, Phones, and Computers.

The cartoon section that was so prominent in the first volume has been scaled down. The section on computers (72 images in all) is truly superb; it rivals, perhaps even surpasses, the comparable portion of the Images with Impact! collection. The manual cum visual index is well arranged and shows the images being used in a variety of ways. It also provides graphic-design hints.

The graphics have a clean, crisp, professional look. The styles include abstract, cartoon, realistic, and line drawings, one of which will probably meet your needs. Plus the collection includes thumbnail sketches and keywords, so you can catalog the art in Curator. At 60 cents per image, Clipartures, Volume 2, is a great buy and highly recommended.

**Works of Art**

Here’s another collection of business-oriented graphics that deserves a serious look-see. Springboard Software’s previous Works of Art collections were bit-mapped images; Laser Art, Business Selection, is the first EPSF offering in this series.

The 180 images of Laser Art, Business Selection — organized into 11 categories — are After Hours, Americana, Arts, Business, Celebration, Computer, Dingbats, Landscapes, Maps, Miscellaneous, and Travel & Transportation. The quality of the collection is generally quite good, and the overall impression is bright, clean, and modern. Everything is arranged well — the disks are even labeled with category names — and, at 55 cents an image, this collection is a real bargain.

It does, however, contain unnecessary images — mostly in the Miscellaneous section — that function more as filler than as business graphics. For example, it’s hard to imagine the relevance a dog chasing its tail could possibly have in a corporate setting.

The manual is essentially just a visual index with little in the way of useful instruction on how to use or manipulate the graphics. One nice touch is that this manual credits the artists responsible for the drawings (Images with Impact! also does so).

**ArtClips**

This collection of clip art from Olduvai is peculiar, to say the least. The manual claims the collection of 112 EPSF images represents a new concept in Macintosh clip art and then states that many of the images are not really clip art at all, but artwork. This tack meshes with that of Olduvai’s Post-ART collections, which strove to package “an art gallery on disk” (see “You Gotta Have Art,” August ’88).

The manual describes three categories into which the images supposedly fall: clip art, illustrations (defined as complex clip art), and art pieces. That’s all very nice, but the visual index doesn’t group the images according to this scheme, and most people will be hard-pressed to classify the graphics this way. Thus, the whole business seems superfluous. Plus, there’s absolutely no way to tell which graphic is on what disk, leaving you to search disk by disk.

As for the images themselves, 29 of the 112 graphics (or 25 percent) are fairly decent, abstract sports-related symbols. The other images are divided into 11 themes: Illustrations, Abstract, Home, Pictograms, Art, Food, Miscellaneous, Professions, Tools, Sports, and Olympics. Many of the graphics are merely modified versions of artwork from the Post-ART collections.

Generally speaking, the images are competently drawn, but they lack polish or verve. There’s the usual ballast, such as a hideous image of rock star Billy Idol, a Roman bath, and the inside of an engine. The package also includes a downloadable PostScript font composed of clip-art images — basically another set of dingbats — and a HyperCard stack of design tips.

**Vivid Impressions**

Casady & Greene’s first outing into the world of EPSF clip art is not a particularly successful one. Volume 1, Special Events, is one of the most expensive collections.

Although Vivid Impressions is the only collection with color EPSF graphics, most images are modified duplicates of others in the package — a poor return for your dollar.
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Metro ImageBase

Metro Creative Graphics has been the clip-art warehouse of the newspaper industry since 1910. Although most of its million-plus graphics aren't available for the Mac, Metro ImageBase's numerous packages of theme-related images let you access some of this traditional, popular clip art—if you're willing to work for it just a bit.

I looked at 2 of Metro ImageBase's 14 collections. ReportMaker and NewsletterMaker each provide 100 images on 800K disks. Unlike most Mac clip art on the market today, these graphics are distributed as TIFF files. The images have been digitized at 300 dpi and can be customized in any program that reads TIFF (SuperPaint, DeskPaint, Studio/8, and others). Since the images are bit-mapped, however, they can't be printed at resolutions higher than 300 dpi, nor can they be ungrouped and manipulated the way EPSF images can.

What do the images look like? Well, just like most clip art you've seen for the past 79 years. They tend toward the old-fashioned, the sentimental, the sometimes silly icons and clichéd conceits of popular culture. They are generally more complex than EPSF images, both in content and in visual aspects such as shading.

TIFF images are typically huge (say, 400K each), so each graphic has been compressed with the shareware utility StuffIt. Thus, you need to unstuff each file before you can use it—and you'd better have a hard disk handy. The

ImageBase packages include UnStuffIt and the UnStuffIt DA, truncated versions of StuffIt.

The documentation includes information on unstuffing the files and a confusing pictorial index. Instead of a self-evident name such as Conference2, a self-evident name such as N820302. This number may be more precise than Conference1, Conference2, and so on, but it fails miserably in user friendliness. It took me ages to locate images, because the numbers tended to look alike.

The ImageBase collection is a nice change of pace from the usual EPSF collections, but the file sizes, old-fashioned images, and less-flexible TIFF format may limit its appeal. Unlike EPSF graphics, however, TIFF images don't require a PostScript printer.

If you don't have access to a PostScript printer, the Metro ImageBase collection may be for you.

—Gregory Wasson

These clip-art renderings of people and work environments range from simple silhouettes (Cipures, Volume 2, left), to people on the go (Images with impact, top), to occupation-specific images (Metro ImageBase, above).
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Requires: 1 megabyte RAM, PostScript printer, application that manipulates Adobe Illustrator files.
Format: Illustrator
Copy Protection: None

Images with Impact!

Business I

List Price: $129.95 (75¢ per image)
Published by: 3G Graphics, 11410 N.E. 124th St., Suite 6155, Kirkland, WA 98034; (206) 823-8198.
Requires: 1 megabyte RAM, PostScript printer.
Format: EPSF
Copy Protection: None

Clip-Ups

Volumes 1 and 2, Business Images

List Price: $129.95 each (67¢ and 60¢ per image, respectively)
Published by: Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031; (213) 221-6436.
Requires: 1 megabyte RAM, PostScript printer.
Format: EPSF
Copy Protection: None

Works of Art

Laser Art, Business Selection

List Price: $99.95 (55¢ per image)
Published by: Springboard Software, 7808 Creekside Circle, Minneapolis, MN 55435; (612) 944-3912.
Requires: 1 megabyte RAM, PostScript printer.
Format: EPSF
Copy Protection: None

ArtClips

List Price: $99 (88¢ per image)
Published by: Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL 33143; (305) 665-4665.
Requires: 1 megabyte RAM, PostScript printer.
Format: EPSF
Copy Protection: None

Metro ImageBase

List Price: $145 (65¢ per image)
Published by: Metro ImageBase, 18623 Ventura Blvd., Suite 210, Tarzana, CA 91356; (800) 525-1552 or (818) 881-1997.
Requires: $12KE or later, application that accepts TIFF files. Hard disk recommended.
Format: TIFF
Copy Protection: None

Vivid Impressions

Volume 1, Special Events

List Price: $130 ($1 per image)
Published by: Casady & Greene, P.O. Box 223779, Carmel, CA 93922; (800) 331-4321 or (408) 624-8716.
Requires: 1 megabyte RAM, PostScript printer.
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OmniPage

One of the reasons I bought an Apple scanner and Caere’s OmniPage was to scan the contents page from magazines into HyperCard to create “card catalog” stacks. As good as OmniPage is, it still has trouble recognizing text and pasting the text blocks it does recognize in the proper sequence when illustrations crowd a magazine’s contents page. The “artic” the page layout, the more difficult it is for OmniPage to differentiate between pictures and words. AppleScan’s editing tools offer a good remedy for this problem, exploiting OmniPage’s ability to recognize previously scanned images.

First, use AppleScan to get a picture of the page. The scanner settings should be 300 dots per inch (dpi), Line Art. After scanning, move to the document window and use the eraser, lasso, and selection-rectangle tools to eliminate graphics that crowd into text and to move text into groupings that are more easily handled by OmniPage. Save the document as a TIFF file.

Open OmniPage, choose Open from the File menu, and open the document you just saved. Choose Recognize from the Text menu. OmniPage runs through your newly designed page flawlessly and in record time!

Edward Settle, Jr.
Liberty, NC

Microsoft Word

If you need to create a split headline that has one part aligned left and another aligned to the right, there is a simple way to do it with Word without using tabs.

In your headings, type an Option-space between the words you want to keep together and use a regular space between the two sets of words. Select Justify (Shift-Command-J) and enter a Shift-Return at the end of the line. The two pieces of the heading will separate and jump to the left and right margins.

Hugh Faulkner
Covina, CA

Take advantage of Word’s overstrike function to place text across a graphic. First, select Show ¶ from the Edit menu. Figure 1 was created by typing Command-Option-backslash, ¶, and a left parenthesis, inserting a graphic, and then typing a comma, the text, and a right parenthesis. To position the drawing as I did, select it by clicking on it and subscribe it by 24 points using the Character command from the Format menu. Select Hide ¶ to see the result. You may have to experiment with different superscript or subscript values to place the graphic where you want it.

Lawrence C. Stedman
Fairfax, VA

Fractional line spacing (leading) is not really supported in Word, but since we wanted to print “galley proofs” that would match the body copy in our newspaper, we needed to find a way to get 10-point type with 10.5-point leading.

After much struggle, we discovered that by setting the text as 20-point type with line spacing of –21 points, and printing at 50 percent, we could get output that matched our PageMaker body text (set at 10 on 10.5) exactly. Remember: When printing with unusual line spacing in Word, you should always specify the leading as a negative value. Otherwise this trick will fail.

Douglas Barnes
Austin, TX

Figure 1: Most people use Word’s overstrike feature exclusively with text. But with a little imagination, it can also be used with graphics, as in the wordplayful example shown here. The top image shows the actual commands and format with Show ¶ enabled; you get the WYSIWYG image shown on the bottom when you choose Hide ¶.
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**MacPaint**

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Figure 2: MacPaint usually opens with inches as its default unit of measurement. But if you change this byte from 01 to 00 with ResEdit, the program will open with a default measurement of pixels.

**MultiFinder**

It's often necessary to return to the Finder from an open application for file information. But when you are working under MultiFinder, open documents obscure the desktop, hiding the disk icons you need. One way to open a disk's window from beneath the clutter is to eject it, using Command-Shift-1 or Command-Shift-2 (depending on what drive the disk is in) and then reinsert it. Reinsertion automatically causes the disk's icon to be selected (even if you can't see it). Then you will be able to open it with Command-O, and its window will pop to the forefront.

Don J. Modesto  
Tokyo

**MacPaint**

Programmers (and desktop publishers) think in pixels rather than inches. Programmers often do screen dumps of an application's windows and use MacPaint to spruce the dumps up or to experiment with different fonts, borders, and other elements. It's nice to have the Show Mouse Position command display in pixels, rather than the default of inches. Ordinarily you would have to change preferences every time you created a new document to see measurements in pixels.

Here's a little ResEdit surgery, however, that makes MacPaint 2.0 default to pixels. Exercise caution when working with ResEdit because you can ruin your application. Work only on a copy of MacPaint and leave the original alone—it's your backup in case you inadvertently do something fatal.

Open the copy of MacPaint, using ResEdit.
Open the PREF resource.
Open PREF ID = 128.
Select the byte shown in Figure 2.
Type 00 for pixels, 01 for inches, or 02 for centimeters.
Quit ResEdit and click on Yes in the Save Changes dialog box.

Brian Sutter and Harl Wiguna  
Lincoln, NE

**QuarterStaff**

Choosing Print from QuarterStaff's File menu when the Map window is active prints out all areas or rooms currently mapped—at least when you output to an ImageWriter. If you're lucky enough to have a LaserWriter, you're in for a bit of a surprise. Hidden rooms and unmapped areas that have yet to show themselves

![Figure 3: When you print out the QuarterStaff map window on a LaserWriter, unexplored, hidden, and unmapped rooms magically appear in the printout, as seen in this comparison of the on-screen (left) and printed (right) maps.](image)
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Tip of the Month

PageMaker can read IBM TIFF files, but other popular programs such as ImageStudio and Digital Darkroom can't. Certain utilities on the market can translate one format to the other, but all you really need is ResEdit.

First transfer the IBM file to the Mac (with a modem, network, or whatever), start ResEdit, and select the filename. Choose Get Info from the ResEdit menu, and change the file type from TEXT to TIFF. All your programs will now recognize this as a TIFF file and open it successfully.

James A. Collins
San Francisco

Font/DA Mover

Sometimes you want to add and remove fonts from an application (as opposed to the System). On launching Font/DA Mover, you'll see a list of all the fonts in your System file. To open the font file of any application — or even a HyperCard stack — press the Option key while clicking on the Open button. Font/DA Mover works the same with applications as it does with System files. You can have two applications open simultaneously to swap fonts, or just one to remove them.

Bill Watling
Quintar, KS

LaserWriter

I just got around to reading the April '89Tip Sheet and noticed a tip from Abby Trudeau about envelopes jamming in the LaserWriter. An even simpler solution is to open the door at the end of the LaserWriter II so the paper path is straight. I never have a jam when I open the door.

Kathy Farmer
Inglewood, CA

Illustrator 88

Your client says, "I like it, but can you make all the lines half as thick?" Professional Illustrator 88 users dread this scenario. But there's nothing to worry about. You don't have to spend hours changing stroke attributes for each path if you follow this simple procedure (see Figure 4).

Select the necessary paths and activate the scale tool. Click on one of the selected anchor points while holding down the Option key — this opens the Scale dialog box. To thin all selected paths uniformly, you must scale the object larger in this dialog box with Preserve Line Weights selected and then immediately scale the selection back to its original size with Scale Line Weights selected. Make sure you Option-click on the same anchor point when reducing the object back down, so the object keeps its original position on the page. The percentage you enter to scale the object back to its correct size must be fractionally inverse to the percentage to which you enlarged it (for example, a 200-percent enlargement is remedied by a 50-percent scaling factor, 500 percent is remedied by a 20-percent factor, and so on).

If you want to make selected paths uniformly thicker, follow the same procedure, except choose Scale Line Weights while scaling up and Preserve Line Weights while scaling down.

Bill Planey
Fort Worth, TX

Figure 4: To rescale line weights in Illustrator, select the lines (1), scale them up (2), and scale them back down proportionally (3) — switching from Preserve Line Weights to Scale Line Weights. The lines will be lighter (4), and the scale of the graphic will be unchanged.
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This month bring order to your Home stack and recycle your best scripts with HyperOne and Script Library from Hyperpress. Find out where to get the latest educational stackware, and see just how friendly the Mac can be with SpeakEasy. Plus Mike Swaine explores using Hypercard as a database in Card Tricks.

**Script Collector**

If you find yourself wasting valuable time rewriting the same line of script or searching through your stacks for that great script you created last year, last month, or even last week, then you might want to add Script Library to your Macintosh product bin.

You store a script in the Script Library by highlighting it, copying it to the Clipboard, and then executing a simple command. To use a stored script in another stack, just copy it onto the Clipboard, and it’s ready to be pasted. Script Library includes a Notes field for annotating your scripts with useful information, a Licensed To field for keeping track of who’s using your script, and a Where To field that records the original location of the script as well as the names of the stacks to which you’ve copied it. Script Library comes with a selection of 25 scripts and is available for $49.95 from Hyperpress Publishing, P.O. Box 8243, Foster City, CA 94404; (415) 345-4620.

— Victoria Juarez

Script Library becomes a recycling center for your best and most-used scripts. Scripts are easy to transfer from stack to Clipboard to library and are just as easy to place in new stacks.

**Order in the Home Stack**

HyperCard is often praised for its customizability. You can enhance this freedom to do it your way with HyperOne, a work-center stack from Hyperpress. HyperOne is most useful as a Home-stack replacement. You can locate buttons for stacks, applications, and documents on your HyperOne Home card for quick access to your most-used programs. Or you can use a dialog box to get from Home to anything on your hard disk or CD-ROM drive.

HyperOne’s Home stack is divided into five sections. Each section has 16 cards, on each of which you can keep all the files, applications, stacks, and notes used in a project (these are called work groups). You can install any application into any number of work groups.

Other features include a menu bar that gives you access to the Text Editor card and File Manager, and automatic compacting and stack-backup options.

HyperOne, priced at $49.95, lets you change the way you approach work on your Mac. You can reach Hyperpress Publishing Corp. at P.O. Box 8243, Foster City, CA 94404; (415) 345-4620.

— Laura Johnson

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— Laura Johnson
Helping Handicapped Speakers

We all know the Mac is a friendly machine. When members of the Neuropsychology Department got together with the Software Development Group at Drexel University to create SpeakEasy, they made the Mac even easier to use.

SpeakEasy is part of a set of stacks, called ProsthesisWare, designed to help individuals with varying degrees of motor impairment perform everyday tasks. The stacks let you assemble, store, and speak phrases (using MacinTalk, which is included in the package), employing input techniques that get progressively easier. SpeakEasy lets users construct a phrase by pointing and clicking on words in a scrolling list. With SpeakEasy, they use a modified trackball to select letters, symbols, and pictures. Using SpeakEasy, they need only click on a symbol highlighted by a moving cursor to put a word or phrase into the Mac window. SpeakEasy costs $24 and is available from Kinko’s Academic Courseware Exchange, 4141 State St., Santa Barbara, CA 93110.

— Victoria Juarez

In the SpeakEasiest Pictures stack, a user clicks on an Icon, and the corresponding message is spoken.

Teachers’ Pet Stacks

HyperCard has been a boon to educators, who are producing a wealth of instructional stackware. Unfortunately, most of this software is not available commercially, and getting it to educators has been a real problem. So the University of Colorado at Denver and the Association of Educational Communications and Technology have set up a clearinghouse for instructional, administrative, and utility stacks. HCSC (HyperMedia and Instructional StackWare Clearing-House), a nonprofit organization, offers its library of stacks on an individual basis. All you pay is the cost of postage and duplication. For submission guidelines or more information about HISC, contact Scott Grubinger, University of Colorado at Denver, Campus Box 106, 1200 Larimer St., Denver, CO 80204-5300; (303) 556-4364.

— Laura Johnson

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It’s a simple procedure to ensure that your next issue of MacUser will catch up with you as soon as you move. Please send your NEW address PLUS your current mailing label to:

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It’s a Macintosh, of course. But it’s also a VAX. Thanks to a family of products from White Pine Software, Macintosh and VAX computers can communicate. These include emulators that allow the Macintosh to appear to a VAX exactly like a DEC terminal. And Reggie, which converts Macintosh graphics into DEC formats (ReGIS and SIXEL) for use by VAX applications or output devices. And VMacS, which allows users to store and manage Macintosh files on the VAX’s hard disk and tape drives.

For more information call or write: White Pine Software, 94 Route 101A, PO Box 1108, Amherst, NH 03031, (603) 886-9650.
Please circle 118 on reader service card.
When most software-engineering professionals think of expert systems, visions of $60,000 list-processing (LISP) machines and $10,000 programs dance in their heads. Products for the Macintosh are approaching the functionality of LISP-based tools, although the best products can still cost about $5,000. Intelligent Developer — at $395 — provides much of that power at a breakthrough price.

HyperCard guru Dan Shafer and Hyperpress Publishing have teamed up to create a program that is a good midlevel expert-system tool and an excellent low-end delivery tool.

Intelligent Developer is a flexible set of expert-system development and delivery programs. Intelligent Developer Designer, the engineering segment of the suite, is a solid expert building tool that includes a forward and backward inference engine; rule, fact, and other knowledge editors; and a clean user interface. Intelligent Developer Builder creates stand-alone programs from your knowledge bases. IntelliCard, a HyperCard stack, places your knowledge base and a C-based inference engine into a HyperCard stack (see figure). Owners of Intelligent Developer can make up to ten copies of their knowledge bases with either IntelliCard or Intelligent Developer Builder and can work out additional copies and commercial distribution agreements by contacting Hyperpress.

At the core of the Intelligent Developer technology is the Designer. It allows knowledge engineers and domain experts to create, maintain, and execute knowledge bases. A knowledge base is a series of IF/THEN statements that capture the essential rules of thumb and knowledge used by a human expert in solving a particular problem. For example, if you were writing an expert system to help car dealers sort through inventory, you might define facts such as the color of a car, whether a particular car was in stock, and whether it had been washed, along with an output called Ford Taurus. A rule that could deduce whether a clean, black Ford Taurus were available might look like this:

```
IF color = "black" AND (in-stock = YES) AND (washed = Yes) THEN car_available = Yes.
output (Ford_Taurus).
```

Fact types in Intelligent Developer include text, dates, times, integers, decimals, currency, and Yes/No. Some facts act as goals within the expert system, and all can be validated by using a range or list. Facts that need user responses require questions as a portion of their definition. All facts can have an explanation attached to them in case a user of your system wants to ask why a particular fact is important.

