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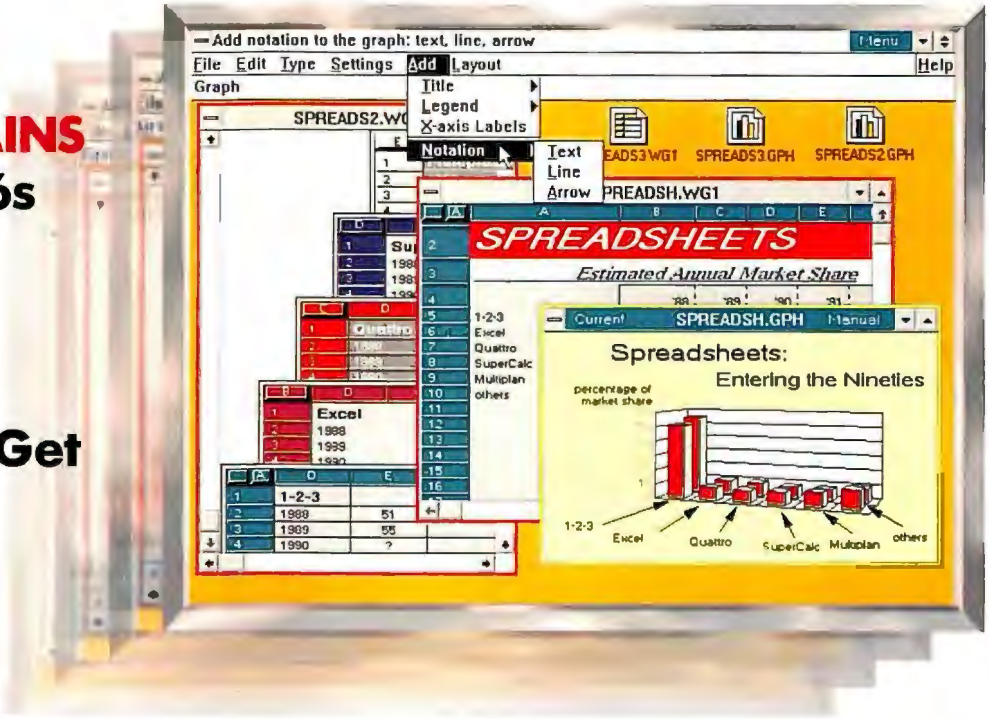


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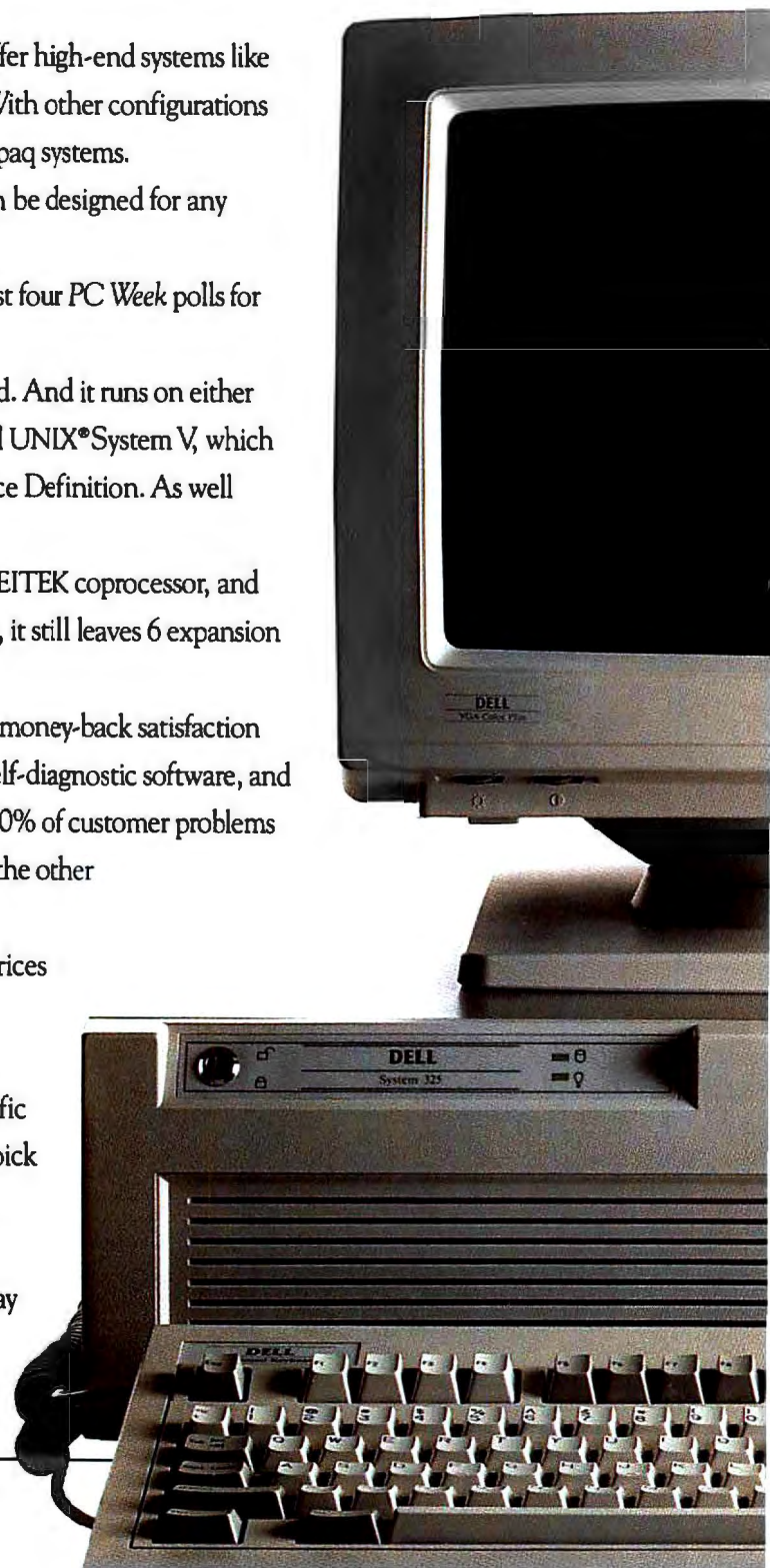

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PC MAGAZINE EDITORS' CHOICE

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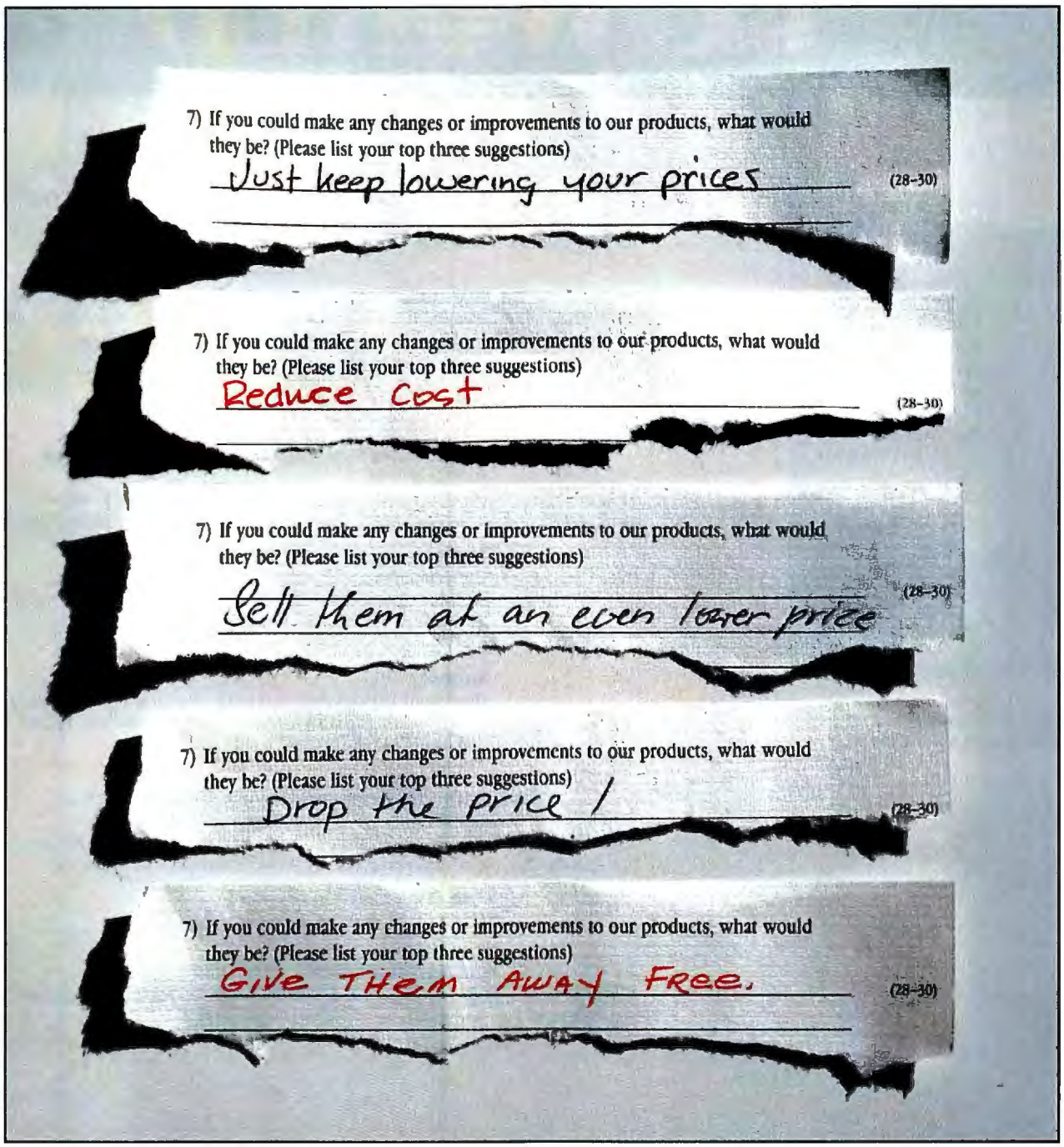


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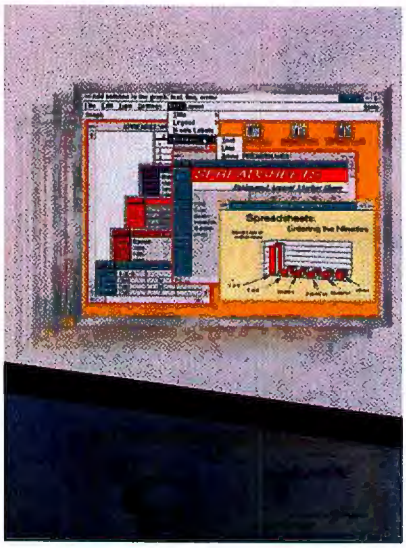

**Cover story: If 1-2-3/G doesn't draw users to OS/2, nothing will. For an advance look at Lotus's latest, see page 78.**

*Cover image by Chromaset; cover photograph by Fred Stimson*

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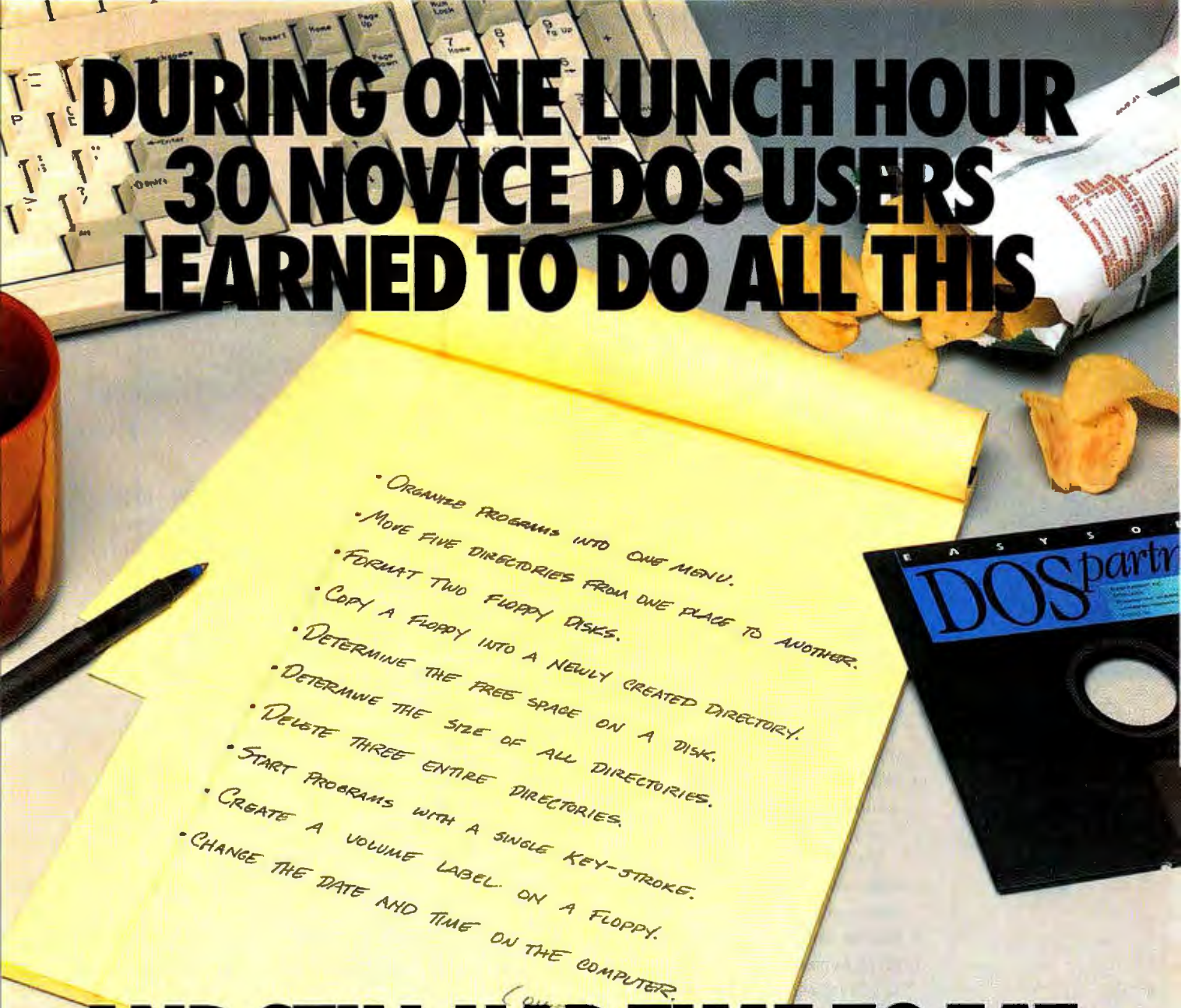


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E A S Y S O F T

# Words' Worth

ROBERT CARDIN

**PC World's toughest critics: Peggy Nauts, Sally Zahner, Peggy Berg, Barbara Lewis, and Marla Miyashiro**

This month, we'd like you to meet *PC World*'s copy editing department. You won't find their byline on a single article, but their collective touch keeps our reviews and features tightly focused and highly readable.

The *PC World* copy editors are charged with conserving a precious, nonrenewable resource: your time. If they've done a thorough job, you won't have to reread a complex paragraph to puzzle out its true meaning. You won't stop in midsentence wondering what some obscure acronym stands for. And you won't need a road map to navigate our how-to articles.

"We do a lot more than push commas around," explains Copy Chief Peggy Nauts. "It's our job to concentrate on sense just as much as style. We're advocates for the reader—if we stumble over a sentence, the average reader probably will, too." Senior Copy Editor Barbara Lewis defines the job even more simply: "We'd like to make every article clear and unintimidating."

Nauts is a *PC World* veteran, having spent most of her professional life here. Lewis has edited everything from detective magazines to Army manuals on the proper handling of high explosives. Sally Zahner once toiled over ultratechnical texts for one of the world's largest engineering firms. Peggy Berg belonged to the University of Chicago's prestigious journal-publishing division before heading West to *PC World*. And the newest member of the crew, Marla Miyashiro, has worked as a copy editor for both *Macworld* and *Publish*.

But aside from a love of language, perhaps the most important job qualification for a copy editor is diplomacy. Not all authors react with equanimity to the suggestion that their manuscript can stand improvement. Lewis and Nauts recall a marathon editing session with a candidate for high office who fancied himself a deep thinker and an expert grammarian. Lewis observes, "Apparently even politicians with speech writers can use a little help."

It's never easy to get several people to agree on anything, but this group shares at least a couple of opinions. If these five wordsmiths could strike one word from the computer industry's lexicon, that word would be *functionality*. "Why not just say what it does?" asks Miyashiro.

And their favorite *PC World* department? *Consumer Watch* gets the nod, unanimously. Zahner sums up the reasons: "It's aggressively pro-user. It's consistently well written. And I like the way it demystifies computer technology."

If you find one of the features in this issue particularly well written, we encourage you to look past the byline. You've got five full-time advocates who think your time is worth more than gold. ●

Ed Bott

*Ed Bott*
*Managing Editor*

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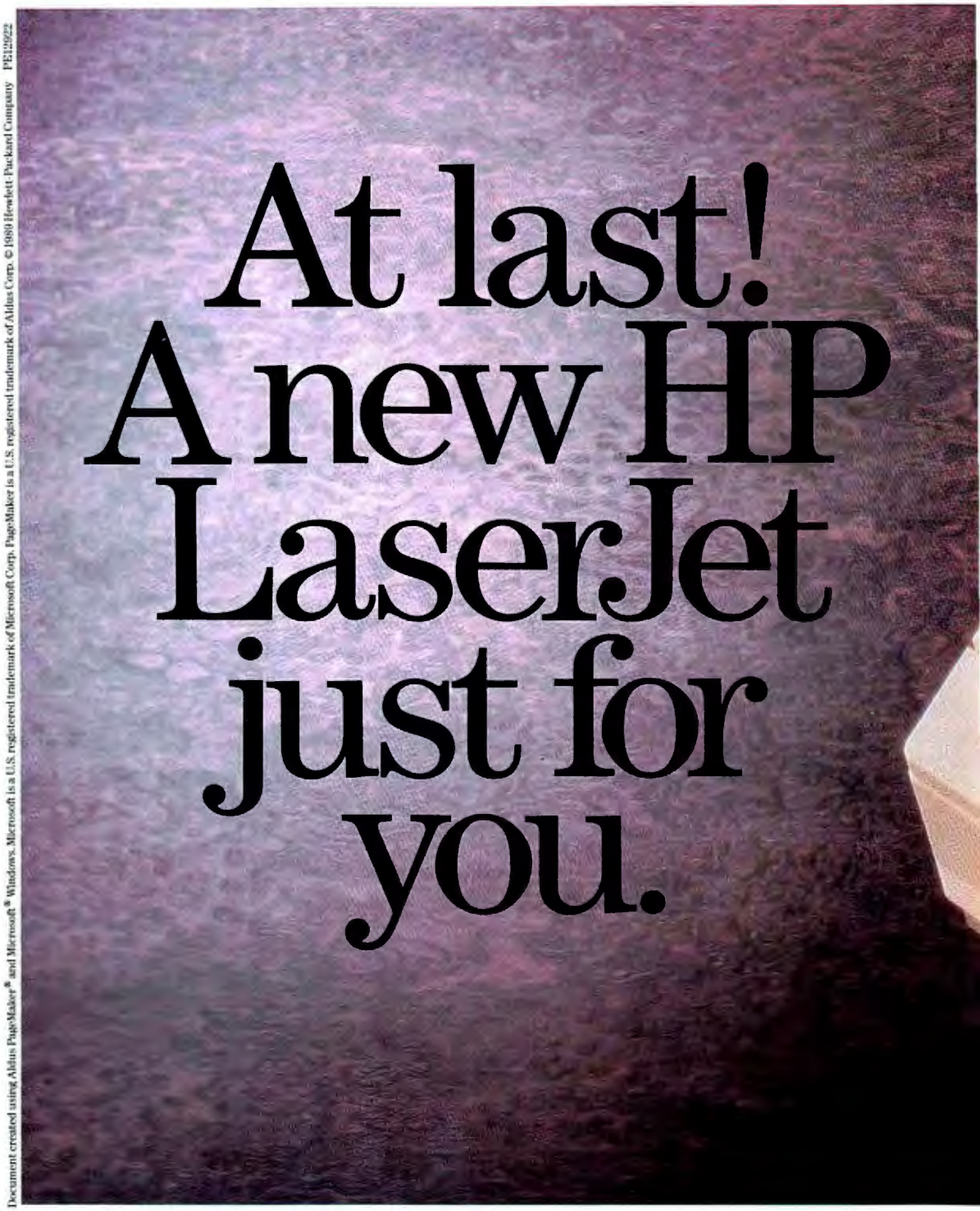


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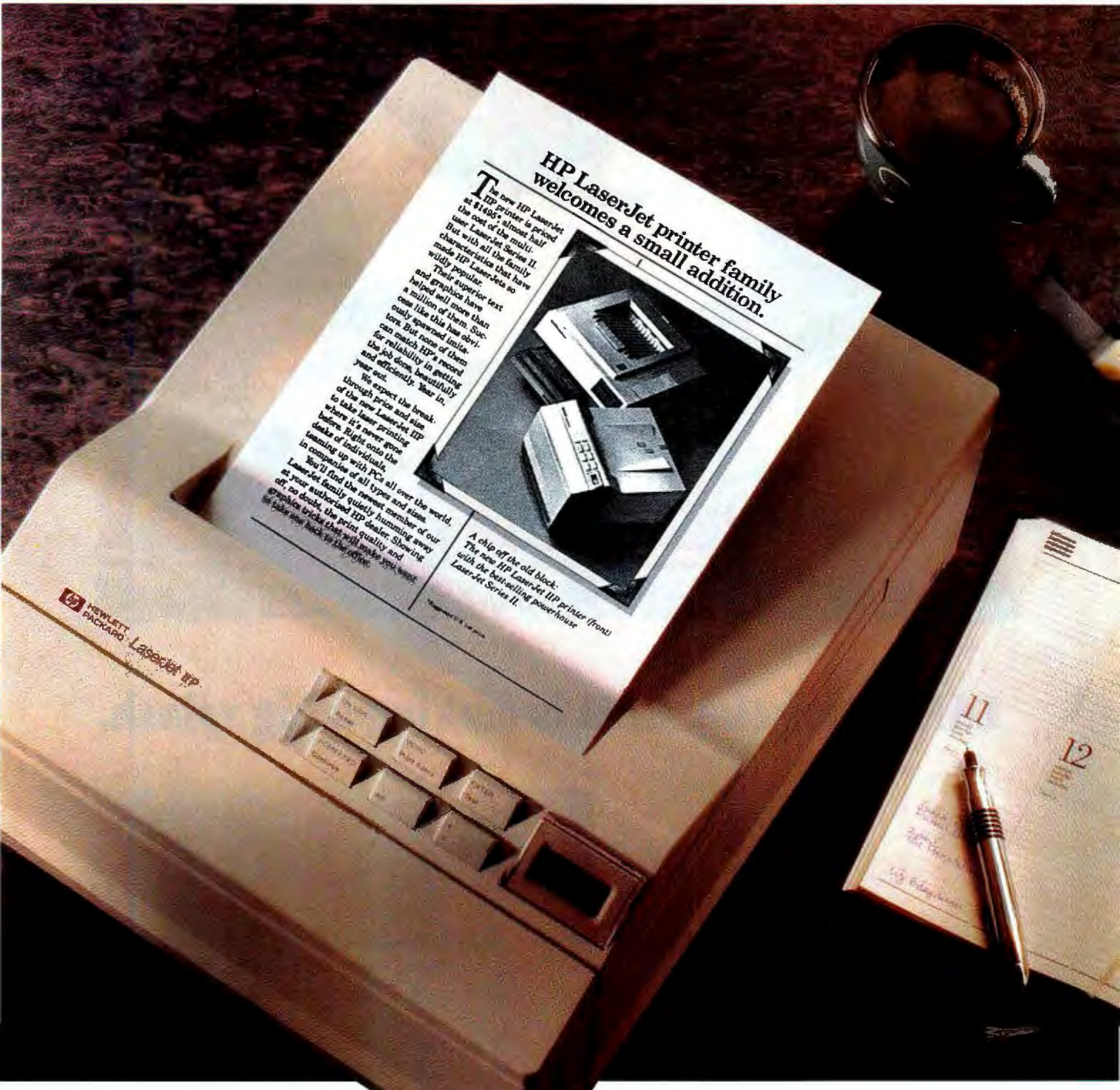
*Suggested U.S. list prices: LaserJet IIP $1495; LaserJet Series II $2695. Dealer prices vary.

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## Inbox Shipped Free

*TOPS Hopes E-Mail Becomes Number One Overnight via Upgrades*

Long a leader in mixing Macintosh and PC workstations on the same network, the TOPS Division of Sun Microsystems also wants to lead in electronic-mail software installations. TOPS wants to make *Inbox* the *1-2-3* of enterprise-wide E-mail and build a fire under its DOS network sales by including the $329 version 3.0 of the program free with the TOPS 3.0 network operating system upgrade shipping in January. The company's optimistic estimate is that 75 percent of its 600,000 (predominantly Macintosh) users will upgrade over the next six months, adding another 450,000 users to the 50,000 who already have *Inbox*. That, says International Data Corporation (IDC) senior analyst Dave Atlas, would catapult *Inbox* past 3Com *3+Mail*'s 130,000 installed nodes but not necessarily expand the number of DOS users. Still, the move won't cost the supplier that much and at the very least will increase TOPS sales to large corporations, responds Director of Product Planning Mike Rogers. Also, *Inbox 3.0*'s message center supports up to 20 mailboxes on a single LAN; TOPS hopes users will upgrade to the $995 *Inbox Plus*, whose message center supports 100 mailboxes and sends mail between major LAN servers and other E-mail environments. Other *Inbox* attributes include a full-featured editor, point-and-click message handling from either centralized distribution lists or personalized address books, and binary file transfer.