Development in Intelligent Developer is relatively straightforward. Rules, facts, outputs, and databases have an associated editor. The user interface in Intelligent Developer Designer is not ideal, but it is functional. I hope future versions integrate the editing and creation functions while allowing for examination of other facts or rules within the editor.

Intelligent Developer Designer's debugging tools make up for what the editing environment lacks. Extensive reports help to cross-reference and list every item in a knowledge base, and the execution debuggers are unmatched by other systems in this price range. Setting the trace and debuggers steps you through a knowledge base one rule at a time and provides you with a complete picture of the system's reasoning.

The expert systems created with Intelligent Developer contain many excellent interface features. For facts that require a list for validation, the software automatically generates the necessary radio buttons. Check boxes are generated for list-valued items that can have multiple values. Graphics can be called into a window to help make the environment a bit more inviting. A well-crafted expert-system application written in Intelligent Developer can be a good addition to your corporate repertoire.

Intelligent Developer Designer by itself is a good value, but with its delivery companions, it becomes a real bargain.

Intelligent Developer Builder embeds the knowledge base you write into a stand-alone application. The knowledge-engineering facilities, such as tracing and reports, are stripped out of the system, but the user interface you develop is delivered intact, which is important if you want to distribute knowledge bases that contain database information. If your knowledge base doesn't take advantage of databases, you may want to employ Intelligent Developer's other delivery option — IntelliCard.

With IntelliCard, you can inject your knowledge base into a HyperCard stack. Your completed stack will have the look and feel of your original application, but it will be a HyperCard document ready for any sounds, graphics, or animation you wish to add to it. The Intelligent Developer inference engine has been completely ported as a C kernel that resides in your stack.

Dan Shafer and Hyperpress have put together some incredible stack programming with IntelliCard. To create an application, you make a copy of the Intelligen
Card Masters stack and execute the copy. By clicking on the Build an IntelliCard Stack button and selecting your knowledge base, you can have the original stack completely transform itself into an attractive image of your Intelligent Developer application. If you turn on the Watch Cards Go By option, you can examine the steps taken by IntelliCard to transform your boring expert system into a HyperCard work of art. Selecting this option slows down the creation of your stack, but it is well worth the time just to see what can be done in HyperCard.

Executing your IntelliCard stack differs little from executing an Intelligent Developer knowledge base. All the buttons, windows, and outputs you originally programmed are represented; they just look better. Certainty Factors, an expert-system method for capturing fuzzy knowledge (such as “maybe it’s true,” “I kind of remember it being about like that,” or “I’m only this sure”), are translated from a sliding button in the development version to an even more attractive button in the HyperCard version. Nothing from the original program is excluded except the database links. By adding your own whiz-bang HyperTalk programming and add-ons from third parties, you can create some pretty impressive expert systems.

IntelliCard provides several tools for enhancing the interface. Clicking on the Designer Mode button lets you reshape and rearrange fields and buttons. When you have added the finishing touches to your stack, a click on “Prepare Stack for Distribution” removes the licensed software (a few XFCNs from 101 Scripts and Buttons and other goodies). With products such as Intelligent Developer, we have an inexpensive way to turn the data collection of the ’70s and ’80s into the knowledge processing of the ’90s.

— Daniel W. Rasmus
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 Multi-Finder and copy changes directly.

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I'll be "open on anything": I want everybody in the game this time. This will be the last hand. This is the last Card Tricks column.

The original plan for this column was to publish some tools for builders of HyperCard stacks, examine the phenomenon of HyperCard, and possibly advance the art of stack development a little. At least the first two objectives have been met, with one glaring omission.

What the column has not yet dealt with, and what is thus dealt to this last Trick, is an examination of the most common use of HyperCard, and the most immediately utilitarian: as a tool for organizing information. The mundane likelihood is that more people have used (or adapted or emulated or cursed and transcended) the Address stack provided by Apple than have used any other stack, and by and large they have used it as a conventional simple database.

The promise has always been something more evolved. HyperCard, we were assured, would lead to a generation beyond conventional databases, to a rough beast called hypertext, and to The Freedom to Associate. Well, hypertext is slouching birthward, and although the software genealogists of the future will probably not place HyperCard as a direct progenitor in any hypertext paternity suit, HyperCard will certainly not escape a sweep of Suspicious Characters Lurking Near the Scene.

As for "The Freedom to Associate," I recently ran the sentence fragment "The Freedom to . . ." through Apple's Localizer utility with the Language parameter set to English and got this translation: "The following function must be performed manually."

I'll be saying more about utilities like the Localizer (although not just like the Localizer) in MacUser in future months, but even users not possessing the Localizer utility have discerned the price of software freedom: What a software product gives them the freedom to do is identical with what the product will refuse to do for them. It's in the links: just as the power of many a nifty new gadget is stored in batteries that are notoriously Not Included, the power of hypertext is stored in the links, which . . . . But you're way ahead of me.

The limitation is hypertext's, and it's HyperCard's only by association. But Apple could at least give us the hypertextual utility that the company's own guidelines for stack development seem to assume we have. Provide users with a map to the structure of your stack, Apple advises coyly, pointing to the excellent map in HyperCard's Help Stack. I've tried, Apple, honestly I have, but it's a lot of work. What I need is a utility written in HyperTalk that traces the structure of a stack and constructs a picture of that structure with appropriately

The Last Trick

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HyperCard is really adequate only for small-to-medium-sized non-relational databases.

BY MICHAEL SWAINE

scaled and labeled boxes and arrows. And then does it again when I alter the structure. I guess I don't mind too much that Apple hasn't provided such a tool, since it's given me the opportunity to create my own.

But that's just fun stuff, and God knows databases are not fun stuff. Bottomline, this hypertext business just doesn't count the beans. This column still owes you a practical look at HyperCard's strengths and weaknesses as a conventional database and some ideas for overcoming the latter.

At the outset there are two size issues, and both of them weigh against HyperCard. First, HyperCard is really inadequate only for small-to-medium-sized non-relational databases. HyperCard is plenty powerful enough to handle hundreds of cards (or records, as they are called in NormalSpace), but with thousands of cards, performance and capacity limitations may justify using a database program.

( The other size issue is the memory appetite of HyperCard itself. It's a machine-dominating application. For some Mac users, it's a machine-defeating application. Despite Apple's pronouncement that the Plus is now the bottom of the line, there are nonetheless Macintosh users whose machines cannot run HyperCard.)

For those properly megabyted, a problem remains: Since HyperCard is best suited to those many smallish databases that you may want to glance at rather than linger over, it would be decidedly more useful as an information manager if it were immediately accessible, even while you were using another program. It's not, unless you can afford to avert yourself of one of two solutions: to let HyperCard dominate your machine in exchange for its acting as a Finder substitute (I discussed this compromise last month) or to get a lot of memory and run HyperCard under MultiFinder.

What about the basic database functions — sorting, search-
ing, and selecting: adding and editing data; and merging, importing, and exporting. Generally, HyperCard is superbly customizable, but the customizations either require user programming and run slowly, or they require third-party extensions. Fortunately, there are many excellent third-party external commands and functions, some of which I've mentioned here in past issues.

For me, that means that whatever I want to do, I can probably do it with HyperCard, and I use it for a lot of things. Since none of the various databases I maintain holds more than a thousand records, performance is not a problem. But if you don't program in HyperTalk, the fulcrum of the balance between HyperCard and a database program is elsewhere.

Sorting. HyperCard's sort capabilities are basic and adequate for simple databases. If you need anything more, you'll have to roll your own. If you program in HyperTalk, that's not hard to do: it is a disappointing exercise, though, since no HyperTalk script can possibly run fast enough to sort satisfactorily. External commands and extensions such as Hyper-HIT (available from SoftStream International) and HyBases (from Answer Software) are the best bet.

Searching, replacing, selecting. For moderate-sized databases, the search power HyperCard provides may be adequate, but for anything beyond string matching, you need to extend the product. This may mean programming, and you can construct query-processing engines of arbitrary complexity and (for moderate-sized databases) acceptable performance in HyperTalk. Or you can use externals.

Adding, editing. HyperCard is an interface, a generally good one for editing data records. What is seriously lacking for data entry, however, is any built-in filtering of input. Again, it's not hard to add filters that efficiently check, say, that the entry is in a valid date format, but this requires another extension involving programming or plugging in externals. The same goes for anything but the simplest merging, exporting, or importing. If your databases are not huge, however,
and you are willing to do some programming or searching for good externals, there's nothing like HyperCard's customizability for the price. And since the best software product is the one that behaves the way you want it to, customizability is awfully nice to have.

And raw performance is often overrated. Often what's more important than lightning-fast performance is the responsiveness of a highly interactive user interface. When you want to find an arbitrary string, for example, HyperCard's minimal solution is for you to type Command-F, the string, and Return. Within a second or so, you'll be looking at the first card containing the string, with the string highlighted.

In terms of performance, that's much better than thumbing through the pages of the dictionary, but in terms of information returned, it's not nearly as good. In the dictionary, you're also likely see related words, possibly homophones, and all kinds of other entries for the same string. Anything you do to get this sort of contextual information out of HyperCard hinders performance — but you may not mind the delay if you consider the time well spent.

For example, I have a name-and-address database stack in which I generally just want to jump to a card based on a person's name. Rather than type the name, I scroll through an index field, find the name in context, and then click on the name to jump to the appropriate card. This approach is often slower than typing the name (depending on how fast I scroll versus how fast I type), but I prefer it because I get more information. I see the name in context, immediately noticing that I have duplicate cards for this person, for example.

And since I store the most commonly needed piece of information with the name in the index field (the person's main telephone number), I often don't need to go to the card at all. Such a solution requires some programming. A field script allows the lines of a field to act like buttons, and a stack script updates the index from the cards (I would hardly prefer this method if I had to type the person's name into the database twice). But it works the way I do, which is what I want.

Well, all bets are in. Since you've stayed in the hand to the end, you have the right to see the cards I'm holding.

First, I owe some debts, so let me pay off my markers. Thanks first to Dan Winkler for a good deal. (Everybody has already thanked Bill Atkinson sufficiently: Winkler actually wrote HyperTalk.) Second, thanks to Steve Bobker for opening this hand. This magazine owes him similar thanks, but I'm only paying off my own markers here.

But enough of that. To quote Kenny Rogers (something I rarely do), "You gotta know when to hold 'em, know when to fold 'em." And know when the game is over.

Although this is the last Card Tricks column I'll be writing for MacUser, I'm going to continue writing about HyperCard and developing scripts, here in MacUser occasionally, and regularly in my own HyperCard newsletter.

If you're interested in the newsletter, just write to me at Card Tricks, 31 Patrick Road, Santa Cruz, CA 95060. I've also put together a disk containing the current version of all the scripts I've published in MacUser as well as the indexed database stack and the stack-mapping utility (which I warn you is still very much under development as I write this) that I mentioned this month.

Some of these scripts have evolved significantly from their original incarnation, but all are still in the public domain. If you'd like to have the disk, just send me $5 for parts and postage at the same address.

I tipped my hand back there when I alluded to writing about utilities, and it's time to lay all my cards on the table. Ever wish Apple did a better job of detailing the features of its operating-system software? Wonder just which of those files in your System folder are doing useful work for you and what might ought to be in the System folder but isn't? Interested in using System utilities, INITs, and ResEdit to customize or extend the capabilities of the system to make it better meet your needs? Well, next month I'll begin writing about such system-software issues under the heading "Beating the System."

Can you beat that?
We wanted to do a comparison. You know, the kind where we do the little box with all the check marks on our side. But we found when you add up all the features, there's just no comparison. TurboNet ST simply outperforms PhoneNET Plus. Here's why:

**NO TERMINATION HASSLES.**
Ordinary connectors need terminating resistors to balance things out. So if you don't terminate your network in all the right places, it may not work right. But TurboNet ST, with its built-in self-termination, will connect anywhere it's needed, to make installation a breeze and network changes hassle-free.

**TRAFFIC LIGHTS.**
Sometimes, even the best networks won't work right. They act funny. Suddenly. Enter our traffic lights. LEDs flash at each connector with data traffic but are otherwise dormant, saving you hours of hair-pulling diagnostic time. They also absorb current spikes to protect your computer.

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Every AppleTalk* network has its limits. Even TurboNet ST. Only our limits are less limiting: up to 5,000 feet of network wiring without costly amplifiers or bridges. Even our best competitor runs out of steam at 3,000 feet. And every TurboNet connector is compatible with AppleTalk and other third-party network products.

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When you build TurboNet ST as strong as it is smart, you become confident about its life expectancy. And when you're Nuvotech, you put your warranty where your mouth is. Lifetime. No Questions. No Hassle. Nuff Said.

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**Features**

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**Don't take our word for it.**
After all, it's our ad so we can say whatever we want. Here's what experts say:

"With its phone-wire cabling, its self-termination and its often-useful LEDs, the TurboNet ST comes out on top in my rating of LocalTalk® compatible cabling systems."


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Apple’s Communications Blitz

Yes, Virginia, there is a Token Ring card.

On June 12, Apple unveiled a host of new communications products — 14 altogether — in one of its most extensive rollouts. Topping the list was the long-awaited announcement of a Token Ring card, along with coax/twinax and serial cards.

Apple has said for a long time that it wants to extend the plug-and-play networking approach so that Mac users can access information anywhere on any network as easily as they share with other Macs in a LocalTalk work group.

Management-information-systems (MIS) managers have remained skeptical because Apple has largely failed to provide products, or even core technologies, that enable Macs to connect to large existing internets dominated by PCs, UNIX workstations, VAX minicomputers, and IBM mainframes. With the June announcements, Apple answered its critics by providing the products that corporate managers have been demanding. Well, actually, it didn’t provide products; it was more like promises. Nothing was shipping. But all will be shipping — honest — some soon, some by the end of the year, and some by this time next year. No pricing was available at press time, but hey, they’re Apple products, so they’re bound to be expensive.

Let’s take them one by one, with Token Ring first, since it’s the one everyone has been waiting for. Apple will ship the TokenTalk NB Card (the NB stands for NuBus — still no support for SEs or Pluses), which runs at 4 megabits per second. TokenTalk NB is an intelligent card that has its own 68000 processor and half a megabyte of RAM. This enables the card to run multiple protocol sets simultaneously.

The card will come bundled with TokenTalk software and an SMB File Transfer Utility. TokenTalk will let Macs use AppleTalk protocols over TokenRing. The SMB File Transfer Utility will extend Apple File Exchange to allow file transfer between Macs and SMB file servers. Apple also announced MacDFT, which will provide multiple 3270 terminal sessions over a single connection to an IBM mainframe over Token Ring, and MacAPP, which will let Macs participate in LU 6.2 sessions (LU 6.2 is a communications protocol) via the Token Ring card.

AppleShare PC 2.0, an upgrade to existing software, will let PCs on a Token Ring share files stored on AppleShare servers. EtherTalk software will also be upgraded to 2.0, and AppleShare PC will support Ethernet as well as Token Ring connections. This AppleShare PC upgrade, when used in conjunction with the AppleTalk Internet Router or other AppleTalk Phase 2-compliant router, lets PCs on TokenTalk or EtherTalk networks print to LaserWriters.
Underlying these new products is AppleTalk 2.0, an upgraded set of network protocols. LocalTalk networks will still support only 254 nodes, because the 230.4 kilobits per second at which LocalTalk transmits is not enough bandwidth to comfortably support more devices. But for EtherTalk or TokenTalk networks or internets containing EtherTalk, TokenTalk, and LocalTalk subnets, 2.0 provides support for 65,000 nodes. This capacity is due to a change in the way zones are identified. For EtherTalk and TokenTalk networks, individual nodes can be assigned to any logical zone, regardless of the physical network they are connected to.

To help interconnect LocalTalk, EtherTalk, and TokenTalk networks, Apple's new AppleTalk Internet Router, a software package based on AppleTalk 2.0 protocols that runs in the background, lets a Macintosh act as a bridge between networks. Each router can connect up to eight LocalTalk, EtherTalk, and TokenTalk networks.

Want more cards? In addition to the TokenTalk Card, Apple will offer a Coax/TokenTalk Card and a Serial NB Card, which are intelligent cards built on the Macintosh Coprocessor Platform. The Coax/TokenTalk Card provides 3270 access to Systems Network Architecture (SNA) networks. It will be bundled with MacDFT software, which allows up to five simultaneous 3270 terminal sessions.

Apple also announced a 3270 API (application program interface), which will be available to developers who want to build Macintosh applications that utilize 3270 connections.

The Serial NB Card contains four serial ports that can be configured separately. SDLC (Synchronous Data Link Control) protocol support is built into the card. MacAPPc sessions can be run with the serial card as well as over Token Ring. When MacX25 is used with the serial card, Macs can connect to X.25 packet-switched networks.

My favorite new product is MacX. Don't ask me why, since there aren't really any XWindow applications except one that displays an icosahedron bouncing around on-screen. MacX is server software for the Mac operating system. No client software yet — although it is available on the Mac under A/UX. (Remember that with X Window, client and server are reversed from what you'd expect: The host machine on which the application runs is called the client, and the workstation [or display terminal] is called the server). MacX lets you put Macintosh-like windows, complete with zoom boxes and the like, around your X applications. It implements version 11, release 3, of the X Window system but does not support the DECwindows extensions. What that says about the Apple-DEC alliance is anyone's guess.

Continuing in the great vaporwave tradition, despite the fact that more than a year has passed since it was announced, the CL/I server for VMS is not shipping (at least not at press time). Apple announced a CL/I Server for VM/CMS and a CL/I Server for MVS/TSO. VM/CMS and MVS/TSO are operating systems that run on IBM mainframes. These servers will provide access to DB2 (VM/CMS) and SQL/DS (MVS/TSO) databases. Apple has promised availability by the end of the year — mark your calendars, but don’t hold your breath.

One more: Jumping into the world of high-speed data communications, the Apple Data Modem 2400 is precisely what its name implies — a 2,400-baud modem. Microcom Networking Protocol (MNP) classes 1–4, which provide automatic error correction, are built in.

So that’s it. We hope to have prices and availability next month. As soon as we figure out how it all works or what it means, we’ll let you know.
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Don't be left behind by Apple's newest disk standard. Expand your 512e, Plus or SE beyond the Apple-FDHD bag of tricks.

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KENNECT's design team includes four of Apple Computer's six original engineers who are still motivated by showing the big guys a trick or two of their own.

"...transferring files between PCs and Macs? ...Kennect has come out with a brilliant addition to the genre—Rapport. It's small, but it packs a big punch... Rapport is a dynamite package." MacUser magazine

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FastPath is Kinetics' answer to Macintosh connectivity. Only FastPath lets you connect LocalTalk and Ethernet networks and manage the complex traffic of AppleTalk, TCP/IP and DECnet environments. Call us for information and a free copy of the Kinetics Network Primer, our user-oriented introduction to networking.

CALL 1·800 243·8526 FOR FASTPATH
Monitoring Your Network

Why is the network slowing down? Why doesn't the printer work? How come I can't access the server? Who's on first? Network-maintenance tools can provide answers.

With more and more Macintosh networks cropping up, network managers have to be prepared to answer increasing numbers of questions. Fortunately, there are software tools that can help you answer — and even prevent — some of these questions. Farallon, Apple, and Kinetics offer packages that give you eyes in the wires, whether LocalTalk, PhoneNET, or Ethernet. The products are designed to help you with a single daisy-chained LocalTalk network, an internet comprising two or more zones, or networks connected by a bridge.

The main packages are Farallon's TrafficWatch and CheckNET, Apple's Inte•Poll, and Kinetics' LAN Ranger. Farallon also has a few other handy utilities to make your network life easier. Each of these programs is worthwhile in its own niche.

Shaping the Network

Knowing where the traffic is heaviest can help you determine how to configure zones and where to locate printers, servers, and bridges. Farallon's TrafficWatch helps you optimize the network topology by showing which users, groups, and peripherals are causing the heaviest traffic. TrafficWatch can run in the background, monitoring the network while you attend to other business.

When you put the RegisterName INIT (provided with TrafficWatch) in the System folder of each Mac on the network, TrafficWatch identifies each node by its Chooser name and number. Printers, servers, and bridges are identified by their network name. You can see who is using a server or printer while it's in use. TrafficWatch provides a real-time display of the number of packets of data sent and received from every node (see Figure 1). Unfortunately, it tells you only the number of packets being transmitted and not their size (although nothing else on the market tells you that either).

TrafficWatch monitors only the nodes that are not separated by a bridge. It treats the bridge as another node; you can measure the traffic to and from one side of the bridge, but you can't see traffic on the other side. This information at least helps you decide whether it might be time to move a node to the other side of the bridge if you detect too much traffic between it and the bridge.