## MCA Gets Boost

*Third-Party PS/2 Bus Masters Arriving, With Help From Key Chipsets*

This quarter, third-party vendors finally will begin fulfilling the promise that IBM made 2½ years ago at the introduction of the PS/2 and its controversial Micro Channel architecture. Shipments have started for more than two dozen MCA bus masters—intelligent add-ins that speed throughput by sharing system resources without engaging the CPU. Early bus-master entries include disk controllers, network adapters, and CPU upgrades. Among them are a $1000 32-bit hard disk controller from Core International with an effective data transfer rate of 5MB to 6MB per second, and a $2495 33-MHz 386 CPU upgrade from Aox. Developers say that the biggest bus-master delay has been the lack of board-to-bus interface chips. This quarter, both Intel and Chips and Technologies should offer such chipsets, priced competitively with other MCA interface silicon. Additionally, a new MCA protocol that makes it easier to create well-integrated bus masters is quickening the pace of engineering. Asked whether it's easier to develop for MCA than for the competing Extended Industry Standard Architecture (EISA) bus, Western Digital vice president Dan Brown replies that it's about the same, but he adds that MCA has a longer track record and is better documented. "The remaining issue with EISA is compatibility. In the real world, compatibility isn't a bus specification, it's a standard machine, and for EISA that doesn't exist."

## Paradox Ships Engine

*Borland Hopes to Make Paradox the Second-Most-Popular File Format*

Making hay while clouds still hug Ashton-Tate's horizon, Borland International has introduced *Paradox Engine* in the hopes of making *Paradox*'s tabular file format a data base standard like *dBASE*'s. Designed to be a core technology for most Borland applications, the engine already powers *SideKick for Presentation Manager* and *Quattro Pro* data manipulation. It could just as easily serve as a corporate repository for data accessed by various front-end applications, from commercial spreadsheets and word processors to in-house corporate applications, says Borland vice president Richard Schwartz. IDC says that Borland has profited more than any company from Ashton-Tate's struggle to update *dBASE*. *Paradox* has become the second most popular PC data base, with an 8.2 percent share of units shipped. But that's a far cry from *dBASE*'s estimated 39 percent unit share and 50 percent–plus share of installations, so *Paradox* will continue to recognize *dBASE* files. Nantucket Software, one of the first firms to support the *Paradox Engine*, last year disclosed plans to broaden beyond the *dBASE* file format. Nantucket's newest data base compiler, *Clipper 5.0*, is data base independent. *Paradox*'s well-implemented multiuser network security, data integrity, and related features are critical to enterprise-wide data networks. *Paradox Engine*, which will ship this quarter for an as-yet-undetermined price, is part of Borland's reorientation toward corporate users.

## Zenith at Nadir?

*Bought Out by Bull, Zenith Data Systems Will Narrow Dealer Base*

Being taken over by Groupe Bull and showing uncharacteristic losses for 1989, Zenith Data Systems (ZDS) is radically changing its distribution methods. ZDS will cut its 1500 computer stores down to 550 by midyear and require the remaining outlets to carry its desktop systems as well as its popular laptop line. In return, ZDS will offer these "medallion" dealers single-tier pricing, corporate leads from a new direct sales force, and other margin-boosting incentives. But even those inducements may not appease Zenith's often dissatisfied dealers. The desktop mandate is "a foolish move," insists Tom Jorgenson of First Capitol Computer in St. Peters, Missouri, a former all-Zenith dealer who predicts that large chains will dump Zenith if they are forced to carry its pricey desktops. (Businessland is among the chains that will do so.) Adds IDC analyst Bruce Stephen, "Zenith's position in laptops is much more threatened now with Compaq moving in." Historically, the bulk of ZDS revenues have come from large government, corporate, and education contracts, but Zenith lost the rebid of its largest Defense Department contract to Unisys late last year. In fact, Zenith Electronics' computer operations (dominated by ZDS) lost $20.1 million in the first nine months of 1989. "Of all the major players who might take a tumble," comments one analyst, "Zenith is at the head of the list." However, ZDS will be assured of building PCs for its French parent.

## 21MB Floppies Arrive

*Two Techniques Achieve High Capacity on 3½-Inch Media*

Blending floppy, Winchester, and optical technology, two start-ups have begun producing drives offering around 21MB of formatted storage on 3½-inch barium-ferrite floppies. Both products employ several tricks to enhance capacity, but Brier Technology's Flextra drives differ in that their servo tracks are magnetically encoded beneath the data tracks. Both are read by a special floppy head positioned by a Winchester-style linear voice coil. A complete SCSI-based Flextra subsystem including two disks—one with installation software—will be distributed by Q/Cor to retailers in April for $895. Meanwhile, Insite Peripherals offers a 20.8MB Floptical drive that magnetically reads and writes data using a high-density Winchester head altered to permit an LED/photo detector to read etched optical servo tracks. The I325 VM Floptical employs both voice-coil and floppy stepper-motor technology for head positioning. SCSI-equipped Floptical subsystems will be developed for retailers by Manzana Microsystems, among others, by this summer for around $1500. The media for both drives must be specially formatted but should be available from retailers at about $10 apiece for Flextra drives and $28 apiece for Floptical systems. The Flextra drives give an average access time of 35ms compared with 65ms for the Floptical drives and 105ms to 110ms for regular floppies. But this Flextra version won't read 720K or 1.44MB disks, while the Floptical can both read and write lower density disks at their original density.

## NewWave Sweeps In

*HP's Corporate Application Environment Competes With IBM, DEC Offerings*

Hewlett-Packard has introduced an integrated office environment for company-wide computer applications and services that means to combat IBM's *OfficeVision* and Digital Equipment Corporation's *All-in-One*. *NewWave Office* is a server-based suite of services running under the *NewWave* environment, for which third-party developers will create applications. DOS users on HP *LAN Manager* and 3Com's *3+Open* (but not yet Novell) networks can receive *NewWave Open Mail* as well as services to access corporate-wide data and dedicated peripheral resources. They also benefit from network management tools for updating and distributing software from the server. However, only systems running *NewWave* itself (which requires at least a 286 with 3MB of RAM and *Windows 2.0*) can take advantage of the environment's most striking features: hot links for transferring live data between applications, and the use of programmable "agents" to automatically complete routine tasks. Nearly three dozen software firms, including Micrografx and Samna, say they are writing *NewWave* applications. "But HP doesn't have a lot of the big names," notes IDC analyst Ann Palermo. "I'm not going to hold my breath waiting to see Lotus applications for DOS *NewWave*." HP has begun to distribute *NewWave Office* on its minicomputers and will release OS/2 and UNIX-server versions in May, but pricing has not been announced. A *NewWave* for Presentation Manager workstations is under development. ●

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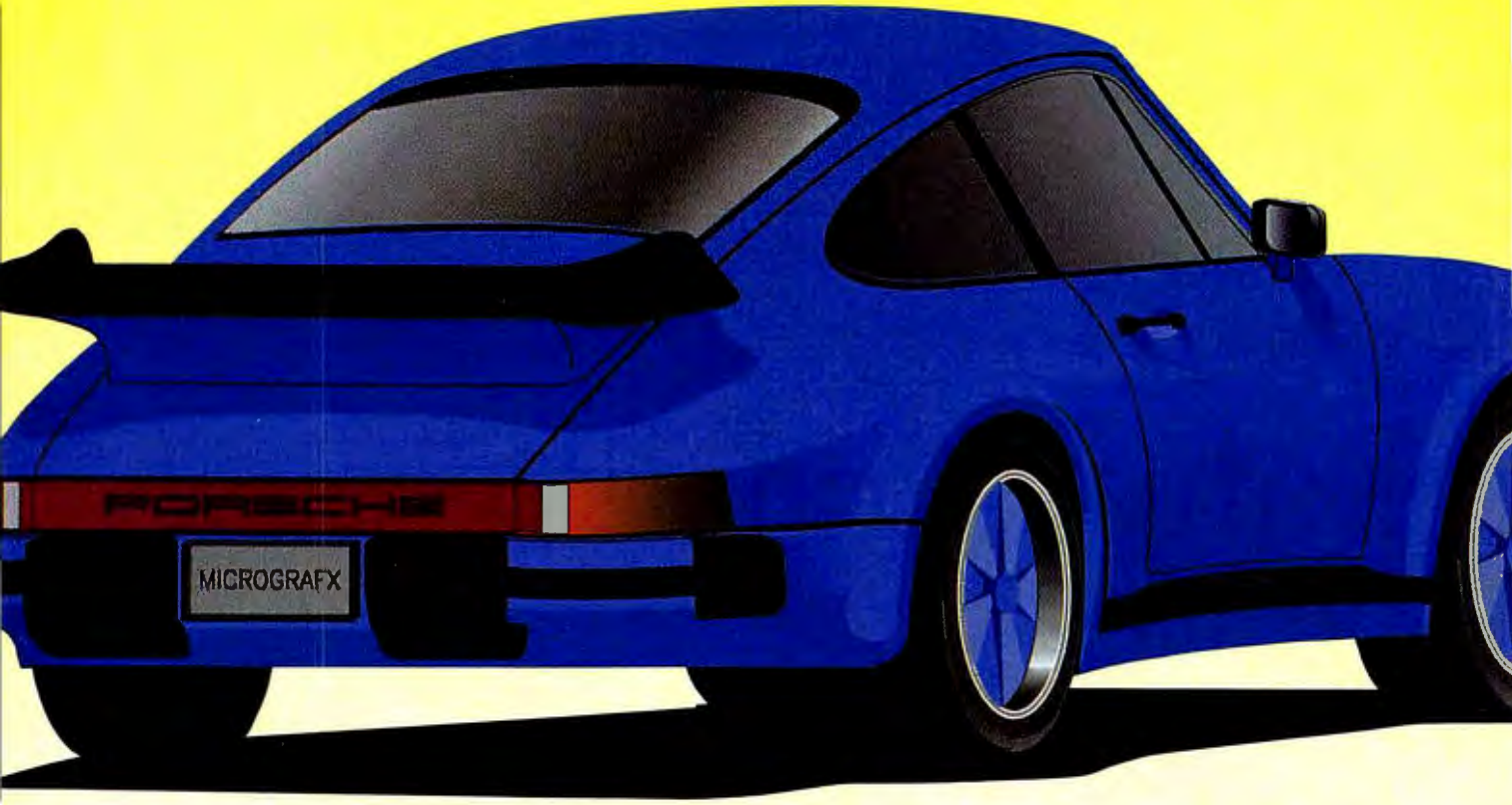


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FRED STIMSON

*Richard Landry*

# Personal Workstations or Hobbled PCs?

**Are PCs getting too big, powerful, and complex?**

**Or is the PC industry thinking too small about ways new technology can empower users?**

Is the next generation of personal computers too muscle-bound for the average user's own good? It all depends, Steve Jobs might say. Lately, Jobs has been going around selling the notion of "personal workstations"—PCs far more powerful than today's standard fare, but geared toward personal productivity rather than raw throughput.

Traditional workstations stress speed over simplicity, Jobs says—that's why they come with an army of technical personnel. PCs are simpler to set up and use but lack the steam to run software smart enough to make difficult tasks easy. That's why PC training and support is a crushing burden to most businesses. Personal workstations, by contrast, combine the best of both worlds—power that delivers greater ease of use with flexible networking that encourages work groups to share information. The result is lower support costs *and* higher productivity, a promise even Jobs can't help making sound too good to be true.

**The New PCs: Workstations or Servers?** Still, Jobs and his Next system represent only one side of an industry-wide debate about how best to use the growing power of high-end PC systems. On the other side sit a substantial number of vendors and MIS professionals who spy a golden opportunity to shift the momentum of office computing away from mainframes and minicomputers, toward local area networks linked at their hubs by powerful PC servers. (See the preview "A Miniature Mainframe for PC Networks" in this issue.)

This vision plays down the PC's role as personal productivity tool in favor of its place as gateway to a company's information system. The benefits are compelling: lower hardware costs, easy expandability throughout the system, and a modular design that fits the decentralized nature of contemporary business. The price: a surprising complexity that threatens to rob users of the freedom to control their own computing environments.

At a recent Businessland conference entitled "Managing Your Microcomputer Portfolio in the 1990s: A Challenge in Complexity," MIS professionals wondered out loud how far they could go in pursuing the latter agenda without incurring the wrath of users and driving training and support costs through the roof. While acknowledging that today's decentralized businesses need decentralized corporate data, none expressed any confidence that they could teach users to successfully navigate distributed data bases or that they could protect the data itself from becoming riddled with errors.

Concerns like these quickly complicate everyday computing. When users want to draw data from multiple distributed servers, will they have to negotiate differences in server software? Will off-the-shelf software handle these subtleties, or will huge training and programming efforts be required? What happens to users' investment in home-grown *dBASE* or *Paradox* files? In short, how many restrictions will we have to live with just to get at vital company data?