A powerful feature of TrafficWatch is its ability to record data in a spreadsheet format. Two Excel macros are included for analyzing and graphing the results. You can automatically create statistics such as the average number of packets created on the network each second and the average number of packets from each node each second. TrafficWatch also monitors and displays packet errors, including time-outs, CRC (cyclical redundancy check) errors, length errors, and overruns.

Two handy utilities, LWStatus and NodeHint, come with TrafficWatch and Farallon's CheckNET. LWStatus is an RDEV put into the System folder that shows up in the Chooser. When you're choosing the printer or spooler, the status of any printer on the network can be displayed. A box will appear and tell you whether the printer is in use and who is using it.

NodeHint lets you change the AppleTalk node number of the Macs in your network. This is very handy for monitoring and troubleshooting. Macs can be numbered from 1 to 127; node numbers 128 through 245 are reserved for printers and bridges.

Figure 1: TrafficWatch's real-time window on the network lets you see where the traffic is coming from. It also keeps track of errors (in the upper right). Excel macros are included to analyze and plot recorded data.

Spotting the Trouble

Farallon's PhoneNET CheckNET is a DA that helps you solve problems such as line breaks or lack of peripheral access. Apple's Inte•Poll is similar, although it lacks the convenience of a DA (it has a few tricks of its own, however).

Both programs list all the devices and names on the network as TrafficWatch does, but they also identify the types of devices (various types of Macs, servers, printers, bridges, and so on). CheckNET and Inte•Poll also list the network sock-
erts, the addresses within workstations that are associated with specific network tasks, such as Timbuktu, TOPS, and some electronic-mail systems. Either Farallon’s RegisterName or Apple’s Responder must be in the System folders of each workstation; Responder will suffice if you’re running both CheckNET and Inter•Poll.

Inter•Poll’s Device List screen and the CheckNET window contain similar information. Inter•Poll can list which version of System files is in use — something CheckNET cannot (see Figure 2). This feature alone is worth the price of Inter•Poll, since users with different versions of printer drivers can cause endless resets of LaserWriters. In addition to the System and LaserWriter drivers, Inter•Poll tracks versions of Finder, Responder, AppleTalk Driver, and AppleShare are used at each workstation. There is also a built-in printer-status function similar to Farallon’s LWStatus that indicates a print job in progress. For those with an artistic bent, Inter•Poll comes with MacDraw files filled with generic floor plans and various node icons to help you create network maps.

CheckNET’s advantages include automatic updating at designated periods (you have to update Inter•Poll manually); the ability to sort by node name, address, or type; and the ability to save a screen listing as an Excel file (Inter•Poll saves only in text format). Since each program costs under $150, however, network

Take your office on the road for only $295.

Stay in-touch wherever you go, with Liaison

Now, you can leave your office without leaving your office behind. Because Liaison is the software “bridge” that lets you take all your network resources—AppleShare, MacServe, or TOPS servers, E-mail, and LaserWriters—with you. Wherever you go. And, without requiring any special hardware.

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- Access file and E-mail services from home or on the road with per-user authorization
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- Make LaserWriters available to EtherTalk users
- Operates in the background

If you use AppleTalk you need Liaison. For information on how to order Liaison, call (800) 445-7085 today.

Liaison — recipient of the 1989 Eddy for Best New Networking Product and the only five mouse network product review “Robust security... works every time... A brilliant piece of programming... Look to Liaison first,” MacUser, April 1989
Feature Port

Another program worth mentioning is Farallon’s Star Command, which comes bundled with the company’s Star Controller. Star Command turns the Controller’s 12 ports on and off, tests wiring and ports, and monitors network load. The Mac running Star Command is connected directly to the Controller via a serial line attached to the Mac’s modem port. This way, if the entire net goes, you can still investigate. A Star Controller may shut down a port if a peripheral is causing jamming, an error condition sometimes occurring with peripherals but rarely with CPUs. I highly recommend Star Controllers for networks of more than 20 nodes. (For an explanation of the pitfalls of passive stars, see Trouble Shots.)

It’s not a question of which program is better; each has unique capabilities. You can purchase CheckNET, TrafficWatch, and IntePoll for around $400. If your network is large enough to need a Star Controller or at least one bridge, I recommend having all of the products. It’s similar to the toolbox a building superintendent keeps: The bigger the building, the more tools you’re likely to need.

managers will probably want to buy and use both rather than choose between them.

Beyond the Bridge

If you work on big internets with Kinetics’ FastPath bridges, you should not be without LAN Ranger. This product has many of the same features as the other programs, but it sees past bridges, which the others can’t. LAN Ranger is a new program that Kinetics now bundles with FastPath 4. (It’s free from Kinetics if you bought FastPath before it was included, and it also works with upgraded versions of FastPath 2 and 3.)

A FastPath bridge connects LocalTalk networks to Ethernet networks. Such an internet may contain UNIX and VAX equipment as well as Macs and PCs, all of which will show up and be identified as such on LAN Ranger.

When you start up LAN Ranger, you see a graphic display of the entire internet, showing the bridges that connect the component networks. When you click on a network, all the devices on that network will be displayed; if you double-click on a node, all the sockets in that node will be listed (see Figure 3). Network topology is represented only logically — star configurations, for example, are represented as backbone setups.

LAN Ranger also measures and displays network traffic, and performs echo testing and zone-verification testing. For a program so graphically oriented, it was surprising that the beta version I saw was missing some basic Mac-like features, such as close boxes and window sizing. Still, LAN Ranger’s interface makes network debugging almost fun (almost).

Unfortunately, LAN Ranger relies on intelligence within FastPath to collect statistical data, so it works only on internets that use Kinetics bridges. Although the internet display can show bridges from other vendors, you can’t monitor statistics or display devices on the other side of a non-Kinetics bridge. Kinetics says that LAN Ranger may eventually work with Hayes Inter/Bridges, which would be a blessing. When they do, the company will probably begin selling the program as a stand-alone product.

Figure 3: LAN Ranger, which works only with internets using Kinetics’ bridges, can report on network traffic (top) and display the internet and network layouts (middle and bottom). The small screen at bottom is listing the socket names on the highlighted node, number 89.
Passed star networks have their place — but they have their limitations too.

By Kurt VanderSluis

Something is wrong. Your CheckNET display is not as it should be. Network performance has been compared to a '68 VW, and it's getting worse as you add more users. The network users are out for your blood. What's the problem?

Previously I talked about the wires, contacts, and terminating resistors in daisy-chain and backbone configurations. This month I'll explore the ins and outs of passive-star topologies.

In a star topology, the network wires are distributed radially from a common area — usually a telephone closet or, if you have separate data and voice lines, a data closet. A star topology is a convenient way to wire a network for two reasons. First, buildings are typically already wired this way; the telephone company has been wiring this way for 100 years. The second reason is that when someone moves to a new desk, it's easy to make the necessary wiring changes because all the distribution wires in the building have one end in the closet.

In a passive star, the ends of the network wires are joined together. When a signal from a workstation on one branch reaches this central point, the signal's power is split among the other branches. Since the signal is weakened by being divided, it can't travel as far, and it may not reach every node. An active star improves upon this design by using a device in the center — such as Farallon Computing's PhoneNET StarController — to reamplify the signal before it goes out to the other branches.

AppleTalk was not originally designed with passive stars in mind. I think of passive stars as "voodoo networking"; it's hard to specify what will and what won't work. Passive stars are also the most difficult topology to troubleshoot. I recommend passive stars only for networks with very few devices, all of which are in private offices. Passive stars don't work when people push them beyond these limits. For anything larger, use a StarController, which adds $1,695 to the network design cost.

Unfortunately, buying something that costs more than $1,000 often requires a five-page justification and signatures from half the corporate officers. And the labor to fix network problems is "free" because that money gets charged to another budget. The result is encouragement to build bad networks.

But if you can't get a StarController and are having trouble with a passive star, you can either conduct a lot of time-consuming experimentation with wire lengths or do the proper calculations to see if you are exceeding the specifications. In the long run, taking the time to understand passive-star wiring specs is less time-consuming. The wiring rules from Farallon for passive stars are probably the best guide, so let's review them.

**Balancing Your Budget**

From the center of a star, the distribution wires going out to the work locations are called branches (see figure below). A branch consists of the distribution wire as well as the lengths of extension cable or line cord between the wall boxes and the network devices.

To be safe, a passive star should have no more than four branches. Also, a passive star should have only one center and should not have any remote stars on any of the branches.

To calculate your wire budget — the maximum length of cable allowed in your network — you first have to know what gauge of wire you're using; ask your telephone installer if you don't know. The gauge of wire is a measure of its thickness. Thicker wire has a lower gauge number and a lower impedance to the network signal.

The three common wire gauges are 22 AWG (American Wire Gauge), 24 AWG, and 26 AWG. If your phone distribution

---

**Wiring Budget**

(Maximum network wiring length)

22 AWG — 4500 feet
24 AWG — 3000 feet
26 AWG — 2000 feet

Equation for determining maximum length of a branch:

\[
\text{Wiring budget} + \text{Number of branches} = \text{Branch budget} - \text{Four times total stub length on a branch} = \text{Maximum length of branch}
\]

In a passive star network, the maximum permissible length of a branch depends on both the number of branches in the network and the total length of the stubs attached to the branch. For example, in the
wires were installed within the past ten years, there's a good chance that they are 24 AWG.

The gauge of your wire determines the starting point of your wire budget. With 22 AWG, you start out with a total of 4,500 feet for your network; with 24 AWG, you start with 3,000 feet; and with 26 AWG, 2,000 feet. Because branches weaken the network signal, you have to divide the beginning budget by the number of branches. So three branches and 24-gauge wiring leave you with a maximum length of 1,000 feet for the entire network.

These figures apply only to standard LocalTalk signals, however. If you have a speed enhancer such as DaynaTalk or TOPS' FlashBox, you must cut these figures further. Since these signals are sent at a frequency about three times higher than LocalTalk's, you'll need to divide your budget by three. Now, in our representative 24-gauge, three-branch passive-star network, the budget is down to 333 feet. For Ethernet running on twisted-pair wiring, Farallon recommends dividing your wire budget by ten, leaving only 100 feet for the entire network. Coaxial Ethernet cable is not usually used in passive stars but would allow much longer networks.

Each branch should end in the telephone wall box, with a terminating resistor hard-wired into it. You can have a daisy chain of Macintoshes coming off the distribution wire. These drops should be less than 50 feet long when measured from the telephone wall box to the last connector.

Drops are made of flat line cord, sometimes called "silver satin" by telephone people. Because the flat cable doesn't carry signals as well as wall cable, you have to add up the lengths of all the stubs on a branch and subtract four times this number from the branch budget. So if you have 50 feet in drops, subtract 200 feet from your wire budget.

In a "legal" passive star, you can check the termination by removing all the Phone-NET connectors and checking the resistance between the network wires. Measure the resistance by placing the probes of the meter across the terminal screws in one of the wall boxes. You should get a reading of 120 ohms divided by the number of branches (40 ohms in a three-branch passive star, for example). But there could also be irregularities in the backbone and daisy chain (see Trouble Shots, May '89) that could affect this reading.

Knowing When to Stop

Having more than four branches is a bad idea. If you need to exceed this limit, don't use more than four resistors: resistors weaken the signal, and more than four will load it down too much. With more than four branches, it's trickier to determine where terminating resistors should go. There's no magic formula: you have to guess. Sometimes it helps to put a terminating resistor between the wires at the center of the star, and sometimes it doesn't.

Passive stars are more trouble than they are worth, and they're dead ends for growing networks. When you've had enough of voodoo networking, it's time to take a serious look at active star topologies.
You don't have to discard your IBM* mainframe emulator, but you might once you've seen the Netway* family of LAN-based gateways. The first stand-alone gateways that connect Macintosh® and PCs directly to your IBM mainframe—without costly emulator boards, control units, and re-cabling.

For small LocalTalk or EtherTalk workgroups, plug into the Netway 1000. It works with every Mac, from 512K to 1lex, and every PC compatible. Right out of the box. Saving you about $16,000 worth of emulators on a 16-node network.

For your departmental connections, choose the Netway 2000. Using the high-power 10 MIPS SPARC chip, the Netway 2000 connects all the Macs and PCs on your LocalTalk, Ethernet, and Token Ring networks to up to two IBM mainframes.

Try one now, pay us later.
Take advantage of our 30/30 Purchase Program and get your first Netway for a 30-day trial, followed by a 30-day net term. It's one opportunity you can't afford to throw away. So, call 800-TRI-DATA, ext. 10 (in California, 408-746-2900) now for details. Or write to Tri-Data Systems, Inc., 1450 Kifer Road, Sunnyvale, CA 94086-5306.

© Copyright 1989 Tri-Data Systems, Inc.
Looking for Translating Dictionaries
Where can I find English-to-Spanish or English-to-Arabic dictionaries and thesauruses and other software appropriate for language translation on the Mac? Greg Groenber
Clements, MN
I found only a Spanish dictionary for the Microsoft Word 3.0x family of word processors. It's called Correctamente, costs $32.95, and is from Medina Software, P.O. Box 521917, Longwood, FL 32752-1917; (407) 260-1676. It contains 100,000 commonly misspelled words in Spanish and includes the correct accent marks. Its documentation comes in both English and Spanish (for more information on other foreign-language software options, see “Multilingual Mac,” February ’89 and “Word Processing with Character,” May ’89).

Bold Greek Letters
I need to print bold Greek letters for use in equations. Unfortunately, I am unaware of a LaserWriter font that can do it. Bold symbols show up fine on the screen, but that doesn't do me any good if I can't print them. Is there some way to do it short of creating my own font? (By the way, I use Expressionist to write equations.)
H. R. Riggs
Honolulu
For better betas, try LaserGreek from Linguist's Software. It doesn't have the range of mathematical symbols that Apple's Symbol font has, but it does have all the Greek letters, uppercase and lowercase, in italic, bold, superscript, subscript, outline, shadow, and underline. It includes screen fonts in 10-, 12-, 20-, 24-, 40-, and 48-point sizes, so you can read characters on the screen easily. It costs $99.95 from Linguist's Software, P.O. Box 580, Edmonds, WA 98020-0580; (206) 775-1130.

Printer Auditing
We are looking for a program to record the elapsed time and the number of pages of documents printed from our 16 Mac IIs and SEs connected to a LaserWriter II, and also to record which user did the printing. Do you know where to find one?
Dr. Esterman Leon
Rehovot, Israel
The AppleShare Print Server can perform all these functions, but it ties up a Mac (unless you have an AppleShare File Server, with which it can run concurrently). The Print Server costs $299 from Apple dealers and is part number M0576.

Check out LaserCount, a time- and page-count tracking system for LaserWriter and Linotronic typesetters from LaserCount Systems, Inc., 103-A Blue Ridge Trail, Austin, TX 78746; (512) 327-2778. It's $285 per printer. You run its System Administrator program to set up accounts and passwords, which are stored in the printer's memory (up to 200 accounts on a LaserWriter II). And then you install a startup program on each Macintosh on the network. When a Mac starts up, it asks for an account name and password and won't let the Mac run until a valid password is entered. It then logs the elapsed time of each Mac and the number of pages it prints. The system-administration program can retrieve this information, tabulated by account name. You can assign accounts either to individual users, who can then move from Mac to Mac, or to workstations.

Extracting CD Audio Data
I have an extensive library of audio compact discs, and I'd like to catalog them, probably in a HyperCard stack. However, typing in all of the album titles, song titles, and other information would take time that could be better spent elsewhere.

I know that a CD contains more than music information, such as track and time information. Is there any text information that a CD-ROM player can read? It would make things so much simpler if all I had to do was to put in the disc, click on a button (with proper scripting), and end up with a new card with lots of information about the disc.
David A. Higgins
Garden City, MI
There's only a little more than music on the average audio CD. Each CD has a unique ID, an index of the number of
tracks, and the duration (in minutes and seconds) of each track. There isn’t any of the alphanumeric information you want, such as the album or song titles. (New formats such as CD+G or CDV are adding graphics and video, but those discs are pretty rare.)

Last March Apple announced its CD Audio ToolKit for HyperCard that can extract what information there is. So with the proper scripting, you can collect the number of tracks and the running time and automatically identify a CD whenever it’s inserted. The HyperCard CD Audio ToolKit should be available through the Apple Programmer’s and Developer’s Association (APDA) this fall. APDA can be reached at (800) 282-2732.

Sound and Fury on the SE/30

Will screen savers such as Pyro! work with version 6.0.3 of the Macintosh system software, which is included with the new Macintosh SE/30? Will both Mac- and Mac II-specific software (such as Studio/8) run on the SE/30, or will it be one or the other?

MacUser’s article on the SE/30 in the March ’89 issue states that “Apple knows what it’s doing in promoting the SE/30 as a music workstation.” The SE/30 has a four-voice stereo Apple Sound Chip, I assume this means it has four voices. But the Apple IIgs has 15 voices! I don’t understand how the sound could be so much better on the SE/30.

Jonathan Loeckle
San Diego

As to the system-software issues, 6.0.3 has no changes that will affect most software. There are some minor bug fixes and some extensions to help the SE/30 and IIgs identify themselves on networks, but no new software features.

What the SE/30 does have over the original SE is most of the Mac II extensions (such as Color QuickDraw) and the 68030 processor. This means that the SE/30 can run the software that requires these features. For example, Caere’s OmniPage software needs the special instructions in the 68020 and 68030 in order to do really fast optical character recognition. Although it’s labeled “Macintosh II only,” it’ll run on the SE/30.

But the SE/30 is not a complete Macintosh II. It doesn’t have NuBus, and its built-in display has only one bit per pixel (black and white). So software that requires NuBus cards or gray-scale or color displays (Studio/8 and ImageStudio among them) won’t run on the SE/30.

You’re right that the SE/30 has four-voice stereo sound circuitry just like the Mac II’s while the Apple IIgs has 15 voices. But comparing the two is like comparing the Beatles to the Count Basie Orchestra: They do different things and require different kinds of effort to get them going.

The Macintosh has a lot of versatile software (called the Sound Manager) to run the Apple Sound Chip. It lets an application create sounds with software “synthesizers” that are then played through the chip. The sounds can be simple or complex waveforms or even digitized sound samples.

But the Sound Manager doesn’t have to use the sound chip. It can be connected to outside circuitry, such as a MIDI interface, and send sound-generation commands to an external musical instrument, such as a synthesizer or sampler. So in the Macintosh, the application has great flexibility, even though the main-board hardware is limited to four voices.

In the Apple IIgs, the Sound Manager does much less—it’s just a simple software interface between the application and the 15-voice Ensoniq Synthesizer chip. The application has to do more work, and it’s less versatile; if the application wants to talk to MIDI, it has to do that itself. But if you choose, it can use all 15 voices simultaneously and create some great sounds.

So they’re different. The SE/30 is a more versatile musician’s workstation because of the architecture of the Sound Manager as well as the higher-level applications (such as Cabala’s powerful but intimidating Finale—see “Measure for Measure” in this issue) written for it. But there’s always room for the Apple II family to be better at something.
An External Drive with the II

I would like to use my Apple 800K External Drive with my Macintosh II. Cutting Edge claims that its 800K External Disk Drive can be used with all new ROM Macintosh computers (512K and later). Cutting Edge explains that using a ribbon cable and connecting the DB-19 connector to the motherboard and the other end to the inside of its disk drive is an easy procedure. Is this so? How easy is it? How about my Apple 800K external drive?

Shelly C. Bernstein, M.D.
Newton Centre, MA

The wiring of an external drive to the internal connector is relatively simple and doesn’t require opening the drive itself. The following technique should work with both Apple and third-party drives because it essentially emulates the wiring of the external-drive port on the compact Macintoshes.

You’ll need a DB-19 socket, a few feet of 20-conductor ribbon cable, a 20-pin ribbon header, a crimping tool, a soldering iron, wire strippers, and fine rosin-core solder. It might be a good idea to have somebody else do this for you, especially somebody who can wield a soldering iron and who has wired ribbon cables before. You can get most of these supplies at an electronics store, although DB-19 connectors are hard to find. One good source for both parts and custom cables is Redmond Cable, 17371-A1 NE 67th Court, Redmond, WA 98052; (206) 882-2009.

Crimp one end of the ribbon cable to the header, with the red-indexed conductor connecting to pin 1 and the cable exiting to the keyed side (with the rectangular lump in it). Then separate (down to about an inch) and strip (to an eighth of an inch) the 20 conductors on the other end and solder them to the tabs on the back of the DB-19 socket in the order shown in Figure 1.

Open the Mac and plug the ribbon header into the main board, where the built-in drive plugs in. Remove the right-most NuBus shield and expansion slot cover and thread the cable through it. Now plug the external disk drive into the socket, and you’re ready to go.

When hacking hardware, make sure you know what you’re doing, and don’t blame us if you fry your Mac. For more on making cables, see “Getting Wired,” February ’89.

Figure 1: To connect an external 800K floppy-disk drive to a Mac II, you need a cable with the right connections. Here’s how to connect the pins on a DB-19 connector.
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### ACCELERATORS, PRINTERS, MEMORY, MONITORS and MORE!

- **Removable Tape Back-Ups**
  - 44 Megabyte Removables
    - CMS Enhancements 44.25ms: $1,299.99
    - CMS Enhancements 44.25ms: $1,299.99
  - 60 Megabyte Tape Back-Ups
    - CMS Enhancements 60: $1,799.99
    - MicroNet 60: $1,799.99
  - 150 Megabyte Tape Back-Up
    - MicroNet 150: $1,599.99

### Mac II, IICX Internals

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### MacBEST Systems Gate

- 800X External Floppy Drive: $189.99

### SIMS in Stock, Call For The Lowest Price!

**SAME DAY SHIPPING** on all in stock items if orders are placed by 3 PM Mountain Standard Time.

**ALL DRIVES** are preformatted and tested by MacLand technicians.

All hard disk drives carry a manufacturer's one year warranty except for the Quantum drives, which have a manufacturer's two year warranty.

**MacII Compatible**

### Prices and Technical Support

For Ordering and Technical Support Call 1-800-333-3353

- Visa, MasterCard, and American Express accepted NO surcharge.
- COD orders only. Additional $5.00 charge for COD orders. All shipments made by Federal Express.
- Standard Air which is 1 to 2 day service. COD's shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.

** summer sizzler! **
FAST and FLEXIBLE!

Storage Solutions

20MB Flexible Disk Drive

Our fast and secure 20MB SCSI Flexible Disk Drive runs five times the speed of a floppy disk, and can be used for either primary or archive storage.

$795

- High capacity cartridges $49 each, or four at $179!
- Ability to store 20MB of data, the equivalent of 26 double sided diskettes.
- With removable media that can be locked away when required.
- Lifetime warranty on cartridges and a one year warranty on Flexible Disk Drive system.

Teac Tape Drives

60MB $689
150MB $899

Low profile chassis fits neatly under the McIntosh Plus and SE. The drive uses high density data cassettes to backup your drive fast.

Seagate Hard Disk Drives

- All drives are preformatted and tested.
- External drives have a 2.5" low profile chassis; built-in power supply, cooling fan, & rotary SCSI address switch.
- Internal kit includes mounting hardware.
- One-year warranty.

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<th>MODEL</th>
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*Mac only.

KAO Media from the Surface Scientists

3.5" DS
10 65
PER BOX
3.5" HD
25 65
PER BOX
"COLORED" 3.5" DS
12 20
PER BOX
3.5" SS
3.5" DS
3.5" HD
5.25" "CALL"

Please circle 9 on reader service card.
**TOP 40**

- **BUSINESS**
  - □ MACmail (2000) - A super mail list manager for MAC. Stores names, addresses, and other vital information. (Also prints labels.)
  - □ Bi-Plane Spreadsheet (2010) - An extremely powerful and complete program with a multitude of options and functions.
  - □ Home Inventory (2012) - Keeps track of all your personal items, expenses, and budgets.
  - □ Accounting & More (2016) - Has a cash accounting and a loan evaluating program.

- **EDUCATION**
  - □ Stars (2102) - Star charting-Astronomy (Breathtaking graphics and really fun education.)
  - □ Math Tutor (2104) - Several fun math quiz games. A really great educational tool for kids.
  - □ Spelling Tutor (2108) - It's easy to improve your typing skills with this excellent tutor.
  - □ Teacher (2112) - Allows you to track grades and create quizzes.
  - □ Spelling Tutor (2114) - Listen and learn how to spell. (Requires MACinTalk)

- **UTILITIES**
  - □ Menu Utilities (2200) - Use these to edit and install menus.
  - □ Disk Utilities (2202) - Disk and file recovery tools that everyone should have - just in case.
  - □ Vaccine (2204) - Programs that will check for, eliminate, and protect against many computer viruses.
  - □ Screen Dump (2206) - Allows you to print anything on the screen to your printer or a disk.
  - □ Disk Librarian (2210) - A complete disk cataloging database program.

- **CREATIVITY**
  - □ MACinTalk (2302) - Allows your MAC to utilize its speech ability.
  - □ Songs (2306) - Over twenty musical selections with a player utility.
  - □ Calendar Maker (2400) - Make your own monthly calendars and monthly planners.
  - □ MACFonts (2410) - Several new font styles for use with your Word Processor or Desktop Publishing programs.
  - □ Banner Maker (2430) - Prints large or small banners using the imagewriter printer.

**TOP 40**

- **GAMES**
  - □ Football (2700) - Be a computer desk quarterback (choose to be any NFL team)
  - □ Billiards (2701) - Fantastic graphics and extreme realism. Plays several different styles.
  - □ Blackjack (2702) - Includes great Blackjack and Poker games.
  - □ Space Invaders (2704) - Defend against the aliens in three great space games.
  - □ Donkey Doo (2707) - Like "Donkey Kong." Has unlimited levels.
  - □ Casino Fun (2708) - Craps, roulette, and slot machines - The fun of Vegas without the risk!
  - □ MAC Landing (2710) - Like the great "Defender" game. Great graphics and sound.
  - □ Missile Command (2711) - Three versions of the popular arcade hit.
  - □ Monopoly (2712) - Play against the computer or a human. (Great graphics & sounds.)
  - □ Wheel (2713) - Like TV's "Wheel of Fortune." (Sorry Yamma not included with your order.)
  - □ Backgammon (2714) - Try to outplay your MAC! (Before it's too late!)
  - □ Solitaire (2716) - A whole slew of great styles and versions.
  - □ Centipede (2718) - Two excellent versions of the arcade game everybody loves.
  - □ MACYahtzee (2719) - Play Yahtzee on your MAC. (1 to 4 can play)
  - □ Destroyer (2720) - Two versions of "Battleship." Has great sound and allows you to play against a human of the MAC!
  - □ Tank (2727) - Tank battle against the MAC!
  - □ Stratego (2703) - Try to conquer the MAC with a super strategy game board game.
  - □ Blackjack Tutor (2730) - Teaches you to play, and to increase your odds of winning.
  - □ Rick (2731) - Try to conquer the World. (up to six can play)
  - □ Spacestation Pasha (2732) - Climb, Jump, and run through the spacestation picking up keys before you run out of oxygen.
  - □ Crossword (2733) - Play the crossword puzzles provided for you, or create your own.
  - □ Blackjack & Poker II (2734) - Includes three different styles of Blackjack play.
  - □ Baseball (2735) - Control the Pitcher, batter, and fielder.

**NEW ADDITIONS**

- □ Songs 2 (2307) - Contains 40 concertware songs and a player
- □ MACart 2 (2403) - Over 30 animal art pictures with viewer.
- □ Painting Tools (2408) - Includes several programs to get you started painting.
- □ MACfont 2 (2411) (800K) - Many of your favorite picture and art fonts styles.
- □ Writing Tools (2508) - Helps you write and correct that paper or essay you got to get done. (This one really comes in handy.)
- □ Desk accessories 1 (2520) - Over 40 Dist. Acs. for business, utilities, and just plain fun.
- □ Stratego (2703) - Just like the "classic" strategy game board game.

**HYPER-CARD**

To run these Hypercard stacks you must have Hypercard, an 800K drive and at least one Meg of memory.

- □ Business 1 (2800) - Includes Checkbook, Checkwriter, Hypercheck, Bill Tracker, Appointment Master, and much more!
- □ Business 2 (2801) - Comes with Stock Helper, Hyperstocks, Spready, Hyper Payroll, Shareware Payroll, Personal Financier, and other great stacks!
- □ Education 1 (2820) - Spelling Tutor, Finger Spelling 2, Vocabulary, Stack, and speller.
- □ Education 2 (2821) - Includes Heather's Multiplication, Heather's Notes, Time for Heather, Childrens Literature, and Hyper Zoo Big.
- □ Music 1 (2840) - Learn Guitar with: The Guitar Tutor, Guitar Tuner, Guitar Chords, Keyboards, and Common Sounds.
- □ Music 2 (2843) - Great Music Storage & More; Record Stack, Music Library, CD Collection, Music Collection, Six Stack.
- □ Games 1 (2870) - Adventure, Adventure Stack, Criminals, Hyper Craps, and Bowling scores. (Many hours of fun!)
- □ Utilities 1 (2900) - Over 15 Utilities for Menus, Disks, Printer, Archiving, Labeling, etc.
- □ Misc. Apps. 1 (2930) - Time Keeper, Quick Memo, Month at a Glance, Hyper Wallet, and several more including: Las Vegas, LeLotto, Ohio Lotto, Hyper Alarms, etc.

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Security and Acceleration

The DPI Security Line
If information is more precious than money, and in many instances it is; why not let DPI's new security line put your's under lock and key.

Our newest removable provides security, speed, and interchangeable modules, giving you the newest advances in removable hard drives.

So why limit yourself to fixed boundaries when you can take advantage of the newest technology available, "Removable modules."

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Introducing SuperCharger/SE
The 16MHz 68000 based accelerator board that doubles the speed of your Macintosh SE. It's fully compatible with all Macintosh SE software, and can be turned off via the Control Panel for speed sensitive applications.

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DPI
40 Corning Avenue, Milpitas, CA 95035 • FAX (408) 945-8148

(800) 825-1850 (408) 945-1850

*For a limited time only. Prices quoted are for cash purchases. Ca. residents add 7% sales tax. Shipping not included. SuperCharger/SE and Macintosh are registered trademarks of their respective companies. Prices subject to change without notice DPI 1989

$349
*$199

30MB $389*
70MB $649*

44 REMOVABLE
$995

REMIZABLE
DRIVE MODULES

* Requires
Module Carrier...$195.00

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MINIFINDERS

Have you ever wished for a personal assistant to help you choose software? These Minifinders may not breathe and move, but they do tell you which 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 rated in increments of half mice, 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 recognition for an excellent product. Next time you have to find products you can count on, count on MacUser.

### Business Accounting

<table>
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<th>MiniFinder Index</th>
<th>Business Accounting</th>
<th>Communications</th>
<th>Databases</th>
<th>Desktop Software</th>
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<th>Entertainment</th>
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<th>Hardware &amp; Accessories</th>
<th>HyperCard</th>
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**Back to Basics Accounting**

is a powerful double-entry accounting software package for the small-business user with general ledger, accounts receivable, and accounts payable modules. Exhaustive manual with numerous examples. Report capabilities are excellent.

S169, Peachtree, 4355 Shackleford Road, Nocorsos, CA 90039. 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 5,000 accounts. Detailed records, wide range of reports.

Requires 512K or more. S399. 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. S595. Layered, 529 Main St., Boston, MA 01215. NCP (Dec ‘88) * 66 Eddy

**Rags to Riches Professional Billing**

tracks and bills professional services. Batches activities for individual timekeepers. Use as a stand-alone, or integrate with R for R modules. Requires 512K or more and printer. S299.95. Chang Labs, 5000 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 Mac interface than most. Payroll tax labels can’t be modified, which forces you to subscribe to Bedford’s yearly update service.

Version 1.03. Requires 1 megabyte. S549. Bedford Software, 15511 N.E. 80th St., Redmond, WA 98052. NCP (Sept ‘86)

**Strictly Business**

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 5,000 accounts. Detailed records, wide range of reports.

Requires 512K or more. S399. Computer Associates, 1240 McKay Drive, San Jose, CA 95131. NCP (Aug ‘86)

**Timeless III**

tracks billing and expense information for people who charge by the hour. OA turns the clock on and automatically bills a client when a session is over.


**Personal Finance**

<table>
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**Dollars & Sense**

is a bookkeeping program. Easy to use, with a good manual and excellent onscreen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K.

S149.95. Monogram, 531 Van Ness Ave., Torrance, CA 90060. CP (Mar ‘87)

**MacBank**


**MacMoney**

is a financial manager that uses information gleaned from your checks and deposit slips. Produces a variety of reports and graphs. Version 3.01 reviewed. Requires 512K and printer. S119.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90334. NCP (July ‘88) * 66 Eddy

**Managing Your Money**


S219.95. MA1 Ventures, 555 Riverside Ave., Westport, CT 06880. Requires 1 megabyte, 128K or later ROMs. NCP (Apr ‘89)

**Quicken**

helps you write checks, then keeps a ledger showing where your money goes. Tax information is generated automatically. Version 1.0. Requires 512K and printer. S49.95. Intuit. S40 University Ave., Palo Alto, CA 94301. NCP (Nov ‘88) * 66 Eddy

**Wall Street Investor**


**Databases**

**C.A.T.**

is a dedicated relational database for managing contacts, activities, and time. Links between types of data make it easy to keep track of important people and events. S899.95. Chang Laboratories, 5000 Stevens Creek Blvd., San Jose, CA 95129. NCP (Nov ‘87)

**Database**

is an excellent flat-file manager in a DA. Files can contain up to 2,500 records, with up to ten items per record. Graphics, text, and computed fields are
MINIFINDERS

supported. Can convert files from QuickOEX. Version 1.12. Requires $12K or
byte. $250; Preferred Publishers, 5109 Poplar Ave., Suite 700, Memphis,
TN 38137. NCP (July '89)
dBASE Mac 3
is a relational DBMS that includes a structured programming language to
develop the NS-DOSS world. Amazingly fast. Good implementation of com-
mands will help novice users. Requires 1 megabyte or more. $495. Ashton-
Tate, 20101 Hamilton Ave., Torrance, CA 90502-1519. NCP (Feb '88)
Double Helix II 1
is a powerful database that supports a multiuser environment with an upgrade.
Uses an icon-based development system for easy creation of databases. $295,
single-user version. Ostrea, 4049 Commercial Blvd., Northbrook, IL 60062.
NCP (Apr '88)
EnNote is a general-purpose database-acquisition and -analysis package. This port from the DOS world has menus, but the interface is so poorly designed that you might as well be using a PC. This version doesn't even have a Print function. Version 1.0. Requires Mac II and System 5.0 or later. $995. Laboratories Com-
puter Corp., 400 Research Drive, Wilmington, MA 01887. NCP (July '89)
LaelVIEW 2 is a graphical programming environment for creating applications for GPUs and
other data-acquisition and -control operations. Data analysis includes complex
math and signal processing. Users can create on-screen control panels to
emulate test instruments. The most complete such package on either PC or
120 Technology Blvd., Austin, TX 78727-5204. NCP (July '89)
MacCalc is a fast, competent, full-featured spreadsheet with impressive built-in func-
tions; font control, on-line help; ability to expand columns and rows; and read/
write SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very
powerful, pane spreadsheet. $138. Brava Technologies, P.O. Box 10278, Berkeley,
CA 94709-0078. (Sept '88) * 66 Eddy
MacPlot is a hardware/software oscilloscope and chart-recorder emulator that records
2 samples/hour to 10,000 samples/second. The portable hardware can be used
remotely. Version 1.02. Requires $12K. Optional external amplifiers,
NCP (July '89)
MacScrip is a unique and powerful program for graphic-data analysis. Handles multivari-
ate data in a highly visual manner. Nothing else like it for any micro. $199.95.
3-D Graphics, P.O. Box 9546, Austin, TX 78766-9546. CP (June '88) * 66
Mathematica is a powerful tool for doing all kinds of math. Offers arbitrary-precision numeric
calculations, symbolic computation. PostScript graphics, and programmabil-
ity. Version 1.03. Requires 1 megabyte or more and a hard disk drive. Requires 2
megabytes to run kernel. $495; $795 for the Mac II version. Wolfram
Research, P.O. Box 6059, Champaign, IL 61821. NCP (Nov '88) * 66 Eddy
MatrixPro is a windowing system for the Mac. Has live menu中华, instant
display, and 3-D plotting with routines for matrices, differential equations and integrals, complex numbers, and the like. Interface leaves a lot to be desired. Version 1.0. Requires $12K and two disk
drives. II and MultiFinder friendly. $249. Brava Technologies, P.O. Box
1803, Austin, TX 78766-1803. NCP (July '89)
Microsoft Works has been the integrated program of choice for years, and version 2.0 should
change that. Package includes word processing, spreadsheet, database, tele-
communications, and object-oriented graphics. Supports color. Excellent
value. May be all the software you'll ever need. Version 2.0. Requires Mac Plus or
later and two 80K drive. $995. Microsoft, 16011 NE 36th Way, Box
97017, Redmond, WA 98073. NCP (May '89)
101 Macros for Excel offers all the power of macros without having to learn how to write them.
Some macros include a macro to transpose rows and columns, and a search-and-
Stevea Kerr Blvd., Cupertino, CA 95014. NCP (July '89)
Parameter Manager Plus analyzes data, using spreadsheet-like interface in real time. It can handle
both hand-entered and imported data. Includes statistical quality control, equation
fitting, predictive maintenance, histograms, drawing, and presentation. Ver-
sion 3.0. Requires 1 megabyte. $395. $595 with communications moduls.
Southwest, 510 Cottonwood, Milpitas, CA 95035. NCP (July '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 full set of functions. Excellent, easy-to-use program. Requires $12K or more. $395.
Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Aug '88)

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StatView 512+ is a powerful, intuitive statistical-analysis program with tools to help you understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast, and accurate. Extremely wide range of analyses possible. Requires 512K or more and 600K of disk space to operate. $349.95. BrainPower, 4209 Ventura Blvd., Calabasas, CA 91302. NCP (Dec '85)

StatView II is a remarkably complete data-analysis package. Essential for any kind of descriptive, comparative, or multivariate statistics. Works in color on the Mac II. Version 1.01. Requires Mac II or SE equipped with 68020 and 68881 math coprocessor and two 800K disk drives or hard disk. $495. Abacus Concepts, 2654 Bonita Ave., Berkeley, CA 94704. NCP (Oct '85)

Trapazee is a powerful presentation worksheet that combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be avoided to use. Mac II and color supported. Version 2.0. $295. Access Technology, 5556 Heritage Harbor, Monterey, CA 93940. NCP (Dec '87)

Wings is a powerful and roomy spreadsheet with an easy-to-use language for developing customized applications. Lacks a few standard spreadsheet niceties such as borders and plane splitting but makes up for it with glitch graphics, including color and 3-D. Version 1.0. Requires 1 megabyte. $399. University Edition, $99. Informix Software, 16011 College Blvd., Lenexa, KS 66219. NCP (June '89)

Graphics & Design

Aldus FreeHand 2.0 is a major upgrade. Greatly increased power includes up to 100 levels of undo, auto-trace, a blend command for interpolating shapes and colors, and extended text manipulation. Has a steep learning curve but is relatively easy to use once you've got the hang of it. Version 2.0. Requires 1 megabyte. $495. Aldus, 411 First Ave. S., Seattle, WA 98104-2871. NCP (June '87)

ArtClips is a peculiar collection of EPSF "art work." Requires 1 megabyte. $99. Oldline Corp., 7520 Red Road, Suite A, South Miami, FL 33143. NCP (Aug '89)

ArtWare: Borders enables you to customize your own clip-art disk. The border collection created is the best package in terms of quality of art. Other packages available. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $129. ArtWare Systems, 3741 Benson Drive, Raleigh, NC 27609. NCP (Aug '80)

Canvas 2.0 is a rich drawing/painting program, featuring full Bezier curves, cutting and joining of polygons, skewing, perspective and distortion, auto-dimensioning, area and perimeter calculation, auto-tracing of bit maps, and full color support. Creates and edits high-resolution bit maps to 256 x 256. Slightly less powerful Mac II version available. Requires 1 megabyte, two 800K floppies, and System 6.0. $89. 29833 Dewbus Software, 3023 W. 74th Ave., Miami, FL 33122. NCP (Apr '89)

Click & Clip offers seasonal graphics packages. Of the two quarterly editions released, the spring '88 package is the better collection. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $39.95 per edition. Studio Advertising Art, P.O. Box 18432-52, Las Vegas, NV 89114. NCP (Aug '88)

Clip Art is a line of 3-D, color-clip-art collections bundled with a powerful editing program. Images are in Pro603 format and provide exceptional output quality. On a Mac II, DAs don't work while ClipArt is active. Version 1.0. Requires 1 megabyte, $99 per package, including Clip603 editor. Enabled Technologies, 600 S. Dearborn, Suite 1304, Chicago, IL 60605. NCP (Aug '89)

Clutters is a series of business-oriented EPSF clip art volumes. 2, Business Images, is the best collection and can be cataloged with Curator. Requires 1 megabyte, $129.95. Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031. NCP (Aug '89)

Collectors Edition I contains a useful assortment of dingbats, borders, and two editable alphabets, all saved in Illustrator format. Requires a megabyte, $125. Adobe Systems, 1568 Charleston Road, Mountain View, CA 94043. NCP (Aug '89)

Cricket Draw is an object-oriented drawing program that will produce stunning, high-quality output. Designed to print on PostScript-compatible devices such as the LaserWriter 3325. Cricket Software, 40 Valley Stream Parkway, Malverne, PA 19355. NCP (May '87)

Cricket Graph easily generates 12 graph types. Multiple windows can be displayed. Graph paper in up to 8 colors with up to 16 patterns. Self-generating formatting. Switcher, HFS, LaserWriter, and printer compatible. $165. Cricket Software, 40 Valley Stream Parkway, Malverne, PA 19355. NCP (June '86) ● 86 Edry

Cricket Presents is a presentation tool with 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 (Dec '88)

Canvas 2.0 and ColorStudio create and edit 600 S. all area and perimeter and accurate. Extremely wide range of analyses possible. Requires 512K or more

Eddy Software, 19355. NCP (June '89)

DeskPaint is a full-blown paint program as a DA. Allows you to spruce up a graphic while in another application. Imports and exports MacPaint and EPSF images, a great tool for DTP, but not enough features to rival the leaders in paint programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85712-5305. NCP (Mar '88)

Dynaperspective is a good 3-D architectural-modeling program ported from DOS. Can create perspective drawings and elevations automatically from a floor plan. Objects can be made translucent, so windows and water effects are possible. It can also produce animations that "fly" you around buildings and in and out of rooms.