**Wanted: Personal Workstations** Users concerned with harnessing PC power to get work done need these problems like a hole in the head. Luckily, some vendors see opportunities in the headaches distributed servers can cause. PC data

*(continues)*

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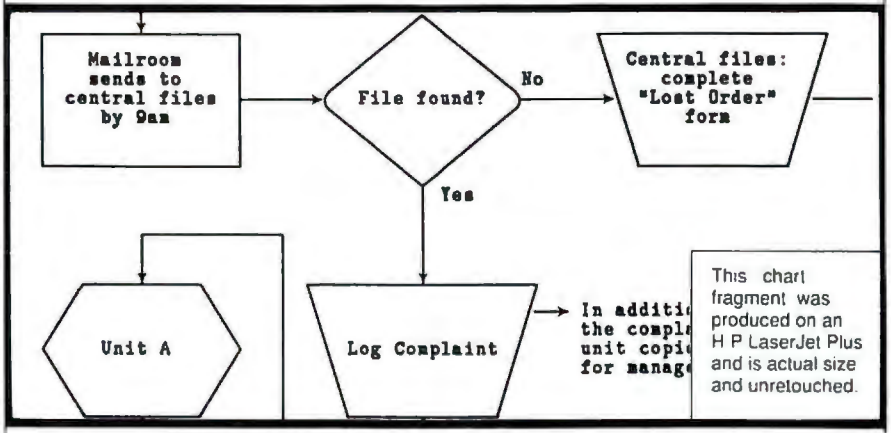


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**Circle 79 on reader service card**


bases like *Paradox* can be trained to smooth over the differences between servers. Likewise, spreadsheets such as *1-2-3* release 3, *1-2-3/G*, and *Excel* include data base access capabilities that require minimal help from in-house programmers. Finally, pure SQL data bases like Gupta's *SQLWindows* make it possible for users to develop fully distributed applications with little or no programming.

Fast, expensive PCs and local area networks should occasion greater personal freedom and productivity, not more gnashing of teeth. A world of many well-connected personal workstations is preferable to one of downsized mainframes and hobbled PCs. But users will have to hold their caretakers' feet to the fire to make it so.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St., San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685. ●

## POWER TIP NO. 85

### List Graphics Files in WordPerfect

When inserting a graphic into a *WordPerfect 5.0* file, you don't have to remember the full name of the graphics file. If your WP.EXE file is dated 7-11-88 or later, you can bring up a list of all your files by pressing <F5>, and then simply select the file you want.

*Michael Linford*
*Springville, Utah*

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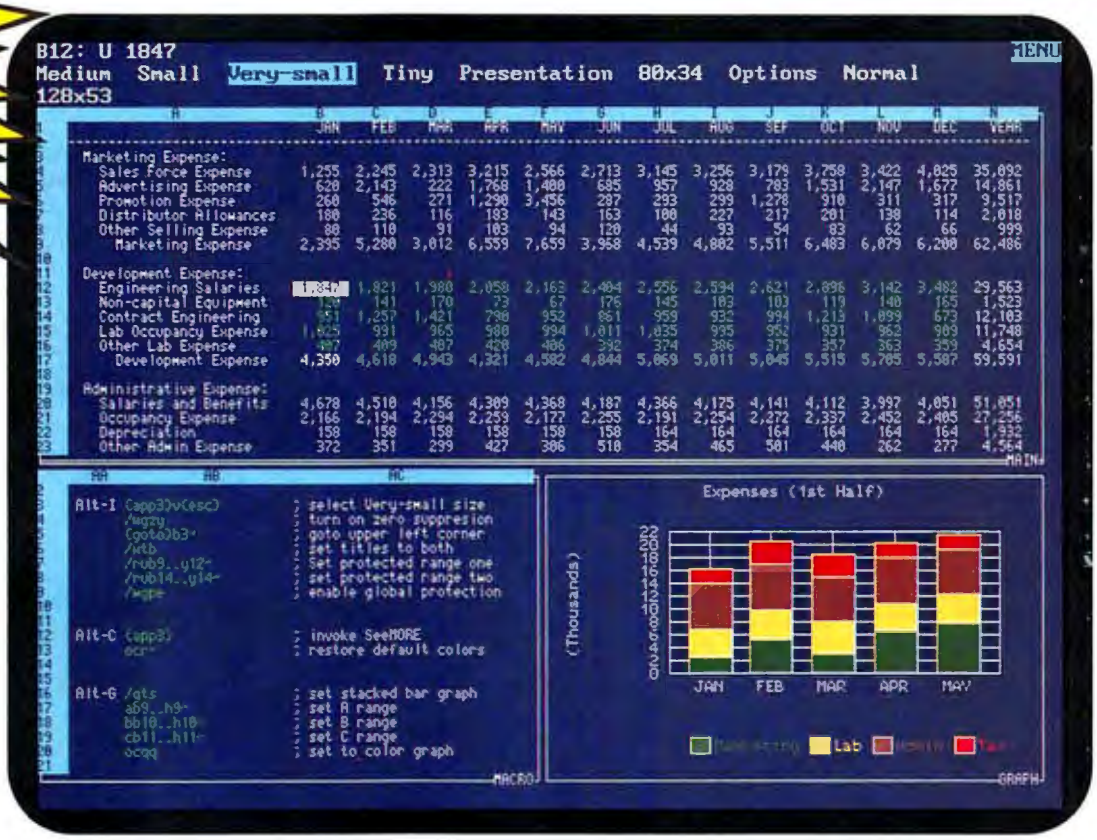


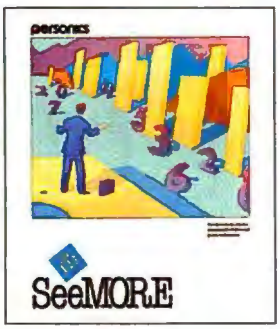


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SeeMORE Version 2 provides a complete windowing system for 1-2-3. Create as many tiled or overlapping windows as you like including multiple graph windows!

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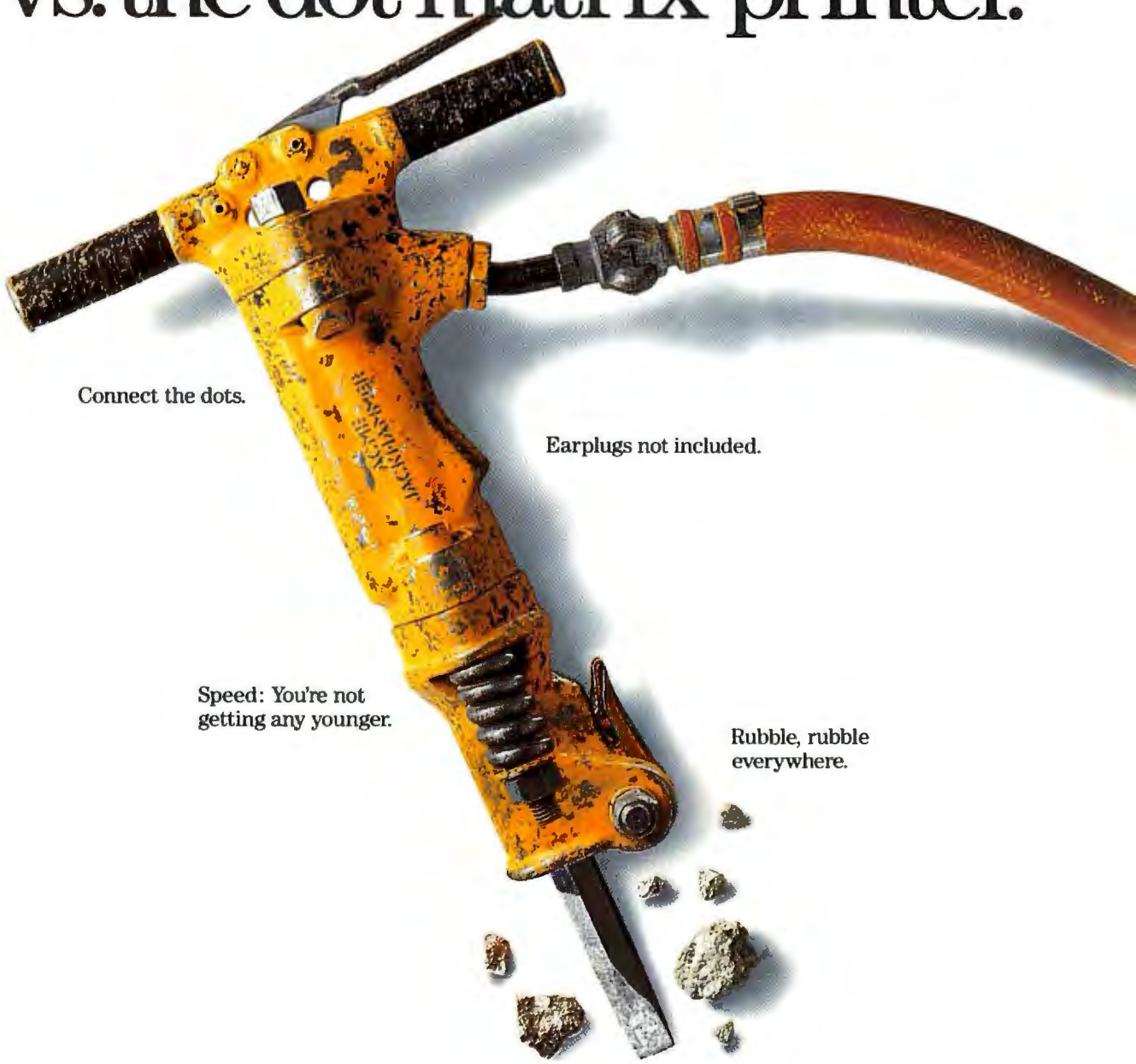
# US vs. the dot matrix printer.

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HEWLETT PACKARD

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10/89

# LETTERS

**Reactions and responses from the PC World community**

TIM CARROLL

### World Class Dismissed

I disagree with the premise of a readers' choice survey, and I didn't respond to the World Class survey [October 1989] for this reason. My choice of hardware and software is based on studying magazine reviews—there's no way I can select from a number of programs based on hands-on experience. Familiarity with one or two programs is no basis for declaring a favorite within a category. I suspect that the same is true for most of the readers who responded.

I liked the presentation of the survey's results, and I think the sidebars such as "World Class Through the Ages" were a great touch. But for me, a better survey would identify hardware and software that people use regularly—and also tell us which products are bought but seldom used.

*T. C. Miller*
*Cameron, Texas*

### Lost in the Learning Curve

The personal computer world has gone completely awry, straying from its original purpose: to make work lighter and us more efficient. When are we going to have programs that an average person can use without having to pore over badly written manuals? Icons could have been a great step forward, except that they are seldom as clear as the programmer thinks they are. Icons, too, have to be memorized. The learning curve is getting steeper and programs are being complicated with bells and whistles, when what we really need is more simplicity.

*W. R. Kellough*
*Scarborough, Ontario, Canada*

### Smooth Operator

What is the point of switching to a new operating system? When we switched to 286 and 386 machines, we had good reason: The new machines were the only ones that would run the software we wanted to use. Until OS/2 has something more to offer, we'll watch awhile.

*John E. Thompson*
*Monee, Illinois*

### The Perfect Choice

Your October 1989 review of *PlanPerfect 5.0* commented that this spreadsheet would be popular "mainly with people already at home on the *WordPerfect* range." That's good, because *WordPerfect* probably has the largest installed base in the world. The review was fair, but I'm getting tired of sneering editorial references to *WordPerfect*'s command set. Surely those who make such comments started microcomputing with *WordStar*. The rest of us are familiar with *WordStar*'s command conventions only because we bought *SideKick* about the same time we bought *WordPerfect*.

*Oscar W. Smith, Jr.*
*Norfolk, Virginia*

*We wouldn't knock* WordPerfect*—many of us use it every day—and when it comes to clunky interfaces, nothing can top EDLIN. —Ed.*

### All Ways Lead to 1-2-3

I would like to point out some errors in your October 1989 review "Power Spreadsheets: A New Standard?" Your Features Evaluation table correctly credits *1-2-3* with WYSIWYG preview when used with the included add-in *Allways*. Yet under the heading "Font styles per work-

*(continues)*

ANTHONY RUSSO

# The Big Guys Still Can't Figure Out How We Do It.

***"It's amazing how much computer you can get for how little money. The Fivestar...nearly as powerful as the Compaq Deskpro 386/33, for a fraction of the cost."***

M.I.P.S. Magazine, October 1989

***"...the 33/D's 90M-byte hard drive and controller completed a series of tasks--file generation, indexing and sorting--four times faster than Compaq Computer Corp.'s Deskpro 33/386..."***

P.C. Week, August 14,1989

***"The SmartCache's usefulness is attested to by the (Fivestar) Model 33/D's excellent performance in the disk I/O benchmarks."***

BYTE Magazine, Fall, 1989

The industry big boys and publishing heavyweights all seem to agree...Fivestar's combination of smart price, gutsy performance and risk-free support may be hard to figure, but the end user is the clear winner.

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sheet," you state that only one font is available. In fact, with *Allways* there are eight fonts available. The abilities to print text and graphs together, and to print in color, make the *1-2-3/Allways* combination superior to *Excel* in reporting and graphing.

*Beth Zion*
*Boston, Massachusetts*

*It's true that we didn't give the* 1-2-3/Allways *team credit for its full range of fonts. However, they show up on screen only in* Allways' *format mode, which means that you can't edit a worksheet and see its font format at the same time, as you can with* Excel. *—Ed.*

**The Old One-Two for 2.2**

Most of the improvements in *1-2-3* release 2.2 are merely cosmetic, and I am very disappointed with the new graphics program. For *x-y* graphs, Lotus has placed tick marks inside the graph and added a dead zone inside the frame at the right of the graph. These changes do not conform to drafting standards, and they seriously impair the program's value in plotting engineering data. Furthermore, graphs from the two versions are incompatible. I cannot combine version 2.2 graphs with ones from earlier versions unless I call up old worksheets and remake the graphs. At the same time, few of *1-2-3*'s deficiencies have been addressed: The axis labels are too small and cannot be rotated, and there is little control over numbering the axis scales.