EZ Draft is a high-level CAD application. Does things usually found only on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. $1,995. $500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindsey St., Bridgeport, CT 06608. CP (May '87)

FastFormal Construction Kit is both a fast and efficient business forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. $149. (U.S.) Shana Enterprises, Advanced Technology Center #105, 8650-20 Ave. Scottmont, Alberta T6N 1G1, Canada. NCP (Nov '87)

FONTastic Plus lets you customize and create bit-mapped fonts. Characters are easily added or modified. Version 2.0.6 adds fonts and supports NITNE. Requires 1 megabyte. $99.95. Altys Corp., 720 Avenue F, Suite 1059, Panama, TX 75074. NCP (May '89)

Fontographer is a complex but excellent laser-font creator. The fonts created have 600 bit-per-inch resolution. The fonts are actually downloadable PostScript files. $395. Altys Corp., 720 Avenue F, Suite 1059, Panama, TX 75074. CP

Fonto is a high-speed laser printer on the Mac. Requires 1 megabyte and two disk drives. $495. Aldus, 411 First Avenue S., Seattle, WA 98104. NCP (Aug '89)

Illustrator 88 is a professional-level graphics program from the people who defined the PostScript language. Uses templates for precise drawing and detailed artwork. Requires 1 megabyte, $495. Adobe Systems, 1355 Charleston Road, Mountain View, CA 94039. NCP (Oct '89) ● 88 Edry

Images with Impact is a superb, imaginative EPSF clip art images. Images are programmed for easy editing. Business Business 1 ($129.95) has 175 editable images in 14 categories, Graphics & Symbols 1 ($99.95) is equally impressive. Requires 1 megabyte, 36 Graphics, 1110 N.E. 124th St., Suite 615, Kirkland, WA 98034. NCP (Aug '89)

ImageStudio puts a photo-relutching lab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Requires 1 megabyte or more and two 800K disk drives. Mac II and MultiFinder friendly. $495. Letrasoft USA, 40 Eisenhower Drive, Paramus, NJ 07653. NCP (June '88)

Japanese Clip Art is a two-disc set of extraordinary Japanese clip art. Consists of MacPaint documents and separate fonts. Volume I, Heaven, covers religious subjects; Volume II, Earth, has secular subject matter. $79.95 each volume; $149.95 each set. Qualitas Trading, 9907 Norfork Road, Berkeley, CA 94705. NCP (Apr '87)

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 megabyte or more and a PostScript printer. $249. Emerald City Software, P.O. Box 2103, Menlo Park, CA 94025. CP until registered (May '87)

LetraStudio is a type customization program for creating headlines, logos, signs, and other display type. Presdefined envelopes let you create unique distinction effects. Works only with LetraFonts, which in turn are accessible only through the program. Version 1.6. Requires 1 megabyte and hard disk. $98. plus $175 per font. Letrasoft USA. 40 Eisenhower Drive, Paramus, NJ 07653. Fonts are protected. (May '89) ● 88 Edry

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| **MacCalligraphy** | ☀️☀️
| simulates brush painting. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Takes several getting used to. $175. Qualitas Trading, 6907 Norfolk Road, Berkeley, CA 94705. NCP (Feb '89) |
| **MacDraft** | ☀️☀️
| is an object-oriented graphics program. It sports advanced features such as variable scaling, single-dimension rotation, complex arcs, auto-dimensioning, and variable zoom introduction. $269. Innovative Design Data, 2280 Bites Ave., Concord, CA 94520. NCP (Feb '88) |
| **MacDraw II** | ☀️☀️
| updates the venerable object-oriented draw program. Adds different and colorful patterns in its own documents but doesn't support color in the PICT II format. Version 1.0. Requires 1 megabyte and two 800K disk drives or hard disk. $395. Chin-Chin Corp., Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168. NCP (Nov '89) |
| **MacGraphics** | ☀️☀️
| is an overwhelming collection of bit-mapped clip art—13 thematic disks containing 10-megabytes of art. Unfortunately, most figures are full-page, and reproduction quality suffers when they are reduced. Version 3.0. $225. GoldBluff Publishing, 12155 Magnolia Ave., Suite 3-6, Riverside, CA 92503. NCP (Jan '89) |
| **MacPaint** | ☀️☀️
| hasn't lost its shine after all these years. Version 2.0 supports multiple and attach keyboards for later search and recognition. $59 per form. It lacks free rotation and distortion requirements. Requires 512X and second disk drive. $125. Claris Corp., 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168. NCP (July '89) ☀️ 85. 87 Eddy |
| **MacDraw** | ☀️☀️
| is a feature-laden 3-D program with a MacDraw-like interface. PostScript-resolution shading with variable light sources, user-definable tools, and much more features. Clumsy interface to rotate objects and camera. Version 2.0. $249. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430. NCP (Jan '87) |
| **Maplotter** | ☀️☀️
| is a digital cartographer that charts demographic and marketing information on a geographic basis. Wide variety of maps available — some at an additional cost. Version 3.0. Requires 512K. $349. Select Microsystems, 46 Triangle Office, Yorktown Heights, NY 10598. NCP (Dec '88) |
| **Metro ImageBase** | ☀️☀️
| is a series of TIFF clip art from the grandfather of the clip-art industry. The traditional-looking images are huge, so have a large hard disk handy. Requires 512K or later. $145. Metro ImageBase, 18253 Ventura Blvd., Suite 210, Tarzana, CA 91356. NCP (Aug '89) |
| **MGMS: Professional CAD for Macintosh** | ☀️☀️
| offers more than 200 functions. Very complete, capable program. Groups, Dimension, and Libraries are standard. Sometimes confusing — designed for the professional CAD user, not the novice. Full plotter support. $299. Micro CAD-CAM, 3000 Sepulveda Drive, Suite 240, Van Nuys, CA 91411. NCP (Nov '87) ☀️ 87 Eddy |
| **ModernArtist 2.0** | ☀️☀️
| is a growing color paint program and has added a few new features. If there's not enough joy to justify the substantial price increase. Requires Macintosh II. S495. Computer Friends, 14250 N.W. Science Park Drive, Portland, OR 97229. NCP (Feb '89) |
| **Persuasion** | ☀️☀️
| is an outstanding presentation tool with an excellent drawing environment. Extensive auto-templates and color schemes as well as multiple master slides make it easy to turn out presentations quickly. Requires Apple System 4.1 or higher, 1-megabyte Mac Plus or higher, and a hard disk. Version 1.0. $495. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (May '89) ☀️ 88 Eddy |
| **PhotoPaint** | ☀️☀️
| is not the equal of Studio II or Photopaint, but it does offer a workable painting environment, multiwindow capability, some interesting special effects, and a lower price. Version 1.1. Requires Mac II with color card, $299 95. Micro Vallie, 17496 University Drive, Mesa, AZ 85202. NCP (Sept '87) ☀️ 87 Eddy |
| **PictureBase** | ☀️☀️
| is a powerful graphic librarian. You can store paint and PICT formatted items and images from various sources elsewhere, and create a composite document. $130. Cassidy & Greene, Inc., P.O. Box 222719, Carneal, CA 93322. NCP (Aug '89) |
| **PixelPaint** | ☀️☀️
| is a color paint program with customizable palettes and a lot of special effects. Some Good and Some. Requires Mac II, 2 megabytes, and 8-bit color video card. $495. SuperMac Technology, 485 Potro Ave., Sunnyvale, CA 94086. NCP (May '88) |
| **PowerPoint** | ☀️☀️
| is an easy-to-use desktop presentation tool. Good color schemes. Canard. presentations to Genographics to produce color 35mm slides. Version 2.0. Requires System 4.1 or later. 1-megabyte, and two 800XK drives or hard disk. $395. Microsoft, 1901 N. E. 38th Way, P.O. Box 97117, Redmond, WA 98073-9717. NCP (Aug '87) |
| **StandOut** | ☀️☀️
| is a presentation program built like a publishing program, with strong text and graphics support. Automatic flow around graphic objects. Lacks good graphic examples. Version 1.0. Requires 1 megabyte and two 800KXK drives or hard disk. $395. Interact USA, 40 Eisenhower Drive, Paramus, NJ 07652. NCP (Nov '88) |
| **Studio/8** | ☀️☀️
| is a professional-level color paint application for the Mac II. Superior to most, elegant interface, excellent performance and speed. Version 1.0. Requires Mac II and hard disk; 2 megabytes of RAM recommended. $495. Electronic Arts, 2981 Gateway Drive, San Mateo, CA 94404. NCP (Jan '89) ☀️ 88 Eddy |
| **Super 3D** | ☀️☀️
| is a high-power 3-D modeling program with an excellent integrated interface. Powerful time-saving features include animation, import/export of 3-D worlds as text files. Excellent for art, design, or technical work. Version 1.0. Requires 1 megabyte. $295. Silicon Beach Software, 9506 Black Mountain Road, P.O. Box 251430, San Diego, CA 92126. NCP (Jan '88) |
| **Swivel3D** | ☀️☀️
| is the first upgrade of the original paint/graph program. Some of the new features are plug-in tools, auto-trace, Bezier curves, support for resolutions exceeding 300 dpi, and color support. A good program but not particularly fast. Version 2.0. Requires Mac Plus or later. $199. Silicon Beach Software, 9770 Carroll Center Road, Suite J, San Diego, CA 92126. NCP (July '89) |
| **TrueForm** | ☀️☀️
| takes a scanned image of a paper form and turns it into an electronic equivalent, complete with fields for entering data. It can automatically sum numeric fields, requires external 800K drive $495; run-time version, $295. Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May '86) |
| **VideoWorks II** | ☀️☀️
| 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 megabyte or more. $199. VersaCad, 2124 Main St., Huntington Beach, CA 92648. NCP (July '89) ☀️ 87 Eddy |
| **VideoWorks II Accelerator** | ☀️☀️
| compiles VideoWorks II movies to make them run more smoothly. Composites for the QuickDraw screen display. Version 1.0. Requires 1 megabyte and a VideoWorks II hard disk drive recommended. $152. Macrind, 410 Townsend #409, San Francisco, CA 94107. (415) 442-0200. NCP (Mar '89) ☀️ 88 Eddy |
| **VideoWorks II Clip Animation** | ☀️☀️
| 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 megabyte or more and an 800K drive. Macrind, 410 Townsend #408, San Francisco, CA 94107. (415) 442-0200. NCP (Dec '88) |
| **Vivid Impressions** | ☀️☀️
| is cartoonish EPSF clip art, some of it in color. Special Events contains 130 images, many of them duplicated with minor alterations. Requires 1 megabyte. $130. Cassidy & Greene, Inc., P.O. Box 222719, Carneal, CA 93322. NCP (Aug '89) |
| **WritePaint** | ☀️☀️
| is a series of three-disk volumes of very high-quality clip art. Also includes the Art Roundup DA, a good art browser/edit. $79.95 per volume. Dibuclk Software, 9316 Deering Ave., Chatsworth, CA 91311. NCP (Sep '87) |
| **Works of Art LaserArt** | ☀️☀️
| is a nice collection of business-oriented EPSF clip art. Requires 1 megabyte. $99.95. Springboard Software, Inc., 7808 Creekside Circle, Minneapolis, MN 55435. NCP (Aug '89) |
| **World Class Fonts** | ☀️☀️
| comes in volumes of three disks each. Includes all the Mac's Zap font and a lot more, including some useful utilities. $79.95 per volume. Dibuclik Software, 9316 Deering Ave., Chatsworth, CA 93111. NCP (Dec '88) |
| **Desktop Publishing** | ☀️☀️
| combines a HyperCard-based tutorial on publishing with a project-manager/make-ready system. Beautifully designed but better off as a book. Requires 1 megabyte and HyperCard 1.2, Version 1.0. $79.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Apr '89) |
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Communications

Accu-Weather Forecaster

is a combination communications and meteorological-date-analysis program. Gives access to hourly National Weather Service station reports. Simple maps and charts let you view weather data graphically. Telecommunication mode is optimized to reduce connect-time costs. Version 1.0. Requires 1 megabyte; one 800K drive, and a 300-, 1200-, or 2400-baud Hayes-compatible modem. $9.95. Accu-Weather Communications, Inc. S35-97, educational and commercial contact rates higher. Metacomput Software, P.O. Box 31377, Hartford, CT 06110. NCP (Aug '89)

AppleShare

is the file server marketed by Apple. Software-based. AppleShare requires you to dedicate a Mac and a hard disk to it. Allows users on the network to protect things from other users on the shared disk. Not password protected. Provided at a reduced Finder, $79. Apple Computer, 20355 Mariani Ave., Cupertino, CA 95014. NCP (May '87)

CableServe

allows you to share a Hayes-compatible modem over an AppleTalk network. You can call out, but you can't call in. Works with most telecommunications packages, $195 per server. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. CP (Feb '89)

Desktop Express

is a simple-to-use, semiautomated program for using MCI Mail and Dow Jones News/Retrieval. Performance is tracked off of ease of use. Requires 312K or more. $149. Dow Jones, P.O. Box 300, Princeton, NJ 08543. NCP (Jan '89)

Desktop Express

is an easy-to-use mail system. It's called up from a D.A. Has a very slick interface. Dedicated Mac not required. Starter set, $295, which includes one Administrator disk and three Connection disks. Additional Connections cost $125 each. TOPS, 505 Marina Village Parkway, Alameda, CA 94501. NCP (May '89) ★ ★ ★ 86 Edy

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 128K; $139.50. Software Designers, 630 North Valley Parkway, Boulder, CO 80301. NCP (Aug '88)

Liaison

is a software-based AppleTalk bridge for connecting two LocalTalk networks on a LocalTalk and an EtherTalk network. Using Liaison with standard modems, a single user can connect remotely to an AppleTalk network, or two networks can be connected to form a wide-area network. Versions 1.0. Requires $295. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. NCP (Apr '89)

MacWorkStation

is a development environment and communications program that accesses custom mainframe applications through the Macintosh interface. Modular 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 Publishing, 26255 Mariani Ave., 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. S395. Software Ventures, 2907 Cliftern Avenue, Berkeley, CA 94707. NCP (Jan '89) ★ ★ 86 Edy

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. DA-based. Prices determined by number of users licensed. 1-20 users, $995; 21-50 users, $2499.95; 51-100 users, $4995; 101-500 users, $24995; 501-1000 users, $4995. Microsoft, 16011 NE 30th Way, Redmond, WA 98057-9717. NCP (May '87) ★ 86 Edy

PC MacTerm/pcAnywhere III

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 2.0. Requires 512K. System 4; or later. PC MacTerm, $99; pcAnywhere III, $145. Dynamic Microprocessor Associates, Inc., 60 E. 42nd St., New York, NY 10165. NCP (Jan '89)

Rapport/Drive 2.4

is a connector/drive combination. When the Rapport connector is attached to the external-drive port of a Mac Plus or SE, it allows MS-DOS 3.5-inch disks to be inserted into the Mac's internal drive and read through Apple File Exchange. Drive 2.4 is an 800K external drive that can be used in combination with Rapport. Rapport, $295; Drive 2.4, $249. Kinnet Technology, 271 E. Hacienda Ave., Campbell, CA 95008. NCP (July '89)

Smartcom II

balances power 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.

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3.0 reviewed. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan ’89) ★★★ Edpy

SunPut puts an IBM PC XT inside your Mac without cracking the case to add any special co-processors. The emulation of an MS-DOS machine is done entirely in the CPU. Version 1.2. Requires Mac II or SE equipped with 68002 accelerator card and 2 megabytes of RAM. $595. Insignia Solutions, 1235 Post St., Suite 625, San Francisco, CA 94109. NCP (Nov ’88)

TOPS !!!!' i•

FullWrite Professional !!! !

FeHa FinalWrite Prolessional !!! !

MacWrite II

is MacWrite’s first major upgrade and a big increase in power. Excellent interface. Powerful Search/Replace function. Elegant multiple-column and mail-merge features. Terrible performance on 68000 machines. Version 1.0. Requires Mac Plus or later and two 800K drives or hard disk. $249. Claris Corp., 5201 Patrick Henry Drive, P.O. Box 54168, Santa Clara, CA 95052-8168. NCP (Aug ’89)

Microsoft Word 4.0

is the best power word processor you can buy. Excellent speed and a huge list of useful features. Tables command lets you create multicolumn tables of text and graphics easily. Has hot links to Excel and Microsoft Mail. Has enough DTP capabilities to format almost any document, without compromising its performance as a dedicated word processor. Requires 512K or later, two 800K floppy drives or hard disk. System 2.2, and Finder 3.5 or later. $550. Microsoft, 16811 N.E. 35th Way, Box 97017, Redmond, WA 98073-9717. NCP (July ’89)

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. $195. Access Technology, 555 Heritage Lake Harbor, Montecito, CA 93040. NCP (Feb ’88)

Quickletter is a DA that turns MacWrite and Microsoft Word into a Chinese word processor. It will also work with Draw, HyperCard, or any program that reads PICT files. You must have Microsoft MacWrite II. Requires 512K or later. $59. Xanadux, 20 Fresh Pond Place, Cambridge, MA 02158. NCP (May ’89)

QUED 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 2.0. $129. Paragon, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar ’89)

Quickletter is a well-designed and thoughtfully implemented DA for the creation of letters and faxes. You can use your original MacWrite, WordPerfect, or any MacWrite compatible with System 6.0. Requires MacWrite II. Version 1.0. $124.50. Editing Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Apr ’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, 384K. Sensible Software, 335 E. Big Beaver, Suite 207, Troy, MI 48085. NCP (Dec ’88)

SpellSew is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak spelling. Version 2.0. $74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Sept ’88)

SpellSew is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak spelling. Version 2.0. $74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Sept ’88) ★★★ Edpy

WordPerfect is an electronic thesaurus that won’t replace your trusty Roget’s but is still useful for checking synonyms on the fly. Large, respectively. Version 2.0. Requires 512K, Mac II and MultiFinder friendly. $59.95. Microlytics, 300 Main St., Rochester, N.Y. 14645. NCP (Sept ’89)

WordPerfect is a good choice for offices needing compatibility but not so hot otherwise. Good internal file-management system and macro-maker. Uses hidden formatting codes, hierarchical menu system. Requires Mac II/KE and System 4.1 or later. Two 800K disk drives or a hard disk recommended. Not fully compatible with System 6.0. $359. WordPerfect, 1555 N. Technology Way, Orem, UT 84057. NCP (Feb ’89)

WorksPlus is a speedy spelling and hyphenation checker for Microsoft Works. It includes a dictionary for abbreviations and time/date stamping. The biggest drawback is its limitation to on-screen text. $59.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94649. NCP (Oct ‘87) ★★★ Edpy

Write is a “beginner’s” version of Word 3.0. More features than some word-processors in its class, but not all of the features work well. Poor value and an excessive upgrade path to Word 3.0. $175. Good for novices. Requires Mac Plus or later. 800N E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717. NCP (May ’88)

WriteWork 2.0 is the fastest, best pure-writing program available. Excellent spelling checker, mail-merge, graphics inclusion, footnotes, and header/footer control. Still runs on any Mac. Wonderful interface, as intuitive as the original MacWrite interface. Supports RTF. Version 2.0, WordPerfect, any Mac including 128K, $195. T/Maker, 1390 Villa St., Mountain View, CA 94041. NCP (May ’89)

HyperCard is a CD-ROM disc containing 300 megabytes of shareware, public-domain software, and demoware. Categories include business, education, games, fonts, Mac II-specific products, and the like. Requires Mac Plus or later.
MINIFINDERS

$99.95, Discovery Systems, 7001 Discovery Blvd., Dublin, OH 43017. NCP (July '89)

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 or more and HyperCard. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '89)

City to City

reports 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. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Sept '88)

ClnMac CD-ROM

discs contain 430 to 550 megabytes of software, including DAE, sounds, editors, word-processing utilities, spreadsheet templates, and 80 megabytes of stack. Has user-rating system, classified-ad section, and electronic—building-board support. Released quarterly. Fall '88 and Winter '89 reviewed. Single stack $59.95, annual subscription Quantum Access, 1700 W. Loop S., Suite 1460, Houston, TX 77027. NCP (July '89)

Educorp


Focal Point II

is a major upgrade to Focal Point, an organizational HyperCard stack. Offers an electronic—mail system and a Task Manager module in addition to greater print options. Requires 1 megabyte of core modules, including calendar, phone log, and affluent accounts. Requires 1 megabyte, hard disk, and HyperCard 1.2. 1.0 or later. $119.95. Ten FontCo, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Apr '89)

HyperAnimator

enables you to create talking heads for your HyperCard stacks, using MacTalk or digitized sound resources. Easy to implement, especially if you know HyperCard well. Version 1.5. Requires 1 megabyte. $149.95. Bright Star Technology, 14450 N.E. 29th, Suite 220, Bellevue, WA 98007. NCP (Feb '89)

HyperCard

is a unique program for the Mac. It uses an icon-based metaphor, and it contains a programming language, HyperTalk. Requires 1 megabyte or more. Free with new Macs and bundled with many HyperCard stacks, otherwise $49.95. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Dec '89)

HyperDA

lets you browse through HyperCard stacks through a DA. A true equalizer for $52 HyperCard owners who cannot normally access stackware. Doesn't support global variables. Requires 32K or more. $99. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (May '88)

HyperTutor

is a stack that teaches HyperTalk, HyperCard's programming language. Uses an interactive Test Mac card on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. $49.95. International Software, 2929 Campus Drive, Santa Monica, CA 90403. NCP (Apr '89)

Macintosh Bible. STAX Edition

is the HyperCard version of the first edition of The Macintosh Bible. Covers system software, applications, hardware, and consumer advice. Requires 1 megabyte, two 500K floppy—disk drives (hard disk recommended), and HyperCard. $37.95. STAX, 8008 Shot Creek Blvd., Austin, TX 78758. NCP (Mar '89)

101 Scripts and Buttons for HyperCard

is a collection consisting of buttons, fields, graphics, utilities, XCMDS, templates, and icons, cursors, and more to be used in creating HyperCard stacks. Version 1.1. Requires 1 megabyte, hard disk, and HyperCard $69.95, Individual Software, 2929 Sherrywood Road, Suite 300, San Carlos, CA 94070-2704. NCP (Jan '89)

ScriptEditor

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 commands. $49.95. HyperPress Publishing, P.O. Box 8243, Foster City, CA 94404. NCP (Oct '88)

STELLAStick

lets you change the boxes and circles of a STELLA simulation into familiar images and icons, with digitized sounds and animation. Contains the STELLA kernel for accessing STELLA models; lets you change models in real-time. Version 1.0. Requires HyperCard 1.2, $295. High Performance Systems, 13 Dartmouth College Highway, Lyme, NH 03768. NCP (July '89)

VideoWorks II HyperCard Driver


Xilinx Time Table of Science and Innovation

presents events from the history of technology on a HyperCard—based CD-ROM. Text, graphics, and sound are nicely integrated, and related events are well linked. Includes HyperCard on CD-ROM. Version 1.0. Requires 1 megabyte, $150. Xilinx, 13464 Washington Blvd., Marina Del Rey, CA 90292. NCP (May '89)

Organizational Tools

Acta Advantage

is an outline in a DA and the successor to Acta. Also available as an application. Smart Poste lets you paste material from other applications into Acta outline format. Includes drivers for translating Acta outlines into MORE and ThinkTank (both ways), and into MacWrite, WriteNow, Works, and RTF. Version 3.0 (DA or 1.0 application). Requires 512K or better $129. Symmetry, 761 E. University, Mesa, AZ 85203. NCP (Aug '88)

Comment

is an electronic version of Post—It Notes. A mini window processor lets you attach notes to a spreadsheet cell. Can also be used with your own spreadsheet. Version 2.0. Requires 512KE. $99.95. Denba 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. $150. Meta Software, 150 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '89)

For the Record

is a database specifically designed for legal, financial, and personal records. Allows password locking of data, and provides an easy index system. Requires 512KE or more and second disk drive. $49.95. Odyssey, 4084 Commercial Ave., Northbrook, IL 60062. NCP (July '88)

Guide

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, 14218 N.E. 21st St., Bellevue, WA 98007. NCP (Apr '87)

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 Systems, 1670 S. Amphitheater Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan '89)

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. Requires AppleWorks; single $195.半小时, P.O. Box 58166, Santa Clara, CA 95052-0160. NCP (Mar '88)

MacSchedule

is a simple scheduling program with substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. Produces Gant charts only (no PERI or CPM). Version 1.0 environment goes to a 32K QX windowed desktop. Version 2.0. Requires 512KE or more. $149.95. Cognitio Technologies, 55 Wheeler St., Cambridge, MA 02139. NCP (Jan '89)

MacSMMRSTs

can create small, stand—alone expert systems. Features hypertext connections to MacPaint, PICT, SYLK, and text files. Still a little buggy. Version 1.03. Requires 512KE or more. $149.95. Cognitio Technologies, 55 Wheeler St., Cambridge, MA 02139. NCP (Jan '89)

MORE

is an outlining and organizational tool that is a big improvement over its predecessors, MORE and ThinkTank, it has on—screen capabilities well beyond its competitors. More can work with System 4.1 or later, 1—megabyte Mac Plus or later, and a hard disk. Version 1.0. Synrattic, Living Videodex Division, 12021 Torre Ave., Cupertino, CA 95014. NCP (May '89)

QuickDELETE

keeps your phone numbers in an electronic Rolodex. The DA even plays the tone through the Mac's sound port. Version 1.1a. Requires $15KE; hard disk is recommended. $50. Casady & Steel, P.O. Box 253707, Carmel, CA 95422. NCP (Jan '89)

STELLA for Business

is a simulation tool used to model complex business systems. Requires HyperCard. You must master a discipline called "system dynamics." Requires 512K or more. Mac II version available: $350. High Performance Systems, 13 Dartmouth College Highway, Lyme, NH 03768. NCP (June '89)
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SugarExpert

is an expert-system shell that induces rules from examples. Rules become unwieldy when a large number of rules are used. Overpriced. Version 1.4 requires $123.95. Softsync, 162 Madison Ave., New York, NY 10016. NCF (July 88)

WillMaker

is a simple yet valuable run-time BASIC program for creating simple wills. Not elegant, but it does the job well. Version 3.6 requires 800K disk. $39.95. Holow, Print, 950 Parker St., Berkeley, CA 94710. NCF (Mar 89)

Utilities

AutoMac III

is similar to Tempo II and Apple's MacroMaker but is generally easier to use and comes with excellent documentation and a powerful Macro Editor. Version 2.0 requires $119.95. Also distributed with Microsoft products (Word 3.0 and Excel 4.0, file 2.0). Genetic Micro Software, P.O. Box 5326, 1712 N.E. Eighth Place, Bellevue, WA 98008. NCF (Feb 89)

CalendarMaker

creates monthly calendars in a variety of formats. Users can incorporate their art and daily notes. Note files can be imported from a variety of data calendars and outlines. Shareware and prelicensed versions available. $49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCF (Oct 86)

Capture

saves any portion of a Macintosh screen to the clipboard or as a PICT file. Works in color on the Mac II. Requires $122.50 or more. MultiFinder-friendly. $59.95. Mainstay, 531-1 8 Derry Ave., Agoura Hills, CA 91301. NCF (June 88)

Copy for the Macintosh


DockExpress

optimizes hard-drive performance by reorganizing fragmented files. Best of its kind. Version 1.5 requires $122.49.85. Alt Soft, P.O. Box 927, Springfield, TX 76233. (Jan 89)

DockFinder

searches disks for files as well as cataloging disks. Requires $122.49.85. Williams & Makiacs, South 2707 Godfrey Blvd., Spokane, WA 99204. NCF (Feb 89)

DockIt

is a utility for backing up and restoring hard-disk files. Creates a "SmartSet" of floppy disks to incrementally backup only update files modified since the last backup procedure. Backs up to floppy disks or another hard disk. Requires $122.50 or later. $99.95. SuperMac Technology, 485 Polvero Ave., Sunnyvale, CA 94089. NCF (June 87)

DockTools Plus

is a set of eight useful utilities and applications. Earlier version was sold as Battery Pak. The DA DiskTool's II is a Finder replacement. Also included are an RPN calculator, Phone-Part and Calendar Manager. Requires $122.50 or more. Software by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCF (Mar 88)

DockTop

is a DA Finder replacement of extraordinary power and ease of use. Comes with the useful LaserStatus DA and Widgets application. The extras alone are worth the price. Requires $122.50 or more. Upgrade from Version 1.0 17$.2710 with new manual. $49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCF (Aug 87)

Eureka: The Solver

is a tree-form numerical equation solver. Standard trigonometric and logarithmic functions are available, as is treatment of imaginary and complex numbers. $195. Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066. NCF (Mar 88)

Fastback for the Macintosh

is hard-disk backup software that is very quick, if not very efficient. Doesn't automatically exclude applications. Creates a separate catalog disk. $99.95. Fifth Generation Systems, 1322 Bell Ave., Tuscaloosa, AL 35409. NCF (Apr 89)

FEddIt

is the file and disk editor for everyone, from newest Mac owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MF files. If you own a Mac, get it. $95. COSMaster Systems. 108 E. Fremont Ave. #37, Sunnyvale, CA 94087. NCF (Sept 86) $60

FileMagic

is a file-management utility that tries to increase the power of the Standard File Dialog. Your most frequently used files or folders install in a pop-up list for immediate access. Lets you copy or move files. A good idea, but it's buggy. Version 1.0 requires $125 or later. MacMaster Software, 800 Koll Center, 500 108th Ave. N.E., Bellevue, WA 98004-5560. NCF (July 89)

Findswell

is an indispensable utility that installs a new button in the Open dialog box for very quickly Macintosh application. Press the button, type a search string, click on Find, and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires $125 or more. $49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCF (Nov '87) $87

1stAid Kit HFS

recovers lost or damaged files from floppy or hard disks. An excellent manually-maintained-textbook actually teaches the Hierarchical File System. Requires 1 MB or more. Version 2.2. $89.95. 1stAid Software, 42 Rindon Road, Boston, MA 02135. NCF (June '88)

Font/DA Juggler Plus

gives you unlimited access to almost any number of fonts, desk accessories, and sounds. Uses hierarchical menus. $59.95. Alt Soft, P.O. Box 927, Springfield, TX 76233. NCF (May '89)

Glue

adds a print-to-disk capability to many programs. ImageSaver installs as printer driver. Viewer allows copying and printing of Glue files. Handy utility for desktop publishers. $59.95. Solutions International, P.O. Box 988, Montpellier, VT 05602, NCF (Dec '86)

HFS Backup

ranks as one of the preferred hard-disk backup utilities. Back up by file/folder or test changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33604. NCF (Dec 88)

Icon-8!

lets you create icons to uses as an alternative to menu commands. Use as icons templates or create your own. Version 1.0. $79.95. Olivut Software, 7570 Red Road, South Miami, FL 33143. NCF (Feb '88)

IconBack

tracks time spent in applications and saves as info text files. Installs on any disk, works in background. HFS-compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4520 Ashale Lane, Camarillo, CA 93010. NCF (Jan '87) $50

LaserServe

is a printer spooler for AppleTalk networks. Once all installation operations are done with the DA. Works with both MacServe and TOFS. Requires $122.50 or more and 200-300 line hard disk. $85 per node ethnics, 4780 S.W. Macadam Ave., Portland, OR 97201 NCF (Feb '87)

MacFlow

is a design tool created for programmers. Traditional flowcharting symbols are linked together, and a symbol can be connected to a sequential flowchart file. Now supports custom symbols. $125. Mainstay, 5211-8 Derry Ave., Agoura Hills, CA 91301. NCF (Apr '87)

MacInUse

tracks time spent in applications and saves as info text files. Installs on any disk, works in background. HFS-compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4520 Ashale Lane, Camarillo, CA 93010. NCF (Jan '87) $50

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 two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk, $139.95. Kent Marsh Ltd. 1206 Post Oak Blvd., Houston, TX 77096. CP (Mar '87)

MasterJuggler

is Font/DA Juggler with so many features added that they can't be listed here. A world-class utility. Not as elegant as Sincase II but has more features. Version 1.0. Requires $125.00 or more. $95. SoftSync, P.O. Box 927, Springfield, TX 76233-0927. NCF (Mar '89)

MaskPackage+

is a set of extremely powerful DA. Includes a text editor, text printer (supports LaserWriter), chair, terminal, and EZ2menus. HFS-compatible. $35. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCF (Mar 89)

MultiDisk

is an excellent software disk partitioner that allows partitions to be dynamically resizeable, password-protected, and even encrypted. Version 1.0. Requires $125 or later. $95. SoftInC, P.O. Box 927, Springfield, TX 76233. NCF (May '89)

Ncrypted

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, 5311-8 Derry Ave., Agoura Hills, CA 91301. NCF

NightWatch

locks up your hard drive by using a floppy startup disk that acts as a key. Type in the correct password, and access to the hard disk is allowed. Version 1.02. Requires $125.00 hard disk, and an 800K drive. Mac II and MultiFinder-friendly. $169.95. Kent Marsh Ltd. P.O. Box 406269, 1206 Post Oak Blvd., Houston, TX 77096. NCF (Sept '88)

On Call

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 $125. Mac II and MultiFinder friendly. $39.95. 1CDM Simulations, B48 I.S. Wheeling Road, Wheeling, IL 60090. NCF (Sept 88)

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. Requires
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68020 and 4 megabytes. $695. Casse Corp., 100 Cooper Court, Los Gatos, CA 95030. NCP (Mar '89)

PC Tools Deluxe

is a collection of seven applications, two DAs, and two INITs that perform various functions, from disk and file recovery to backup to disk optimization and encryption. Would be better if its elements were better integrated. Doesn’t have the smoothness Mac users expect. Requires 512K or later and System 4.2 or later. $79.95. Excel Point Software, 15220 W.W. Greenbrier Parkway, #200, Beaverton, OR 97005. NCP (Aug ‘89)

PowerStation

is an extremely easy-to-use, versatile, and powerful Finder substitute. Loaded with powerful features. Comes with Print, $39.95. Fifth Generation, 1222 Hill 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 512K or more. $75. SoftStyle, 716 Kalamazoo Highway, Honolulu, HI 96825. NCP (Aug ‘87)

QuickKeys

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. Extremely powerful, necessary for Apple Extended Keyboard owners. Requires 512X or more. $99.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Jan ‘88) • Ed7 Eddy

Random Access

is a RAM disk and disk cache in one easy-to-use package. Can store multiple configurations as files. Good product but a little pricey. $30. Dave Computer Corp., 1200 N. 23rd St., Wilmingtom, NC 28405. NCP (June ‘87)

Redux 2.0

is an upgrade of Olduvai’s ORC package. Still a good value and performer. Now includes printer drivers for most scanners, batch processing, background operation under MacFinder, and 22 font tables. Recognizes multiple columnics, some foreign characters but not underlined text. Version 2.0 Requires 1 megabyte. $495. Olduvai Corp., 7720 Red Road, Suite A, South Miami, FL 33143. NCP (June ‘89)

Redux

is an excellent incremental backup program. Lets you back up files, folders, or entire volumes. For more control, you can write your own “scripts.” Using the Redux control program, BackUp Redux Restore, a restore utility that can be distributed freely. Version 1.5. Requires 1 megabyte. $99. MicrosPublishing, 7030-B W. Hillsborough Ave., Tampa, FL 33614. NCP (July ‘88)

RoundUP

searches your disk for a specified text string. Slow, awkward, poor performer. Does not work with Mac Ii or 68020 accelerators. Version 2.0. Requires $124. $49.95. Virginia System Software Services, 5589 W. Bay Court, Midlothian, VA 23112. NCP (Apr ’89)

ScreenRecorder

is a utility for recording your on-screen Mac activities. Ideal for presentations, copying, and training. Uses a tape-recorder model. "Tapes" can include sounds recorded with applications such as MacRecorder and can be a fixed length or loop. Requires 512K or more. Installs with HyperCard stacks for distribution. Version 1.0. Requires 1 megabyte. $195. Fariation Computing, 2201 Dwight Way, Berkeley, CA 94704. NCP (June ’89)

Sendinal

encrypts data files (or sets of files) using a super-secure DES or a super-fast SuperCrypt algorithm. Provides high-level security if you keep your passwords secret. Requires 512K. $295. SuperMac Technology, 485 Poplar Ave., Sunnyvale, CA 94086. 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 advance warning options. Single-user: $49.95; multuser: $99. Appointment Diaries with Smart Alarms priced according to number of users. JAM Software, P.O. Box 1345, Pr. Reyes Station, CA 94056. NCP (Oct ‘86)

SmartScraper and The Clipper

are two useful DA utilities for graphics work. SmartScraper is a major enhancement to the standard Scrapbook DA. The Clipper provides you with a transparent Clipboard window, allowing you to resize or crop a graphic that is output to a printer, MacPaint, or other applications. Single-user: $195. Multuser: $99.95. JAM Software, P.O. Box 1345, Reyes Station, CA 94056. NCP (July ‘86)

SoundWave

is a useful sound recording and editing utility. Works with waveforms, able to change sampling rates. Previously known as SoundCin. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr ‘88)

Stopping 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 draw. Version 2.0. Requires 1 megabyte. $95. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709. NCP (Oct ‘87)

StuffIt

compresses files to reduce the amount of space they take up on disk. Great for transferring documents via modem. Also joins and encodes files. Version 1.5. Requires 512K. Shareware fee, $15. Raymond Lau, 100-60 74 Ave., Forest Hills, NY 11371-3133. Also available on most electronic services. NCP (Dec ’88)

Suitcase II

is even better than its predecessor. Increased file-management capabilities enable you to open 99 font, DA, and Key files at a time. Can display any installed font in any style. Fonts can also appear in their proper typefaces on their font menus. Includes Font Harmony for resolving font number conflicts, and Font & Sound Control for font and sound compression. Version 1.2. Requires 512K or later. $75. Fifth Generation Systems, 11200 Industrial Blvd., Baton Rouge, LA 70809. NCP (June ‘89) • Ed7 Eddy

SuperLaserSpoon

is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background but doesn’t print a faithful rendition of PageMaker documents as a result. $149.95 single user. $395.50 for up to five users on one network. SuperMac Technology, 485 Poplar Ave., Sunnyvale, CA 94086. NCP (June ‘88)

Symantec Utilities for Macintosh

(or SUM) resolves worries about losing data. It prevents, diagnoses, and, if required, fixes many serious disk and file problems. Recover lost files or crashed hard disks. Version I.0. Requires 512K, $99.95. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Sept ‘88) • Ed7 Eddy

Tempa

is a powerful keyboard macro program that gives owners of extended keyboards the money’s worth.” Especially good for building sequential macros. Features include conditional branching and the ability to remember menu selections by name. I.0. Requires S149.95. Affinity Microsystems, Ltd., 1056 Walnut St., Suite 425, Boulder, CO 80302. NCP (Dec ‘88)

Top Desk

is a set of seven self-installing (and self-removing) DAs. Menu Key 2000. Command-key sequences to programs; View allows looking at and moving data among up to eight MacWrite documents; also included are BackPrint, Touch’n Go, Bookmark, Encrypt, MacWrite II, Poplar II, and Standard Computer. P.O. Box 9916, Berkeley, CA 94709. NCP (May ‘88) • Ed7 Eddy

TMON

is the debugger for the Mac. This isn’t open to question. TMON is simply the best. Comes with the latest version of Dark Adler’s Extended User Area. $149. ICDM Simulations, 625 Wheeling Road, Wheeling, IL 60090. NCP (Apr ‘89)

Turbo Download

is a DA designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range from upward of 50 percent to over 300 percent at 2,400 baud. $39.95. Mainstay, 311-Berry Ave., Agoura Hills, CA 91301. NCP

User foil

is a DA that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed in blocks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 311-Berry Ave., Agoura Hills, CA 91301. NCP (Jan ‘86)

Vantage

is a text-editor DA and the commercial version of McSick. It can change case, count the number of lines, words, sentences, or paragraphs in a selection; and search and replace on character strings (including invisibles). Supports macros and external communications tasks — For example, it can automatically send a file. Version 1.0. Requires 512K or later. $99.95. Preferite Publishers, 510 Poplar Ave. Suite 617, Memphis, TN 38137. NCP (June ‘89)

Virex

is the first commercial antivirus program for the Mac. Seeks out and repairs damage done by the three best-known Macintosh viruses and points out anything suspicious that might be a new form of virus. Updates will be released if new viruses appear. Version 1.1a. Requires 1 megabyte. $99.95, updates $13. Site licenses (100-CPU minimum), $20-$390 computer; updates $4-$5. HJC Software, P.O. Box 51816, Durham, NC 27717. NCP (June ‘89)

WritePlus Command

lets you build and define macros for all Works modules. Prefixed macro provide for an even tighter integration of the program’s word-processing, spreadsheet, and database modules. Requires 1 megabyte or more. $89.95. Lundeen & Associates, P.O. Box 20028, Oakland, CA 94601. NCP (May ‘88)

Languages

AALIS Prolong

is a fast standard Prolong with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $130. Advanced AI Systems, P.O. Box 39-0380, Mountain View, CA 94039-0380. NCP (Mar ‘87)

Acknowledgement

lets advanced programmers create customized applications that will accomplish many telecommunications tasks — for example, automatically backing up E-mail to communicating with VAXes. Version 1.0. Requires $124. $495. SuperMac Technology, 485 Poplar Ave., Sunnyvale, CA 94086. NCP (Jan ‘89) • Ed7 Eddy

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Allegra Common Lisp

is a development environment with an EMACS-style editor that implements most Common Lisp editing and debugging functions. Version 1.2. Requires 1 megabyte and a hard drive. $620. Coastal Software, P.O. Box 307, Cambridge, MA 02142. NCP (Nov '89) • $8 Edpy

ExperComon Lisp

is a LISP development system. Not fully Common LISP-compatible but creates good compiled code. Version 1.2. Requires 1 megabyte or more. $995. Exper Felligane, 599 San Ysidro Road, Santa Barbara, CA 93103. NCP (Aug '87)

LPA MacPrelog

is a much improved program that includes incremental and optimizing compilers, a graphics environment package, and C and Pascal subprocesses. Version 2.0. Requires 1 megabyte or more. $495. Programming Logic Systems, 31 Crescent Drive, Milford, CT 06460. NCP (Feb '88)

Mac C

is a highly Mac-oriented implementation of the popular Forth programming language. A new, reduced price: $199. Creative Solutions, 4701 Randolph Road, Rockville, MD 20822.