*Bengt H. Fellenius*
*Ottawa, Ontario, Canada*

*A Lotus spokesperson has confirmed the drawbacks of using* 1-2-3 *for engineering graphs but offers an easier way to combine the old- and new-style graphs. You can use* 2.2 *to open a* 2.01 *graph file, then simply save it. —Ed.*

**They Could Pass for Brothers—Part II**

I am responding to Thomas Petro's August 1989 letter about Brother's HL-8 printer and its inability to emulate the LaserJet Series II. The latest version of the new model, the HL-8e, *does* emulate the Series II—and by working through their dealer, owners of earlier versions can have their printers upgraded. I'm telling you this because Brother's customer service department is so abysmally bad that the representatives usually don't know about the upgrade.

Brother's Series II emulation isn't perfect, though, especially for *WordPerfect 5.0* users. Brother recommends that you use *WordPerfect*'s HL-8 driver, but that driver doesn't support HP's downloadable fonts. Despite its problems, however, this printer is still an outstanding bargain.

*Christin Grant*
*Ann Arbor, Michigan*

**A Brush With Paint Programs**

I agree with your *Product Outlook* item on *PC Paintbrush IV* [September 1989]—it's a nice program. But why did you leave out its biggest defect? You show a picture of a scanned image—but the program isn't capable of scanning. Also, I can't get *Paintbrush* to import a scanned photograph. Even with 4MB of memory, I get an 'Insufficient memory' message when I try. Had Z-Soft been able to combine scanning capability and enhancement of scanned photos...that would have been something.

*Sol Pessin*
*Yadkinville, North Carolina*

*While* PC Paintbrush IV *can import and manipulate gray-scale images, memory-resident programs and large image files will create a memory crunch. Z-Soft has responded to the problem in* Paintbrush IV Plus, *which recognizes virtual memory. The retail price is $199; users can obtain an upgrade from Z-Soft for $69. For a look at* Paintbrush IV Plus, *see* Product Outlook *in this issue.*

**Working With Words**

Your review "Managers' Special: Eight Executive Word Processors" [October 1989] missed one with the best value of all. Except for creating indexes and tables of contents, the word processor in *Microsoft Works* included every feature of that review's Best Buy. Moreover, *Works* costs less and includes a graphics spreadsheet, a flat-file data base, and communications software. Even if you want only a word processor, you can ignore all the other features and still get a better buy in *Works* than in your first choice.

*James K. Condon*
*Gloversville, New York*

**Enter Hero's Name, Enter Desired Sales ...**

The instructions in "Easing Into WordPerfect Macro Programming" [November 1989] were very helpful, especially to a nonexpert like myself. I learned so much that I was able to customize the illustrated macro. Now I'm working on a much more complicated macro that will en-

*(continues)*

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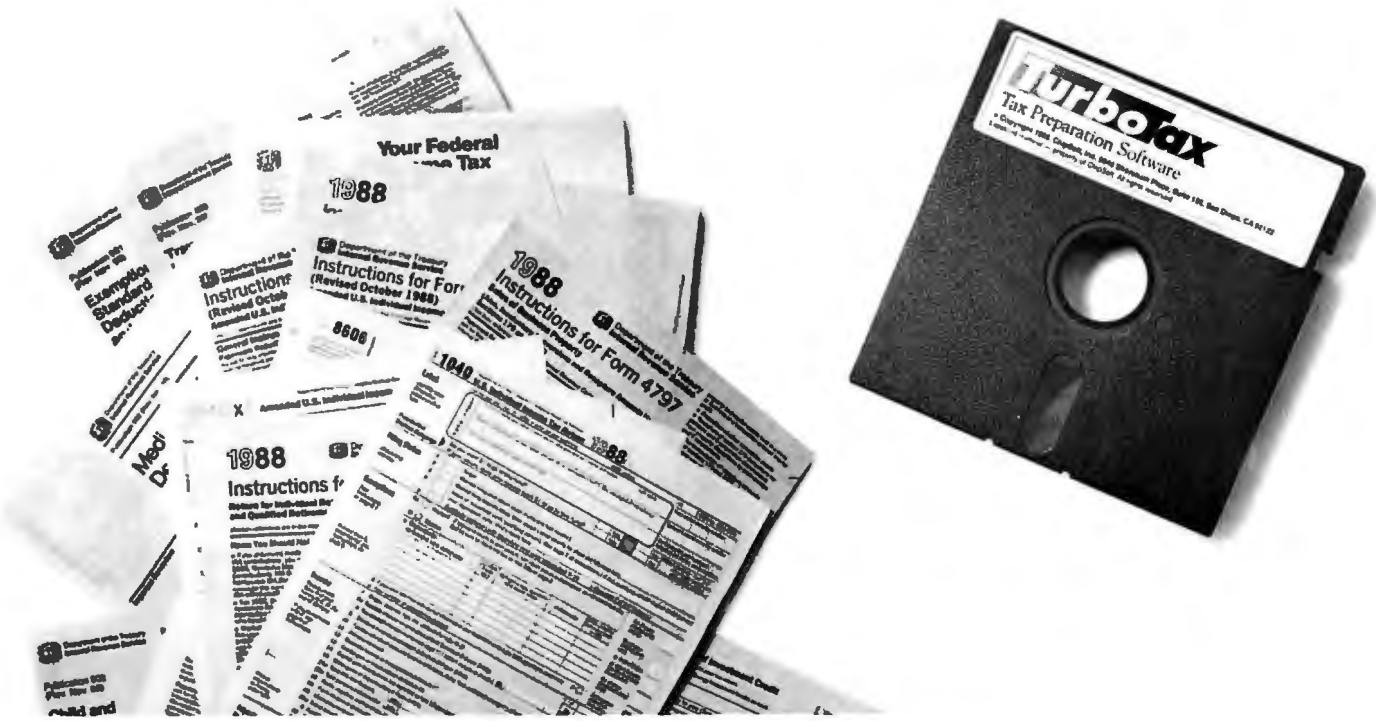


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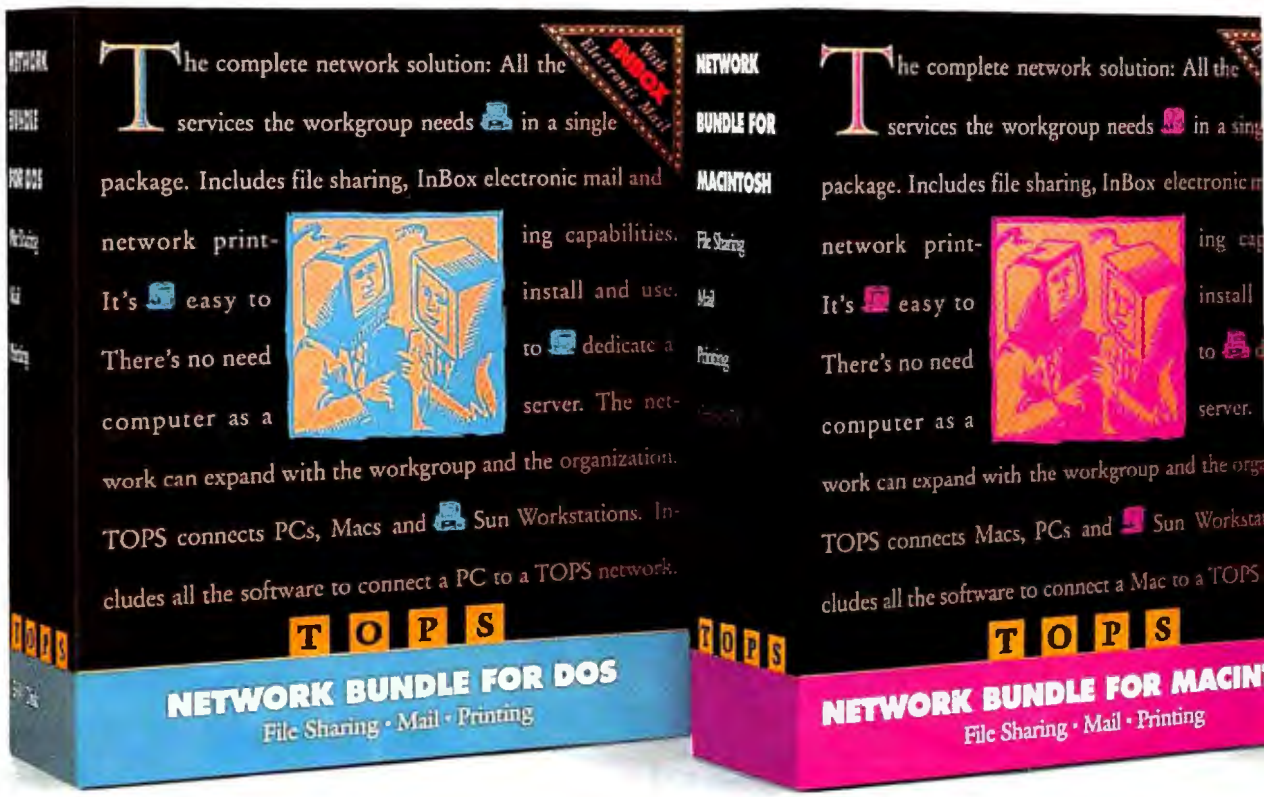


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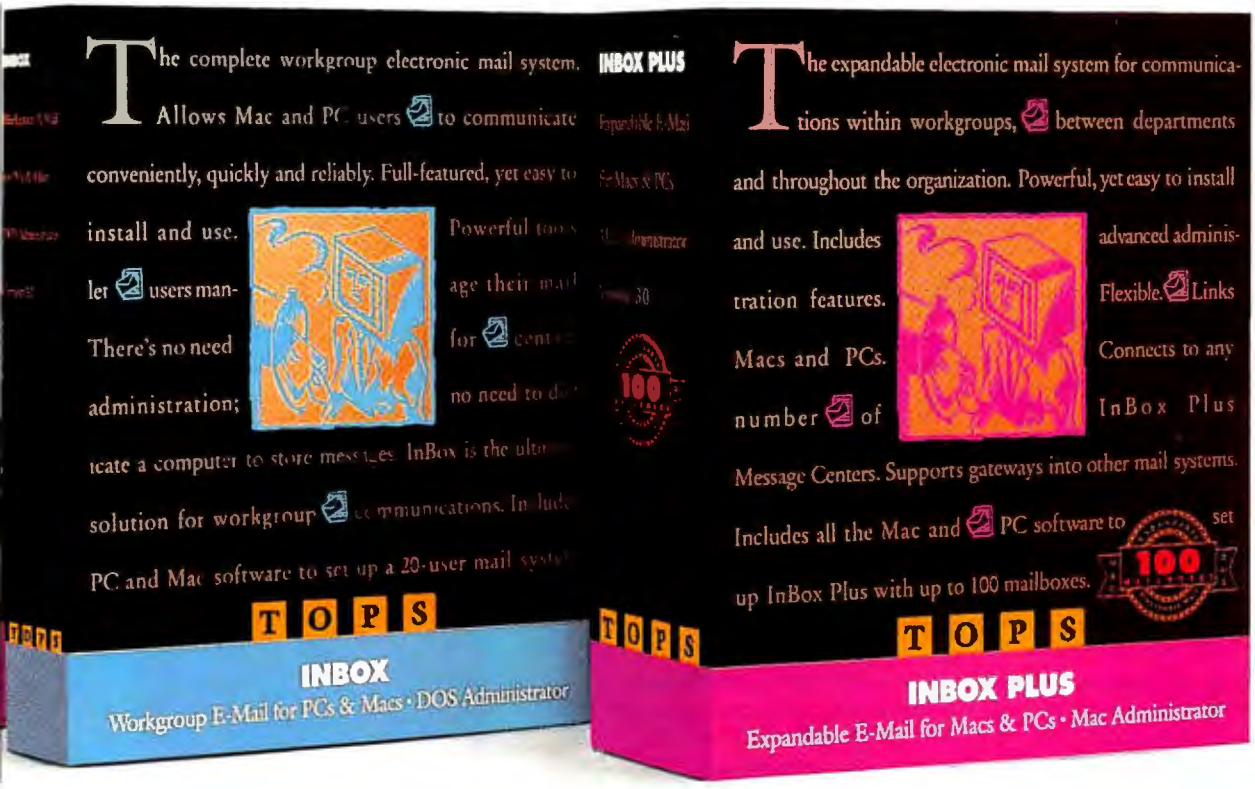


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sure publication for my until-now-rejected short stories!

*Eli A. Rubinstein*
*Chapel Hill, North Carolina*

### Corrections

In our August 1989 review "Alpha Four: Easier Than dBASE," we compared *Alpha Four* with *Q&A 3.0*, but we erred in our listing of *Q&A*'s price: The suggested retail price is $349.

In "Ten Top Upgrades for Under $500" (December 1989), we mistakenly noted that you shouldn't install the Hardcard 20 in one kind of machine and later run it in another. Plus confirms that you can indeed move the drive from system to system. The only requirement: The drive and the system must be using the same version of DOS.

*To send correspondence, please see How to Contact PC World, page 4.* ●

### POWER TIP NO. 86

**Redefining OfficeWriter Go Key**

OfficeWriter makes extensive use of the <Gray Plus> key, which it calls the Go key. Some computers, especially laptops, do not have a <Gray Plus> key. To assign another Go key, select OfficeWriter Options from the main menu. From the Options menu, select 'Redefine GO Key', then press the key of your choice.