MacForth Plus

is an excellent implementation of the popular Forth programming language. Now, reduced price: $199. Creative Solutions, 4701 Randolph Road, Rockville, MD 20822.

Mac II

is a multitasking implementation of Forth 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. $995. Requires 512K or more. Palo Alto Shipping, P.O. Box 7430, Millbrae, CA 94030. NCP (Apr '89)

Macintosh 68000 Development System

is a fairly traditional assembly-language package. The two-disk set provides an editor (Edit), an assembler, a linker, an executive, and a resource compiler. $195. Apple Computer, 20532 Mariani Ave., Cupertino, CA 95014. NCP

MacScheme+Toolsmith

is a Mac version of Scheme, a LISP dialect. Professional implementation, marred only by relative slowness compared to similar products. Get Toolsmith. Requires 1 megabyte or more. $395. Siamatic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Aug '87)

Object Logic

is an object-oriented programming language with access to the Toolbox. Great product but can’t produce stand-alone applications. Requires 512K or more. $79.95. Coastal Software, P.O. Box 307, Cambridge, MA 02142. NCP (Aug '87)

ProLog

is a solid Prolog following the Edinburgh standard. Has extensive debugging facilities, but you’ll need a separate Toolbox disk with $8 additional printables. Drawback: No true editing or printing features. $99.95. Chalcodony Software, 5530 La Jolla Blvd., La Jolla, CA 92037. NCP (Mar '87)

Prototyper

is an application-specification program. Lets you create a program interface and simulate how an application would work. Comes with a good source-code generator for THINK’s Lightspeed: 3.0, MPW 2.0 and 3.0, Turbo Pascal, Lightspeed Pascal, MPW Pascal, and TML Pascal II. A useful tool for quick and easy system mock-ups. Requires Mac Plus or later, two 80K drives. System 4.1 or later: $259. Smathers+Barnes, P.O. Box 639 Portland, OR 97207. NCP (Aug '89)

QUED (Quality 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. $50. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '86)

THINK’s Lightspeed Pascal

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 2.0. Requires 2 megabytes, $75. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Jan '88) • $8 Edpy

THINK’s Lightspeed

is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K or more. $125. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Feb '87)

TML (MacLanguage Series) Pascal

is a good Pascal compiler, capable of producing stand-alone programs. Can use any existing Pascal programs with slight modification. Requires 512K or more. $99.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (June '86) • $6 Edpy

TML Source Code Library

shows how to write programs that use custom definition routines: speech, serial drivers, split bars, and other topics. Provided on three 400K disks. Requires TML Pascal. $79.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

Visual Interactive Programming

is a unique visual programming system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most Toolbox routines. $149.95. Mainstay, 5311-B Danny Ave., Agoura Hills, CA 91301. NCP (June '87)

Education

Alphabet Blocks

teaches prekindergarten skills and sounds of the alphabet. The digitized voice of an on-screen elf is clear and pleasant. Very intuitive. Requires 1 megabyte or more. $39.95. Bright Star Technology, 14450 NE 29th Place, Bellevue, WA 98007. NCP (May '88)

American Discovery

is an interactive United States geography game that teaches states, capitals, and in a roundabout manner, postal codes. Version 2.0. Requires 512K or more. $59.95. Great Wave Software, 5533 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 or more, two disk drives (one must be 800K). May be run from a hard disk. $69.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Dec '87)

KidsTime

is a package of five educational programs for children between the ages of 3 and 12. The programs allow different difficulty levels. Some use speech, and one is a nice introduction to musical notes. $49.95. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Oct '88) • $8 Edpy

LXText

generates tests from a database of questions. Makes it easy to modify and scramble test questions. Flexible output. Requires Mac 512K or later and two 80K drives or a hard-disk drive. $195. Eddy II Enterprises, 9511 Business Center Drive, Rancho Cucamonga, CA 91730. NCP (May '88)

Mavis Beacon Teaches Typing!

has more features than a usual, text-based leek. Lots of diagnostics concerning typing and incomplete documentation. Version 1.1. Requires 1 megabyte. $49.95. The Software Toolworks, 19608 Northfield Place, Chatsworth, CA 91311. CP (Nov '88)

On Becoming a Desktop Publisher

is a video-training tape based largely on the syndicated television program, “The Computer Shop.” Good primer on the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. $49.95. Ocean Communications, 1614 N. First St., Suite 160, San Jose, CA 95112. (Sept '88)

Reader Rabbit

teaches 4- to 6-year-olds to read in four elephant games that play and switch off of each other. Requires 512K or later and an 800K drive. Mac II and MultiFinder hostile. Version 2.0. $59.95. The Learning Company, 5493 Kaiser Drive, Fremont, CA 94535. CP (June '88)

Sensei 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 or more. $99.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Jan '88)

Type!

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. $259.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Nov '88)

Tutoring Instructor Encore

recognizes that it’s being 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, 128 Shoevery Road, Suite 3000, San Carlos, CA 94070-2704. NCP (Nov '88)

Tutoring Tutor IV

consistently tests your use of all keys, including seldom-used ones. It’s hard to maintain user’s attention span, as the testing material is unimaginative. Requires 512K. $49.95. Simon & Schuster, One Gulf and Western Plaza, New York, NY 10023. NCP (Nov '88)

Entertainment

The Ancient Art of War

gives users a chance to rekindle some famous campaigns on both strategic and tactical levels. Campaigns can also be designed by scratch. Very playable, but not addictive. Requires 512K or more. $44.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Apr '88)

Apache Strike

would have been an excellent arcade game in the late 70s. Now, it’s just a helicopter to destroy ever-increasing numbers of enemy aircraft and tanks. Mac II hostile. Requires 512K or more. $44.95. Silicon Beach Software, P.O. Box 251439, San Diego, CA 92156. NCP (July '88)
ArkanoS

A fast-moving, arcade-style game—a souped-up Breakout. It also includes a special "Bass mode," which brings up a uniquely musical word processor in order to give you a boss that you think you're actually working. Version 1.0. Requires 512K. $49.95. Discovery Software, 163 Conduit St., Somerville, MA 02143. NCP (May 89).

Balance of Power

Is the world's first computer political game. This simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Exceptional artificial intelligence routines and general play make this a classic. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Prim).

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. Full screen game, especially when the Mac is one of the players. Requires 512K or more. $30. Timeline. P.O. Box 60, Ypsilanti, MI 48197. NCP (June 88).

Beyond Dark Castle

Brings back Prince Duncen in an encore performance to run, jump, and boa his way to victory. But justly, more of the same. Requires 312K. $49.95. Silicon Beach Software, P.O. Box 261439, San Diego, CA 92126. NCP (Aug 88).

Beyond Zork

Is yet another installment in the famous Zork series of text adventures. Find the fabulous Coconut of Ventura Blvd. .. Slicon simulates an superb interface in a trul y is a CP program is an outstandin.o (May '88). But iObblc Apr 69 recep. s.

Beyond Crystal

Dinner at Eight

Down Deja Fool's Errand

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MINIFINDERS

missions, and collect gold. Nice work if you can get it. $39.95. Electronic Arts, 1620 Gateway Drive, San Mateo, CA 94404. CP (June '87)

Shadowgate

is an episodic-based graphic adventure. You, as the seed of prophecy, must save the world from the evil varlock. Far surpasses all others with great animated graphics, sound, and adventure. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60063. CP (Dec '87)

Shanghai

is a challenging game that requires a board of all 144 tiles by matching pairs of mahjong tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. $44.95. Activision, 3855 Bohannon Drive, Menlo Park, CA 94025. CP (Nov '86) @ 86 Ed

SimCity

is an animated game that's also a city planning simulator. You can work on any language or country, build your own city in the world, or build your own city from the ground up. Evolution window gives you instant feedback on your efforts. Version 1.0. Requires 512K, $49.95. Microtivity, 933 Mountain View Drive, Suite 113, Lafayette, CA 94549. CP (June '89)

Snake-Br

is a video game of a snake (or train or ship) through a maze, picking up various objects, eating feed and making your snake grow. Options include changing languages, editing the maze, and playing an X-rated game. Shareware: $15. Georges Malmound, 37 Rue des Abbesses, Montmartre, 75018 Paris, France. NCP (Dec '87)

Solitaire Royale

is a collection of eight solitaire card games. The Tour mode cycles through each game, Tournament mode deals the same hand for several players. $34.95. Spectrum, 2061 Challenger Drive, Alameda CA 94401. CP (May '88)

Space Quest

is a 3-D animated adventure in which you play a janitor in a dinky situation. All you have to do is get off your ship before it explodes and save the Eron System. Nuke on any Mac. $49.95. Sierra On-Line, P.O. Box 485, Corte Madera, CA 94925. CP (Sept '87)

Star Fleet I: The War Begins

is a computer game in the Star Trek variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K or more. $55. Interact, P.O. Box 57925, 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 or more. $59.95. PB Software, 1111 Trunton Drive, Foster City, CA 94404. CP (Feb '88)

Trust & Betrayal: The Legacy of Sidcot

requires negotiating with six artificial personalities in a struggle for power—navigating, considering that it comes from the maker of Balance of Power. Uses hieroglyphics to communicate with a foreign race. Requires 512K or more. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Mar '88)

Unlimited

is a non-based adventure game set in an extremely haunted mansion. Graphic interface makes it easy to play. Animation and sound add to the thrill. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Sept '86) @ 86 Ed

Winter Games

lets up to eight players compete against each other in Olympic events including figure skating, bobsliding, biathlon, and ski-jumping. Excellent animation of good graphics, good theme music. $59.95. Expy, P.O. Box 8020, Redwood City, CA 94063. CP (Mar '88)

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-422 interface, and sampler. $495, Blank Software, 1471 Folsom St., San Francisco, CA 94103. CP (Oct '86) @ 86 Ed

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 Mac's adapter required for 128K and 512K. $99. Apple Computer, 20133 Saratoga Ave., Cupertino, CA 95014. (June '88)

ConcertWare

is an enhanced version of ConcertWare. Has different instruments and can load any four of a set of eight at any point in a piece. Supports Apple Sonata music font. $69.95. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95068. NCP (Dec '87) @ 85 Ed

ConcertWare+MIDI

is a composition and transcription program that can record multiple notes from a MIDI keyboard. Easy to use if you need music. Handles eight tracks of eight voices each. Requires 512K. Version 4.0. $149.95. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95068. NCP (Dec '87)

Cue: The Film Music System

is a powerful and versatile assistant for scoring films. Automates spotting and logging cue points and searching for matching tempos. Also performs many minor jobs, such as generating a performing rights cue sheet. Version 2.0.

Requires 512KX. $395. Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025. CP (Feb '89)

Deluxe Music Construction Set

allows you to use up to 88 voices on eight staves and play the music through the Mac's internal speaker and/or MIDI. Requires 512K or more. Mac II and Multifinder hostile. Version 2.0. $99.95. Electronic Arts, 1620 Gateway Drive, San Mateo, CA 94404. CP (June '88)

Finale

is a powerful music notation program that brilliantly transcribes keyboard performances of MIDI and/or MIDI files. Also allows you to convert an existing score to a MIDI file. Requires Mac Plus or later and hard disk. Mac II or SE/30 with 2 megabytes highly recommended. $1,000. Coda Music Software, 1401 E 79th St, Bloomington, MN 55425-1126. NCP (Aug '89)

Graphic Notes

is a very good page-layout program for music notation, with MIDI support. Comes with special musical notation keyboard. Version 2.0. Requires 1-megabyte and second disk drive. $295 (including Presto keyboard). Music Software Plus, 7000 Sequel Drive, Suite 444, Apts, CA 95003. NCP (Apr '89)

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 or more, MIDI interface, and MIDI synthesizer. $200. Intelligent Music, 116 N Lake Ave., Albany, NY 12226. CP (Oct '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 Mike" for the computer set. Requires 512K or more. $49.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (July '87)

Listen

is an educational tool for ear training. It has both a piano keyboard and a guitar keyboard to board for the student to note and it offers a wide range of exercises. $99. Resonate. P.O. Box 995, 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 powerful but requires lots of patience and practice. Requires 512K or more, MIDI interface, and MIDI synthesizer. $250. Intelligent Music, 116 N Lake Ave., Albany, NY 12226. CP (Oct '87)

Master Tracks Pro

is a full-featured second-generation MIDI sequencer that adheres to the Mac interface very well. It is the first program to have graphic controller editing. No longer needs patch chasing for professional use. Version 3.3. Requires 512K or less. $395. Passport Designs, 625 Miramontes St. #105, Half Moon Bay, CA 94019. CP (Dec '87)

MIDIBasic

is a simple but highly useful routine for writing MIDI software. Good stuff. Documentation. Works with both Microsoft and TASCAM. Requires 512K or more plus BASIC, $49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug '87)

Music Mouse

is a music program in a genre all its own. Called "an intelligent instrument," Music Mouse gives you instant feedback as you move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. $79.95. Aesthetic Engineering, 175 Duane St., New York, NY 10013. NCP (May '87)

Perform

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 or more. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142 CP (Jan '88)

Practica Musica

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 or more, $125. Arts Nova Software, P.O. Box 40829, Santa Barbara, CA 93140. NCP (Nov '87) @ 87 Ed

Professional Composer

produces performance-quality sheet music using Adobe's Sonata font. Scores can be created from scratch or import from Performer (and can be exported to Performer for MIDI playback). Requires 512K or more. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

Softspeak

creates sounds for additive synthesis synthesizers. Downloading from Mac to sampler is time-consuming. Requires 512K, sampler, and MIDI interface. $295. Digidesign, 1300 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '86)

Sound Designer

sets the standard for editing samplers on lower-cost samplers, but it still lacks real-time high-fidelity playback. Requires 512K sampler and MIDI interface. Ensoniq Arts, E-9, 2000/2000, DSS-1, S900, $495; all others, $395. Digidesign, 1300 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '86)

Stash

consists of two programs, an Editor and a Player, that produce music with six voices of digitized sound. Excellent program and manual make this a good buy.
MINIFINDERS

Turbosynth...AST...CMS S-140 SCSI
ColorVue SE!!!

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Hardware & Accessories

Applico SC...read 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. Available in two configurations: $2,195. Apple Computer, 20535 Mariani Ave., Cupertino, CA 95014. (Dec '88)

Apple Scanner is not a clone of the art but is adequate for scanner neophytes. The 4 x" 5 gray levels) scanner comes with AppleScan software and HyperScan, written by Bill Atkinson. Requires System 6.0, hard disk for full-page work, and SCSI connection cable. $1.799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCF (Feb '89)

ASTs TurboScan is a 300-dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 720 dpi, Super-Scan software offers halftone, line art, and animation modes. "Virtual memory processing" lets you scan images too large to fit in RAM. $1.899. Requires 1 2x or more. Super-Scan software included. AST Research, 3121 Allon Ave., Irvine, CA 92714. NCF (Feb '89)

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. $349. Classic Components, 1405 Artesia Blvd., Gardena, CA 90248. (June '88)

CMS S-140 SCSI Hard Disk is a very fast, high-capacity SCSI hard drive with a unity interface and average access time of 16 milliseconds. Holds 140 megabytes. Help, file transfer, and tape backup commands built-in. Hard Disk Partition is a useful DA Comes with a 6-foot SCSI cable. $2,995. CMS Enhancements, 1372 Valencia Ave., Testin, CA 92840. (July '88)

ColorVue SE is a video processor board for the Mac SE that lets you display 16 colors on an external RGB monitor. Shows up performance. $365. Orchard Technology, 43065 Northport Loop W., Fremont, CA 94538. (Oct '88)

DASCH is an external RAM disk available in 1/2-, 1-, and 2-megabyte sizes. Connects to a serial port. Speeds up operations by 200 to 300 percent. Can be used as a printer buffer. Works with all Macs. $1.792. $1.95. Available in 256K. $450. Western Automation Laboratories, P.O. Box 3438, Boulder, CO 80307. (Feb '87)

DataPack is a 45-megabyte removable Winchester hard disk. Great for backing up your main hard disk or transporting large amounts of data between office and home. Requires SCSI connector and System 4.1.5 or later. Drive. $1,793.95. 256K. $1,495. Publish Pac software, $195. OCR text processor card, $995. DES Corp., 1201 Cadillac Court, Milpitas, CA 95035. DEC (Dec '88)

DaynetFile hooks up to an SCsi drive to read MS-DOS disks in the Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5.25-inch and 3.5-inch formats. $595 for single copy. Daynet Communications, 1453 Main St., Santa Fe, NM 87505. (Oct '88)

DECT PC Scan 2000 is an 8-bit scanner that saves images in up to 56 levels of gray. Can be configured for IBM PC, Macintosh, or Apple's SCsi. $1,495. Software, $595. OCR text processor card, $995. DES Corp., 1201 Cadillac Court, Milpitas, CA 95035. DEC (Dec '88)

FaxSift is an early entrant in the fax modem race. Adequate, but slower than most other machines and, using it as a normal modem requires changing plugs. Requires 1 megabyte of memory and a hard disk is strongly recommended. $955. STT Technologies, P.O. Box 247, Higsville, MO 64079. NCF (Feb '88)

Felix 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 6-inch square device is designed primarily for right-handed people. Works with Mac Plus, $149. Action, 1200 Skyline Drive, Lasimere, NY 12070. (Sept '88)

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, eddy shaped case. Requires

SCSI port, $125 or more, and new ROM. $1,199. General Computer, 215 First St., Cambridge, MA 02142. (Feb '87)

Graphics LD hooks Macs up to parallel laser 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. S149. Orange Micro, 1400 N. Lakeview Ave., Anaheim, CA 92807. (Nov '88)

Hard Disk 20SC is Apple's 20-megabyte SCSI hard disk. Reliable, fairly noisy unit. Good utility software but no backup yet. Requires cable and terminator ($80). Requires SCSI port, $125 or more, and new ROM. $1,299. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Feb '87)

Hewlett-Packard Camera Pro Grafix Printer is an eight-page desktop printer that requires third-party software to drive it. Fonts are limited to an optional Graphics Enhancements Cartridge that requires some BASIC programming. $1,295. Hewlett-Packard, 10639 W. Bernardo Drive, San Diego, CA 92127. (Feb '88)

HyperDialer provides an interface between your phone and a Mac so you can dial a number using one of the Rolodex-type programs, like SideKick, Focal Point, or QuickDial. Hook up between the Mac's sound port and a telephone handset. Requires 128K. MultiFinder friendly. $150. DataDisk International, 7951 Haskell Ave., Van Nuys, CA 91406. (Sept '88)