*Software Publishing Technical Support*
*Madison, Wisconsin*

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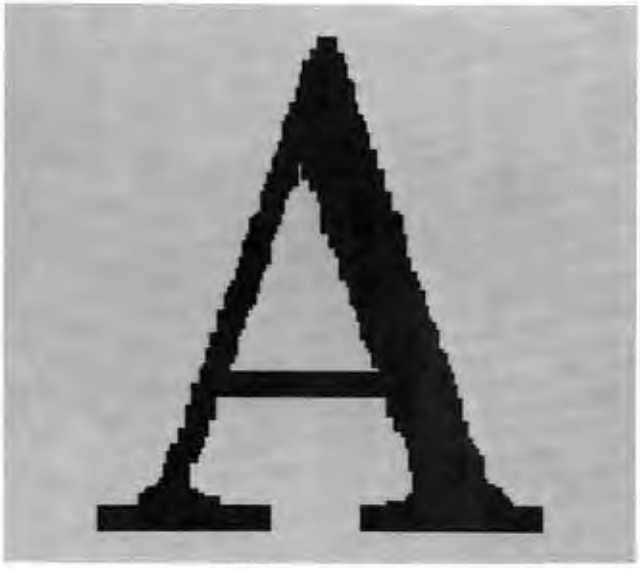

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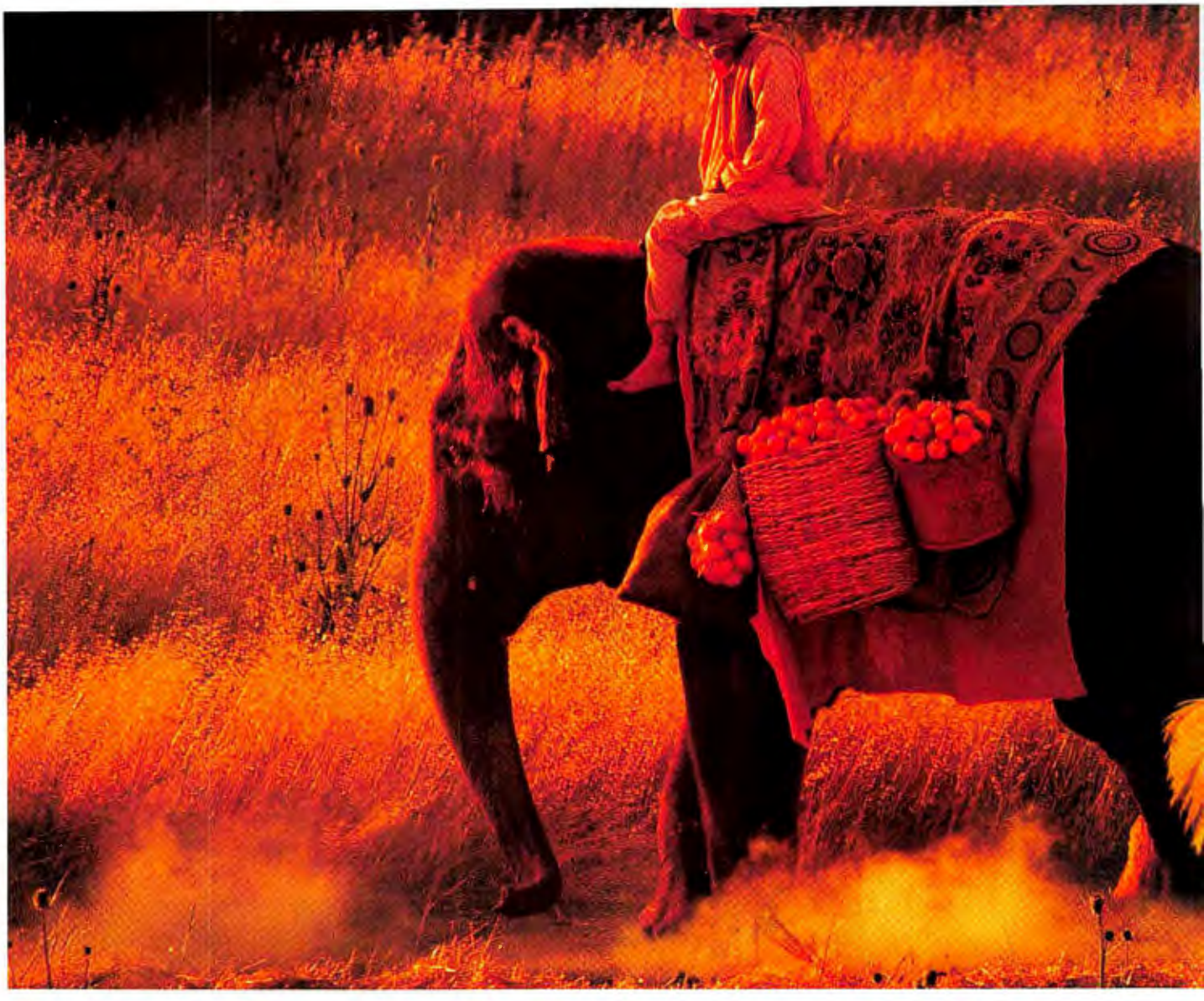

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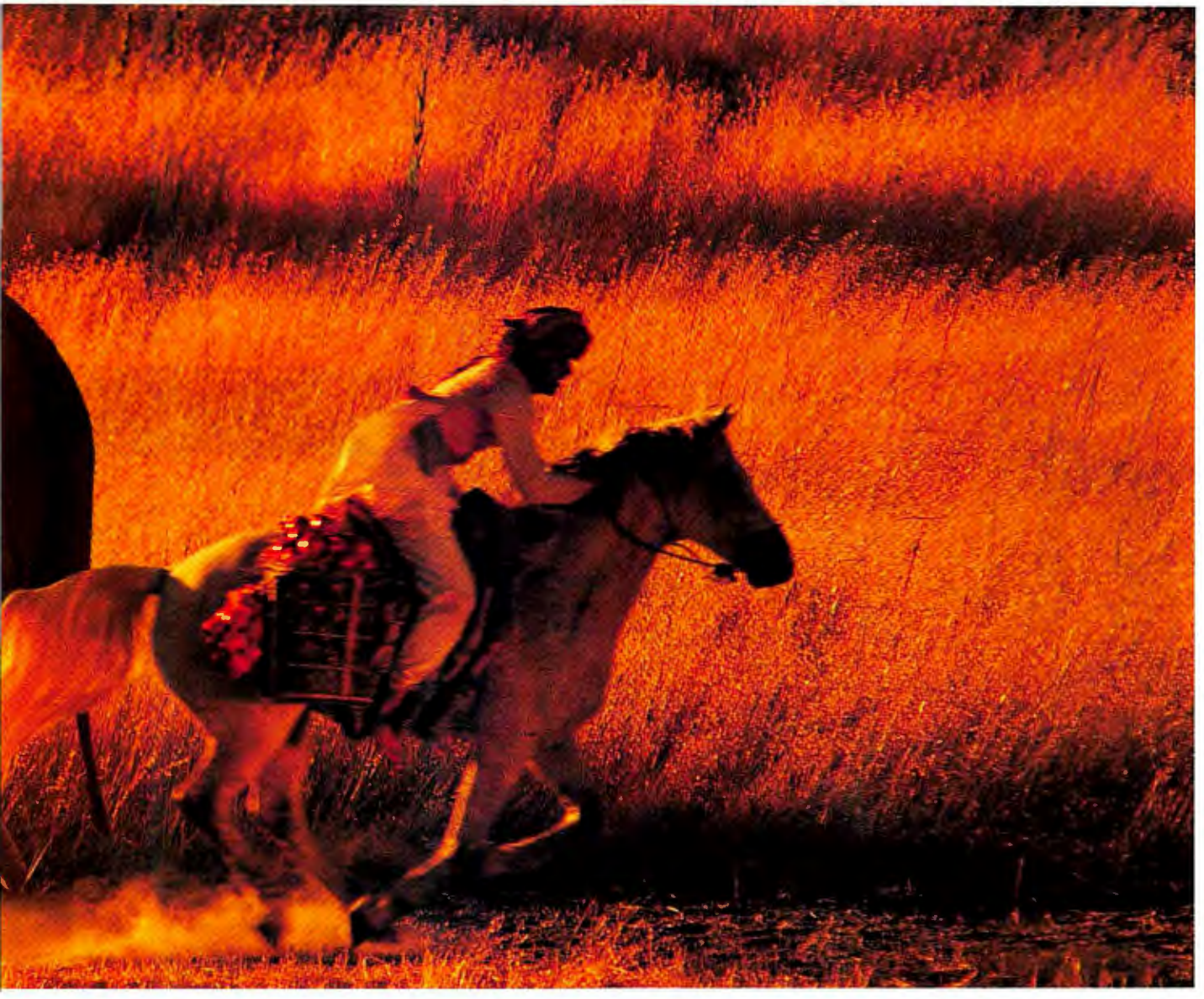

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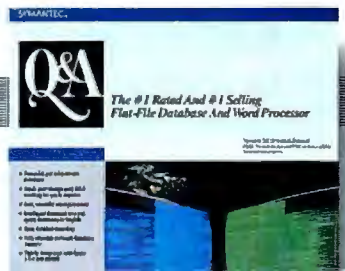


Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. 408/253-9600.

*Q&A awards: #1 Corporate Satisfaction PC Week 1/89; PC World's Best Buy 7/88, and World Class 9/88; Software Digest #1 File Manager 2/88; InfoWorld 9.3 rating 5/88; PC Magazine Editor's Choice '87 and '88, and Technical Excellence 1988. Q&A is a trademark of Symantec Corporation. dBASE is a registered trademark of Ashton Tate, Inc.*

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# THE HELP SCREEN

**PC World offers answers and advice at every level**

Write batch files that don't lose control, capture 43-line VGA screens, understand why some programs won't work with large hard disks, fix a foreign keyboard's <F11> and <F12> keys, and use ZMODEM with Pracomm Plus.

***Karl Koessel***

## Batch Labors Lost

**Q.** *I've created my own simple menu system that uses batch files (1.BAT, 2.BAT, and so on) to launch my programs. At the end of each batch file is the command TYPE MENU, which displays a menu of numbered choices. This rudimentary system works well, except for a few programs (*WordStar 2000, *for example) that fail to return control to the batch file after the program is done. The TYPE MENU command is, therefore, not issued, and I'm left staring at the DOS prompt.*

*Is this characteristic of some programs, or am I doing something wrong?*

*Cole P. Thompson*
*Garden Grove, California*

**A.** By default, DOS can keep track of only one batch file at a time. If one batch file invokes another, DOS transfers control to the new batch file and does not return to the first. The TYPE MENU command is not being executed by your problem batch files because each one transfers control to another batch file that then calls the desired program. **FIGURE 1** shows the problem and two possible solutions. Let's assume that your menu system uses a batch file named 1.BAT to run *WordStar 2000*. 1.BAT contains the command 2000, which in turn transfers control to the batch file 2000.BAT, which makes \WS2000\DOCUMENT the default directory and runs the program file WS2.EXE. When you exit *WordStar 2000*, control is not returned to 1.BAT. To solve your problem, either replace the command 2000 in 1.BAT with the commands contained in 2000.BAT (CD \WS2000\DOCUMENT and WS2), or use one of the following techniques:

If you're using a version of DOS prior to 3.3, insert the command COMMAND /C on the same line and in front of the command that invokes the secondary batch file, for example, COMMAND /C 2000. Essentially, this command causes DOS to run a secondary DOS session that runs the secondary batch file. When that batch file is finished, the secondary DOS session is closed and control returns to the primary DOS session, which resumes running the primary batch file.

*(continues)*

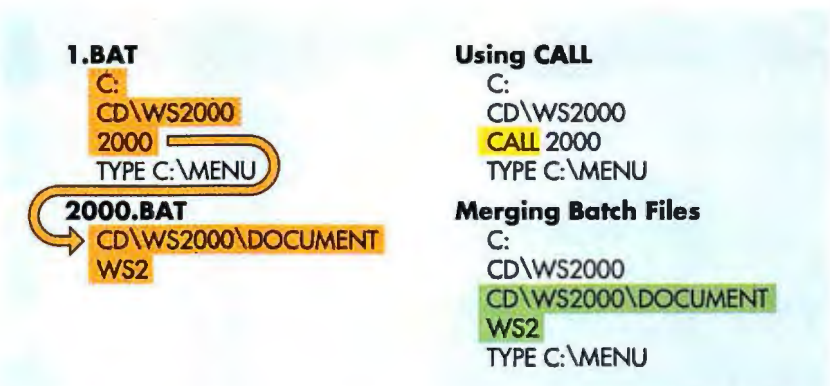


**FIGURE 1: When a batch-file command invokes another batch file, control passes to the second file (orange arrow), and subsequent commands of the first are not executed. To return control to the first file, use the CALL command (yellow), or merge the files' commands (green).**

ANTHONY RUSSO

DOS 3.3 introduced the CALL command, which solves the problem without your having to load a second copy of COMMAND-.COM. Simply place the CALL command, followed by a space, on the same line and in front of the command that invokes the secondary batch file (CALL 2000). Note that piping and redirection should not be used with the CALL command.

## VGA Screen Capture

**Q.** *I am attempting to develop a series of computer-based training [CBT] modules for PCs. I'd like to simulate a number of the sessions we run on our mainframe. After investigating several screen capture programs, I'm still not able to capture a 43-line VGA screen. Do you know of a program that can grab and save such a screen?*

*Rich McRae*
*Denver, Colorado*

**A.** Most screen capture programs assume you want to grab graphics (for painting, editing, clipping, and pasting), and therefore they don't capture text-mode screens like the VGA's 43-line display. I know of only two programs that include a utility to capture 43- and 50-line VGA screens: *Show Partner F/X 3.5* from Brightbill-Roberts and *IBM Storyboard Plus 2.0*. Both are desktop presentation packages, enabling you to create and display interactive or automated slide show–style presentations on your PC. Either package will cost you $395, a steep price if all you want is the capture utility. However, both programs are well suited for developing CBT.

### WHERE TO BUY

**IBM Storyboard Plus 2.0**
IBM
1 Culver Rd.
Dayton, NJ 08810
800/426-2266, 404/956-4000
LIST PRICE: $395, upgrade from 1.x $140
**Reader service no. 735**

**Show Partner F/X 3.5**
Brightbill-Roberts
120 E. Washington St. #421
Syracuse, NY 13202
800/444-3490, 315/474-3400
LIST PRICE: $395; call for upgrade prices
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## FAT Causes Problems

**Q.** *I have used* The Norton Utilities *and* PC Tools Deluxe 5.1 *(continues)*

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*with no problems under DOS 3.1 on my Compaq Deskpro 286. I recently purchased an IBM PS/2 Model 50 Z with a 60MB hard disk and DOS 4.0 and found that it won't run some of the utilities, specifically,* Norton Utilities' *NU and* PC Tools' *PCBACKUP. PCBACKUP loads but does not function, and NU just generates the error message 'Unable to read drive C:'.*

*I've tried using DOS 3.1 (booting from a floppy disk) but have had no success. Is there a new version of those programs for DOS 4.0 or for PS/2s, or is there something else I need to configure?*

*David Duff*
*Libertyville, Illinois*

**A.** The problem is not specifically with DOS 4.0 or with your PS/2 but can be found in any system with a hard disk volume larger than 32MB. DOS 4.0 was the first version from IBM that allowed logical drives larger than 32MB. (That capability was first offered by Compaq in its DOS 3.31.) To accommodate the larger volumes, Microsoft changed the structure of the File Allocation Table (FAT), which keeps track of where each part of each file resides on disk. Your programs that now malfunction do so because they are designed to directly manipulate the FAT, and since those versions were written before the FAT was revised, they don't recognize the new structure. (The programs that you can still run rely on DOS to manipulate the FAT instead of doing so themselves.)

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*George Walther, *Phone Power* (New York: Berkley Books, 1986)
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## Foreign Keyboard's Lost Keys

**Q.** *Can you explain why the <F11> and <F12> keys do not work when I use a keyboard configured for the United Kingdom? My British AT clone was supplied, naturally enough, with the UK keyboard, with which I am quite familiar, and which I prefer. My UK keyboard is properly set up—CONFIG.SYS and AUTOEXEC.BAT in-*

*(continues)*

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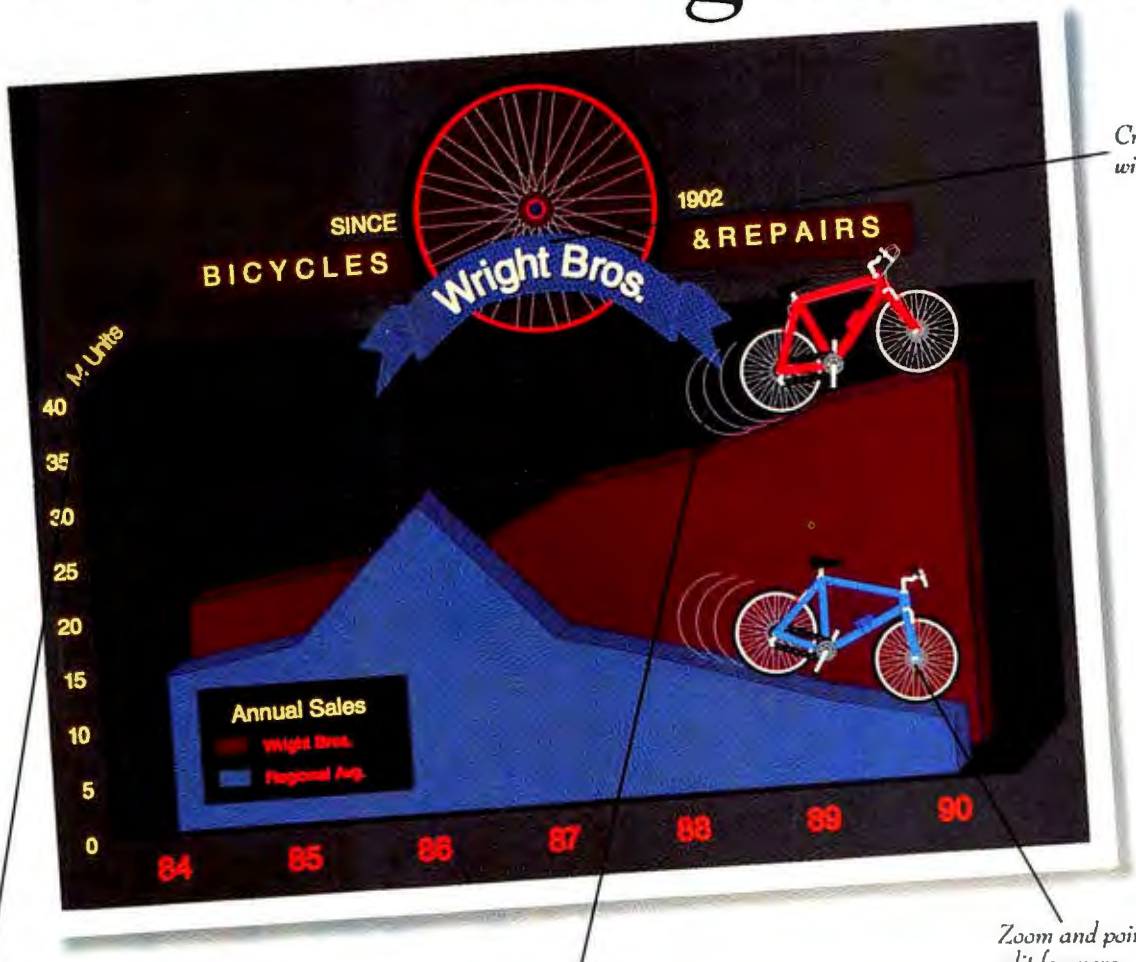


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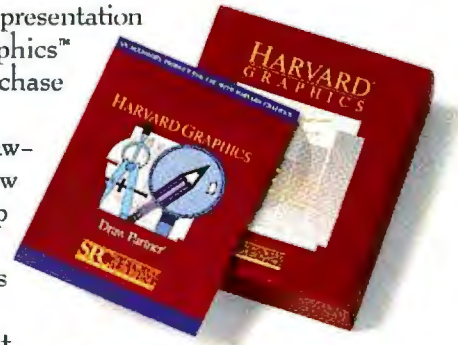


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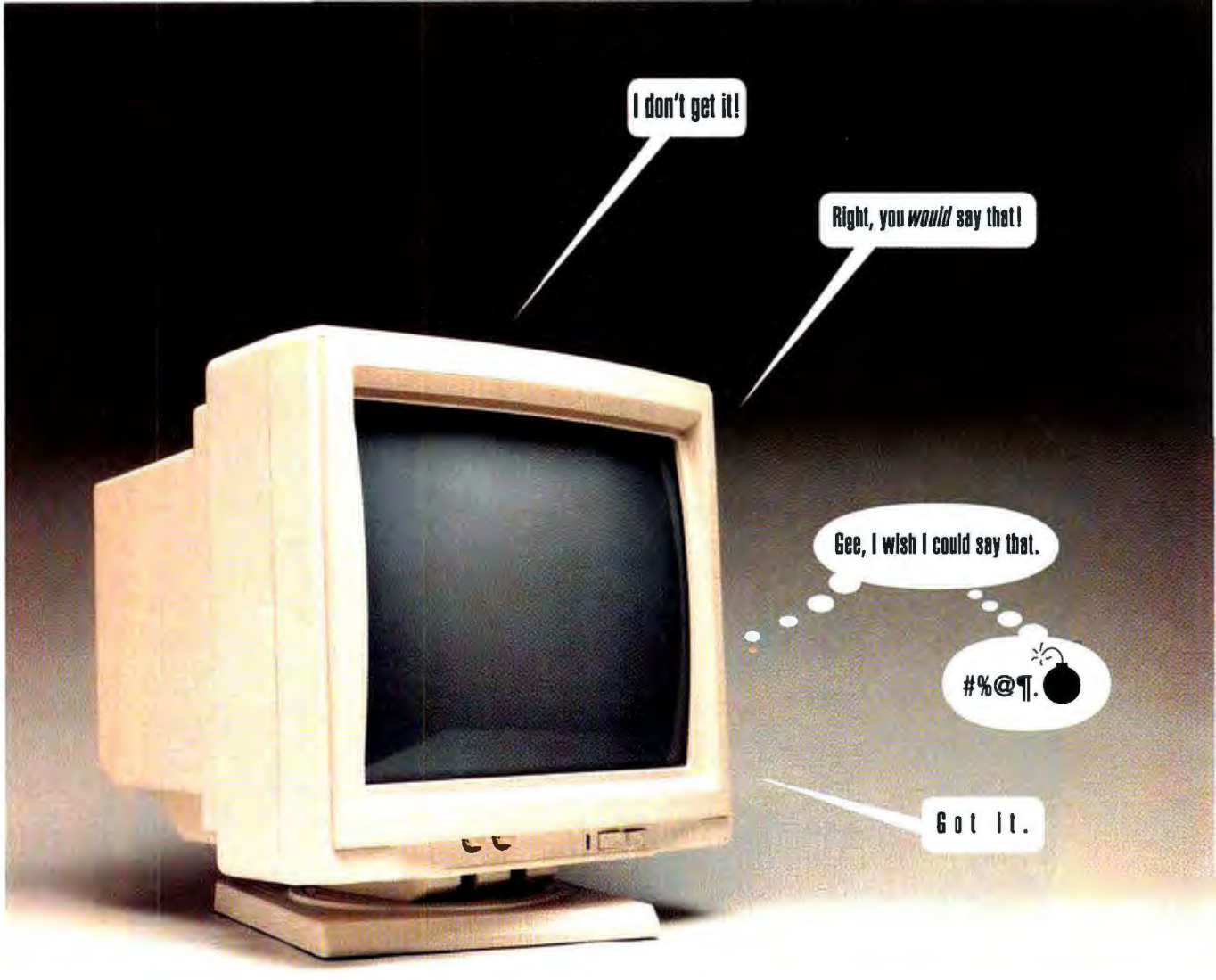


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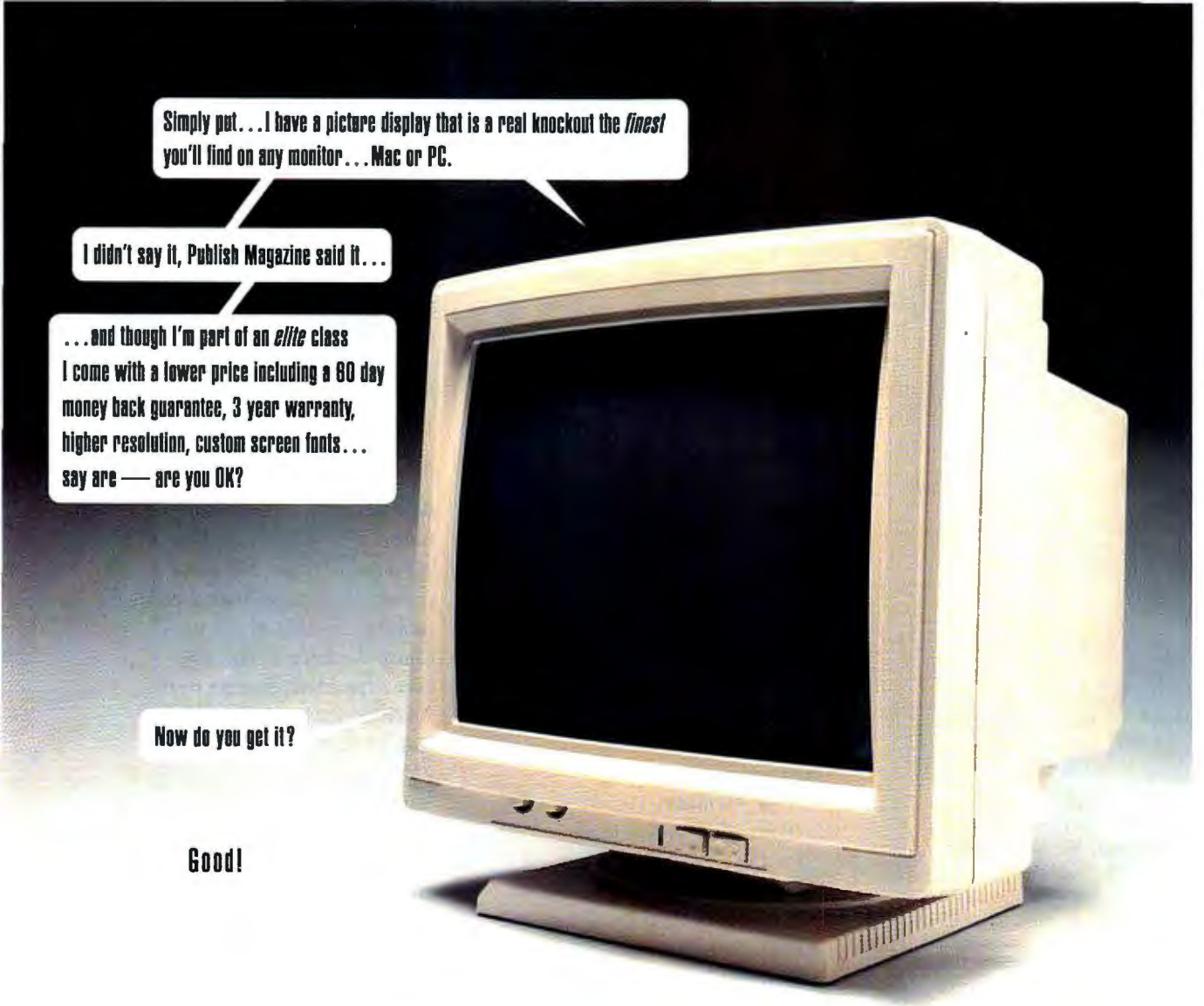