ImageMaker shoots 35-mm color slides directly from the Mac. Supports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires 512x or more. $1.695. MacDriver software. $149. Presentation Technologies, 743 N. Pasodena Ave., Sunnyside, CA 90486. (Feb '88)

Imagewriter LD outputs letter-quality text and graphics at 216 dpi. To do so, it reduces 72-dpi screen fonts to a third of their actual size. Takes a lot of memory. Printer Driver version 2.6. Requires 1 megabyte and large font sizes. $1,400. Apple Computer, 20523 Mariani Ave., Cupertino, CA 95014. Jan '89

JS/ONE tablet with Penworks software lets you use a corded or cordless pen or 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 or more. $995 to $1,145. Kuta. 40105. 35th Ave. 85204. (Jan '88)

LaserWriter INTX 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 512x or more. $1.689. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Mar '88)

LaserWriter INTX is Apple's top-of-the-line PostScript laser printer. 6820 chip makes it very speedy; expandable to 12 megabytes: SCSI hard disk can be attached for fonts. Requires 512x or more. $6.599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

LaserWriter ISC is Apple's low-end QuickDraw laser printer. Can be upgraded to INTX or INTXX reasonably fast. Requires 1 megabyte or more. $2.799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

Mac 50-60-MHz Hard Disk puts a Seagate drive in a platinum case. At $1 per megabyte, it's a good consumer value. Also comes in 20- and 80-megabyte models. Requires Mac SE or Mac II. Requires 519x or more. $1.185. DataDesk Internation, 7600 Haskell Ave., Van Nuys, CA 91408. Software NCF (Apr '88)

Mac-105 Keyboard is a good alternative to Apple's Extended Keyboard, with a larger Return key, later and more sculpted key tops, and a lower overall weight. Requires Mac SE or Mac II. $175. With QuickKeys, $195. Cutting Edge, P.O. Box 1285, Evanston, WY 82930. (Feb '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 movable, damped arm for your monitor. The unit comes in a variety of configurations. $540. Ergotron, 3430 Yosemite Drive, Suite 100, Eagan, MN 55121. (Mar '88)

MacADDOS II is a hardware and software interface for laboratory instruments. Standard configuration samples up to 142 kilohertz. Documentation is sketchy. $1,290 for Macintosh II-ready data-acquisition card; $800 for MacADDOS II software interface. GW Instruments, 254 Mgr., O'Brien Highway, Cambridge, MA 02141. (July '88)

MacBottom 45 SCSI and Internal Modem has a modem that fits into the top half of the 45-megabyte SCSI hard-drive case.
MINIFINDERS

Comes with HFS Backup and Euroka, $1,795. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. (Feb '89)

MacBotom HD-21 is a very low-cost (under $20) hard drive with 60 megabytes of disk space. It is available in two models: models 1 and 2 are nearly identical in price, but the model 2 has a combination of features not available in the model 1. (Feb '89) • 96 Eddy

MacBotom HD-70 Personal Disk is an excellent drive that comes with some very good software, including HFS Backup. Requires SC5 port. $1,995. Macintosh-compatible software. (Feb '89)

MACS is a personal Megasoft. This is the first color PostScript printer that uses a four-color thermal wax transfer method. (Oct '88)

MACS-PS 810 is an eight-page-per-minute, 300-dpi PostScript laser printer that is capable of producing high-quality graphics and text. (Oct '88)

MacSnaps 2 Plus is a 2-megabyte memory upgrade for the Mac Plus. The board has 256 kilobytes of memory. (June '88)

MacTable is an excellent table that holds a Mac and printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. It has a table top, 29/8-inch cabinet, and 31/2-inch rear panel. (Mar '88)

MacTilt/MacTilt SE is a Mac (and external drive) holder that allows a full range of swiveling and tilting. Very strong, well-made unit is also easy to use. $99.95. Ergonomic, P.O. Box 11703, Minneapolis, MN 55418. (Jan '88)

Magic Digitizer is a hardware digitizer that works with video cameras. With LaserMagic software, you can generate 300-dpi images in PostScript. Requires 1.4 megabytes of memory. $99.95. LaserMagic, 10300 Greenbelt Road, Sea Brook, MD 20706. (Apr '87)

Micrel 352-620 is a fast 600-megabyte internal hard disk for the Mac II. The drive is a repackage of Imprimis Wren V (Control Data). Average access time is 16 milliseconds. Requires Mac II with 80-MHz microprocessor. (Nov '88)

Micrel MSF-300C is a 300-epi flat scanner. Really fast when used with optional MS-SG/SIC adapter. Comes with Versa-Scan Plus software (NCP) to scan and manipulate image. Images in several formats, including TIFF and MacPaint. $1,395. Micrel Lab, 1650 S. Western Ave., Garden, CA 90247. (Dec '87)

Midget Pocket Modem is a 300-baud portable modem about the size of a 3-x-5-inch index card. Comes bundled with MacTerm 2.0. Borland's telecommunications software. (Nov '87)

Net/Modem is a 1,200-baud modem that can be accessed by all users on an AppleTalk network. The modem's display lights and dial tones are synchronized on the Mac. Requires $152 or more. $599. Silver, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb '88)

One Touch Line is a user-installable memory upgrade for a Mac Plus. Adds 1 megabyte of RAM to the 1 megabyte already there. Simple one-step installation. Includes MacBasic, an excellent small-fane manual. Requires Mac Plus. $375. Leva, 61601 Lask Blvd., San Diego, CA 92121. (Aug '87)

Personal LaserPrinter is a non-PostScript laser printer at a great price. Chatty workstations require some attention. Printing can be slow. Requires 1 megabyte or more. $1,900. Fonts Plus. $209. General Computer, 580 Winter St., Waltham, MA 02154. (Apr '88)

Personal Writer PW15 S is a PostScript-based handwriting-recognition system that also allows graphical input and macros. Number of interested characters is too high for general word processing. Requires 1 megabyte or more. $895. Personal Writer, 1801 Avenue of the Stars, Los Angeles, CA 90067. Software NCP (Mar '88)

PhoneNET is an AppleTalk-compatible network. Network can be up to 3,000 feet in length. In-place, unboxed phone cabling can be used for network and can be combined with AppleTalk on the same network. $599.95 per node. FastCom; 2150 Kittredge St., Berkeley, CA 94704. (Dec '86) • 87 Eddy

PrePoint replaces the mouse with an ADB trackball. Works better on the SE than it does on the Mac II. (Aug '88)

QMS Colorscript 100 is the first color PostScript printer that uses a four-color thermal wax transfer method. Works on AppleTalk. Excellent typographic capability. Currently supports only a handful of applications. Requires 1 megabyte. $291. QMS, 1 Magnussen Pass, Morro Bay, CA 93442. (Oct '88)

QMS-PS 810 is an eight-page-per-minute, 300-dpi PostScript laser printer that produces high-quality graphics and text. (Oct '88)

Radius Accelerator 25 can make your Mac SE run 30 percent faster than a Mac II. The add-on adapter card has a Motorola 68020 CPU that runs at 25 megahertz, and an optional 25-megahertz 68881 math coprocessor. $1,995. (Sep '88)

Radius SpeedCard is an accelerator board for the Macintosh SE that more than doubles the speed of most applications. The board uses the 68000 chip found in the SE and an optional floating-point 68881 chip for number crunching. Requires Mac SE. $399, $599 with coprocessor. SuperMac Technology, 485 Polter Ave., Sunnyvale, CA 94086. (Nov '88)

SuperRam 2 and SuperRam 4 are 4- and 8-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 SuperRam 4 adds power-supply booster and two 1-megabyte memory modules. Not compatible with most big screens. $499. SuperMac Technology, 485 Polter Ave., Sunnyvale, CA 94086. (Oct '87)

Teletron 46530 Color Printer is a 300-dpi bit-mapped color printer. Costs look smooth and rich. Uses bitmap-screen fonts; most type has noticeable jaggies. Requires Mac II with color monitor. Recommended 8-megabyte configuration, $1,410. Tektronix, P.O. Box 500, Beaverton, OR 97007. (Oct '88)

ThunderScan replaces the ribbon cartridge in an ImageWriter, which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $249. ThunderScan, 21 Orinda Way, Orinda, CA 94563. • 65 Eddy

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 documentation and support. Requires 1 megabyte or more. TimeWand 2K version. $198. TimeWand Manager. $249. Video, 1105 N.E. Circle Blvd., Corvallis, 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 controller that enables you to specify custom tracking and double-click speeds. $192.95; $285 direct order only. Kensington Microwave Ltd., 225 Park Ave. S., New York, NY 10010. NCP (Feb '89)

V-series Smartmodem 9600 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 512K, Mac-to-modem cable, and communications software. $1,299. Hayes Microwave Computer Products, 705 Westech Drive, Norcross, GA 30092. (Jan '89)

WriteMore is the smallest, lightest Mac printer around. It's an ink-jet unit that can produce resolutions of up to 192 dpi. It can run off rechargeable batteries or AC and weights just 3 pounds. It comes with a good selection of bitstream fonts. Printing quality varies widely depending on the paper and ink used. Printer Driver version 1.0. Requires 1 megabyte and hard disk. $699. G&J Technolo-
giue, 580 Winter St., Cambridge, MA 02154. (Apr '89)
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## UPDATES

With all of life's changes, keeping up with software updates and new versions is not easy. This chart attempts to keep Mac users abreast of popular programs' upgrades and new versions (as of press time). To see if you have the latest version, check the About item at the top of the program's Apple menu. If you have a 512K, 512KE, or XL, you should be running System 3.2 and Finder 3.3 software. Everyone else should be running System 6.0.3 software.

Silicon Beach Software's Super 3D 2.0 has added color, increased animation capabilities, PICT import, and math coprocessor support that utilizes the 68881 and 68882 chips. Ashton-Tate has updated Full Impact and FullWrite Professional. Full Impact 1.1 includes XMacro capabilities that let users call external functions and commands. FullWrite Professional 1.1 lets users access foreign-language dictionaries in French, Italian, German, Swedish, Dutch, and Spanish.

### Key

- **CP** or **NCP**, copy-protected or not: **//** programs we have found to be Mac II-compatible (not yet a comprehensive list).
- **/** for shareware (try before you buy).

**Boldface**, changes and new listings.

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Macintosh screens unavailable at press time.
Et Tu, Microsoft?

While Ivy League geneticists busily try to patent single-cell organisms and mice (of the four-legged variety), the software industry has set its sights on protecting intellectual biological property that's a little higher on the evolutionary ladder. Specifically, Bright Star Technologies and Microsoft are engaged in a bitter legal battle over Employee Look and Feel.

In spite of an earlier agreement between the two companies stating that the president of Bright Star, Elon Gasper, could borrow elements of the president of Microsoft, Bill Gates, Microsoft is drawing the line now that Bright Star has hired Tom Hussey (see photos — that's Tom on the right . . . we think). Claiming that the original agreement tended to presidents only and not to programmers, Microsoft contends that Hussey is an "exact copy" of Gates.

Bright Star has interpreted the contract to extend to programmers, since Gasper is also a programmer. "The tension is obvious," according to Bright Star lawyer Dave Goldstein.

At press time, Spy magazine's Separated at Birth? department could not be reached for comment.

— Jeni Coaler

Don't Worry, Be Synchronous

Suppose a product could help you relax, make better decisions, develop creativity, solve relationship and career problems, ease personal stress, and increase productivity. It's real; it's even legal — it's Synchronicity from Visionary Software. Synchronicity aims to do all these things for you through your Mac — without a book of incantations or a yoga video.

Based on the I Ching (Book of Changes), Synchronicity has three related rituals: the relaxation ritual, candle ritual, and keyboard ritual. During the latter, Synchronicity tracks your psychic energy by timing keystrokes you make while performing the ritual.

Although you can get some preliminary readings from the program, to keep up with all the changes in your subconscious, you'll need to update the rituals for future readings, for which you must be registered with Visionary Software. Synchronicity is not copy-protected and lists for $49.95. For more information, contact Visionary Software, P.O. Box 69191, Portland, OR 97201; (503) 246-6200.

— Michele Stokol

Synchronicity from Visionary Software attempts to relax you with soothing screens. Through its three rituals — relaxation, candle, and keyboard — the program claims to help develop your creativity and handle your everyday calamities.
Ramses II was not one to mince words. When it came to getting a point across, he was very direct — what was written was in fact etched in stone.

If he ruled today — in this exciting Information Age — he'd feel compelled to update his method to input and retrieve information. Being the meticulous type, Ramses would choose page recognition software that was accurate, fast and above all, flexible. Ramses would definitely choose OmniPage® to get the job done.

Let's face it, some scribes have less than perfect "chipmanship." Ramses would require the most versatile page recognition software — one that could scan any font or font size, even multiple columns of text — no matter which scribe created it. There's nothing more frustrating than a misplaced hieroglyph. He'd definitely want it to support MacWrite™ and Microsoft Word™, two of the most popular word processors within his kingdom. When it comes to page recognition software, he'd want the very best product at the best possible price.

He'd want OmniPage! And who would argue with the Pharaoh?

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*Egyptian scribes had a real time of it when it came to excessive key strokes. Each letter, or hieroglyph, had to be individually etched into stone. And we complain today about writer's cramp?

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— Laura Johnson

Cool Peripherals

True, but strange: In the process of researching new and revolutionary networking applications, engineers at Apple recently connected a refrigerator to an in-house network.

A switch connected to the door of the refrigerator transmits data over an ADB connection to a foreground application running on an AppleShare server. If the fridge door is opened or shut, the server Mac broadcasts the door’s status change over the network.

Selected engineers running special software on their Macs can determine remotely whether the fridge door is open or shut and how many times the door has been opened and shut that day. No information was available about whether this research will result in a new product.

— Stephan Somogyi

Dialog Box of the Month

Just say no or, in this case, just click OK on dialog boxes, and they’ll be out of your way — maybe. Walter K. Daniel of Annapolis, Maryland, thought just a double-click would get him into the advanced utilities on CMS SCSI Utility 5.0, which comes with CMS Enhancements’ hard disks.

According to Daniel, the manual states that accessing these utilities requires a special click on the CMS logo. After trying different key and click combinations, he was rewarded with dialog box 1. Clicking on OK didn’t do what he expected either — a few more clicks yielded another box. This continued until he finally got tired and gave up. (Actually, he had gone through 20 screens; we’re giving you the abridged version here.)

— Kristi Coale

Someone’s been eating my porridge — and drinking my Jolt cola! With Apple’s (unreleased) ADB refrigerator monitor, you’ll be able to catch the soda siver red-handed. Is this a cool world or what?
C.O., Phone Home

Cosmic Osmo is the legendary patriarch of a 4-megabyte adventure environment created by Cyan (and distributed by Activision) that will capture the hearts of kids of all ages who are ready for life after Inigo. Cosmic Osmo is a delightful interactive space adventure, but first a word of warning: Don't start this trip unless you have plenty of time for exploration. You won't want to miss your school bus — or your board meeting.

In Cosmic Osmo, you find four HyperCard worlds full of wondrous graphics and enchanting animations (created with VideoWorks II). You can visit about 250 places in your travels — and you're never sure you've hit every button or seen every photo opportunity.

Cosmic Osmo is no spectator sport. Its creators have used many ingenious ways to involve the participant. There's a compact-disc player with a choice of tunes for your enjoyment as you fly through space, an arcade-style game in one world, and an easel for your creative endeavors in another. (Paint carefully, though — if your masterpiece might show up hanging on someone's wall; many Osmoid toys stay where and how you leave them after you've created, rearranged, or played with them.)

You don't win or lose in this cosmic odyssey, although there are points where you can stop with a feeling of completion and accomplishment. As in any good adventure game, you can follow straightforward paths from one land to another (on spaceships, a submarine ride from a kitchen sink to a desert island, staircases, and elevators), or you can take ad- recurring motifs — such as the Cosmic Operator for the telephone network that services these lands (she provides music when you're on hold) or the subtle references to the Manhole, Cyan's previous adventure (see Hyper- cameos, and special effects are several minigames: a jigsaw puzzle, a couple of musical instruments, a shooting gallery (with nonviolent cotton swabs), and a couple of Mr. Potato Heads for genetic experiments. And should youngster kids get stuck, guardian angels step in. For instance, if you take too long to navigate a boat, the emergency autopilot kicks in.

For Coffee Achiever parents who don't have time to grope in the dark, HyperCard "cheating" is supported (Command-Option reveals button locations; the usual Next, Previous, and Recent Card commands are in effect; and so on), but there's really no need to succumb to the temptation; half the fun is serendipity.

A CD-ROM version (which will probably have additional worlds to visit and extended dance versions of the music and songs) is expected later this year. Pricing for Osmo and company had not been set at press time, but if the Manhole sets a precedent (at $49.95 for the disk version, $59.95 for the CD-ROM one), the price won't be out of this world, even if the adventures are. For your own close encounters of the Osmo kind, contact Activision Entertainment at 3885 Bohannon Drive, Menlo Park, CA 94025; (415) 329-0800.

— Laura Johnson and Jon Zilber

In your merry Osmobile, you'll cruise the friendly skies — and sail the high seas, sing the middle C's, and explore contingencies. Everything's interactive, from the fuzzy dice to the bumper sticker to the killer swabs.
Who's Minding the Store?

Customer: "$4,400? Gee, that's a little high. A friend says she can get me one at the student union for much less than that."

Dealer: "Yeah, but do you really want a Mac? Look at this Taiwanese PC clone. It runs rings around the Mac and has color — and we'll throw in a bunch of free software. It's $1,200 with a hard disk! Everyone is buying them. The Mac is dead."

Customer: "If you say so, I'll buy it."

Of course, some computer stores now specialize in the Mac, but they're rare, and if given a cheap Mac clone, they'll bail out of the Apple camp faster than you can imagine.

IBM had the right idea when it opened the IBM retail centers, but apparently the company decided that it didn't want to deal with the "public." It prefers direct sales to businesses. This is a fine decision for IBM, but Apple has never been able to deal directly with business with any competence, although it has done a great job of selling itself to the public. (After all, Sculley used to sell Pepsi to the unwashed masses.)

Apple does have a company store in Cupertino, where it does a small catalog business for all sorts of accessories and Apple logo junk products such as Apple pens, Apple T-shirts, Apple carrying bags, Apple mugs, and whatever. Heck, even I have an Apple tie! This is the mentality of a company attuned to the public's desires. I can't imagine IBM selling IBM mugs in an IBM store. Let's face it: IBM is no fun. There are no ComputerLand mugs or key fobs either.

Here's a typical story: I'm in Chicago, driving a friend to Comdex who needs to print out a file from a Mac disk so it can be faxed someplace. I figure a quick run into a ComputerLand will do it. I run into the store and ask if it's possible to print out a one-page document. There are two salespeople in the store. Otherwise, it's dead empty. The woman is sitting down doing nothing. The guy is standing around.

"We don't do that," she says, "but we do rent Macintoshes."

I indicate that I work for MacUser and other magazines and tell her who I am, hoping that might help. She hasn't heard of any of the magazines or me. So much for influence peddling.

"OK," I say. "I'll rent one. How much?" I pull out the disk.

"You can't just rent the machine and use it here," she says.

"You have to take it with you."

"You mean there is no way I can get this file printed? Even if I give you money right now?"

"No."

So I leave. I look back and see her still sitting on her duff in the empty store doing nothing. Heaven forbid she'd do some work.

The only way for manufacturers to get lazy, unenthusiastic sales personnel to do any work, including sales, is to bribe them with a pathetic system similar to what you find in today's stereo chain stores. The technique is called spiffing. Bose, for example, is big on this technique. Bose, like other vendors, pays salespeople a factory-direct bonus (a spiff) for each speaker system they sell. If you sell a speaker, you get a trip to Hawaii. The roots of corruption lurk within this method, but it's actually a system that manufacturers have to establish to force sales. The stores do not pay salespeople enough money to attract the great employees. An extra $10 spiff per system paid by the manufacturer makes the job more attractive. Of course, customers are short-sheeted in such transactions, as salespeople may guide buyers to the company with the biggest spiffs, regardless of the products' quality.

The long-term drawback of the system is obvious too. Manufacturers can compete with what amounts to legal bribery by incentives only if they all do the same thing, to the point that manufacturers subsidize all products' sales commissions. You can be sure that exactly this will soon happen. So the sales system will be paid for by manufacturers, but all control of the channel is bound to be lost. Kind of a modern taxation without representation.

The only real solution is for the manufacturers to open their own stores or franchises, just as car manufacturers had to do long ago. In Taiwan, Acer has more than 80 profitable stores selling Acer computers. Hertz Computers in New York City is thinking about doing the same in the U.S. Apple shouldn't wait for shake-ups or fallouts or for lazy salespeople to get off their behinds to move some products. It should buy an existing network of stores or start a chain itself. I'm sure they'll be a lot more fun and profitable than the empty Chicago ComputerLand and I visited.
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