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*clude the proper COUNTRY, KEYB, NLSFUNC, and CHCP commands—and all the keys are correctly mapped, except for <F11> and <F12>, which are dead.*

*I run* WordPerfect 5.0 *quite a lot and would like to be able to use those keys for* WordPerfect's *Reveal Codes and Block functions, as I can with the U.S. keyboard. The <F11> and <F12> keys are not broken—they work when the U.S. keyboard definition is activated by pressing <Ctrl>-<Alt>-<F1>—so I know it's only a software problem. Can I modify my software to enable those keys without losing the UK keyboard configuration?*

*J. M. Fleming*
*Rotterdam, Netherlands*

**A.** You can blame the problem on your system's BIOS (basic input/output system) version. The BIOS contains code necessary for the processor to perform basic system functions, such as placing a character on the screen. Among its duties, the BIOS is responsible for managing the keyboard, and your BIOS does not fully support foreign language configurations of the enhanced (101-key) keyboard. You may be able to solve the problem by running the FIX-BIOS program, which is on *WordPerfect*'s Conversion disk. If that doesn't fix the problem, you'll have to contact your system's manufacturer to request an updated BIOS.

## ZMODEM for Procomm Plus

**Q.** *I enjoyed reading "Communications Software: Easy Choices" [August 1989], in part because I use the Best Buy selection,* Procomm Plus. *A footnote in the Features Evaluation table indicates that the ZMODEM protocol is available for* Procomm Plus. *How do I obtain and install ZMODEM as one of my protocol selections?*

*Gary L. Anderson*
*Virginia Beach, Virginia*

**A.** ZMODEM, although not the fastest protocol, is rapidly gaining popularity because of its superior ability to manage communications on dirty phone lines. Chuck Forsberg's *DSZ*, a $20 user-supported program from Omen Technology, provides XMODEM, YMODEM, and ZMODEM protocols. A search of your local electronic bulletin board services may uncover others. However, one of *DSZ*'s admirers, Mark A. Albrecht, wrote *HotKey-Z*, a menu-driven interface that makes *DSZ* very easy to use. *HotKey-Z* is a shareware program that can be called up via one of *Procomm*'s hot keys. Try it out, and I'm sure you'll want to send in the $10 registration fee.

### WHERE TO BUY

**DSZ Revision 02-06-89**
Omen Technology
P.O. Box 4681
Portland, OR 97208
503/621-3406
LIST PRICE: $20 for 5¼-inch disks, $25 for 3½-inch disks
REQUIREMENTS: 64K, DOS 2.0 or later version, communications program
TECHNICAL SUPPORT: BBS 503/621-3746; CompuServe 70007,2304; UUCP !tektronix!reed!omen!caf
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**HotKey-Z 5.0**
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**ESSENTIAL COMMANDS** are organized into logical sections for easy reference.

**FUNCTION KEY DIAGRAM** identifies all function key assignments at a glance. **Vertical function key overlay also included.**

**TWO-SIDED PLASTIC** design fits all keyboards, wipes clean.

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**GUIDELINES,** illustrations, and examples aid learning and review.

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**SPIRAL BOUND** pages lie flat, turn easily. Built-in easel, too.

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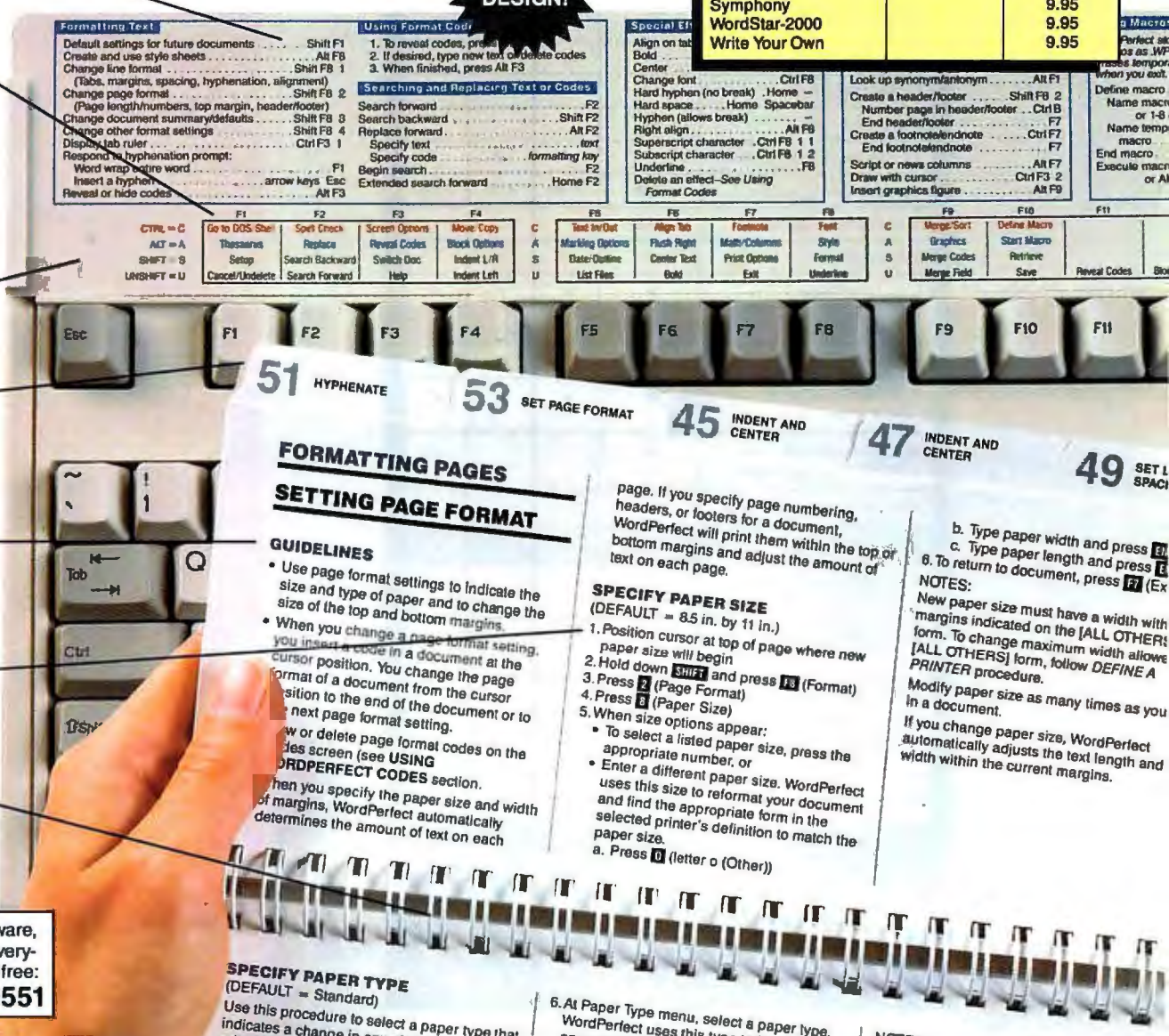


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**1-800-333-0551**

**Circle 68 on reader service card**

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Messages may be left at Nighthawk BBS 319/338-2961
LIST PRICE: $10
REQUIREMENTS: DSZ plus 60K, DOS 3.0 or later version, communications program with a hot key or a DOS access mode
TECHNICAL SUPPORT: Nighthawk BBS 319/338-2961
**Reader service no. 738**

*How does...? What can...? Should I...? Send your PC questions to* The Help Screen; *for details see How to Contact PC World, page 4.* ●

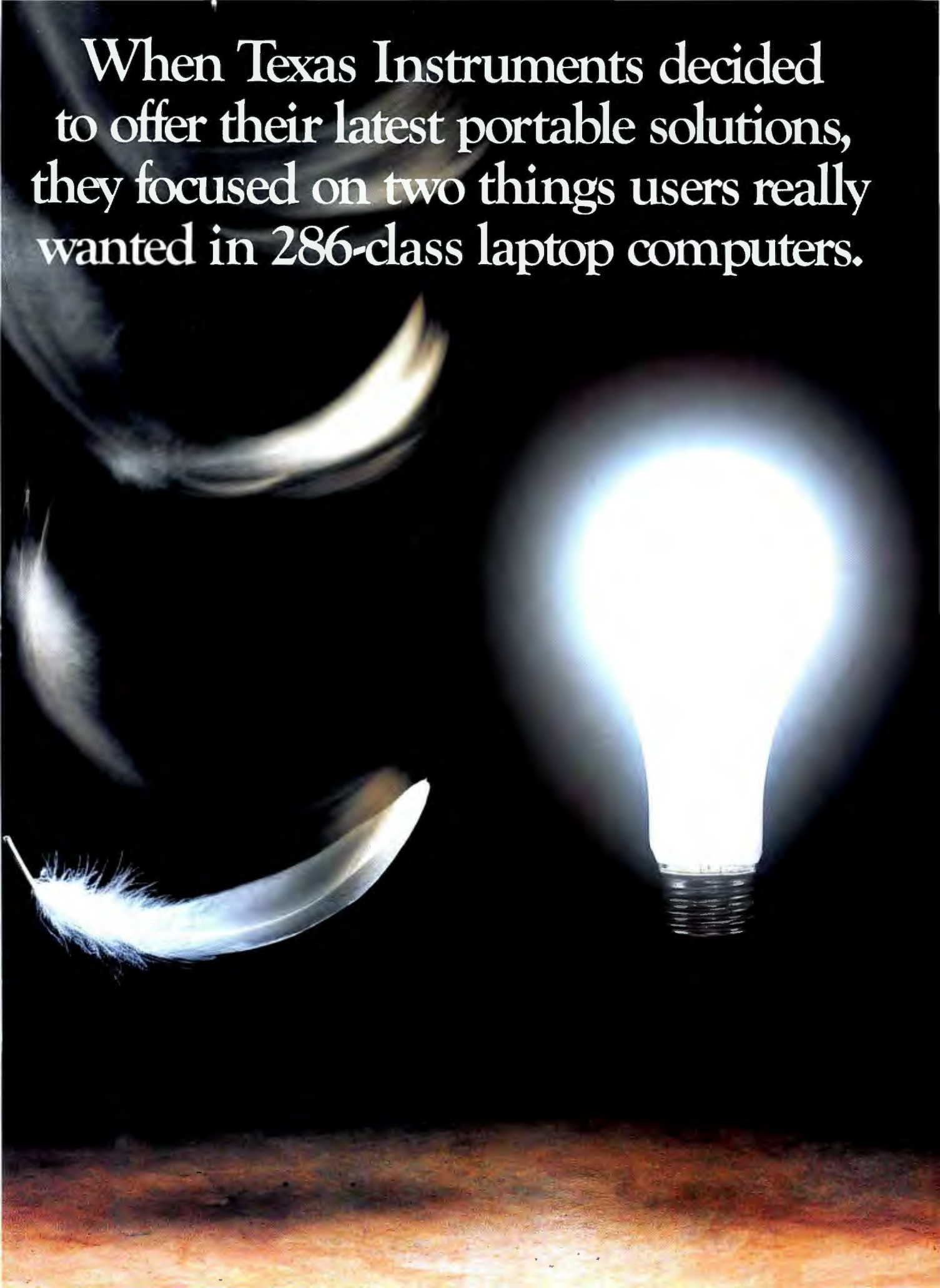
## POWER TIP NO. 87

### A Quick Date Macro for Word

*Microsoft Word 5.0* comes with a glossary listing for inserting the current date in a document, but a one-keystroke macro helps automate the job. Start Word and press <Shift>-<F3> to turn the macro recorder on. Press <Esc>I to select Insert from the main menu, type date, and press <Enter>. The current date will appear at the cursor. Press <Shift>-<F3> to turn the macro recorder off, and type a one-word name for the macro—InsertDate, for instance—followed by a caret (^). Press the key combination you want to assign for the date—<Ctrl>-D, for instance—then press <Enter>. From then on, pressing that combination will insert the current date at the cursor position.

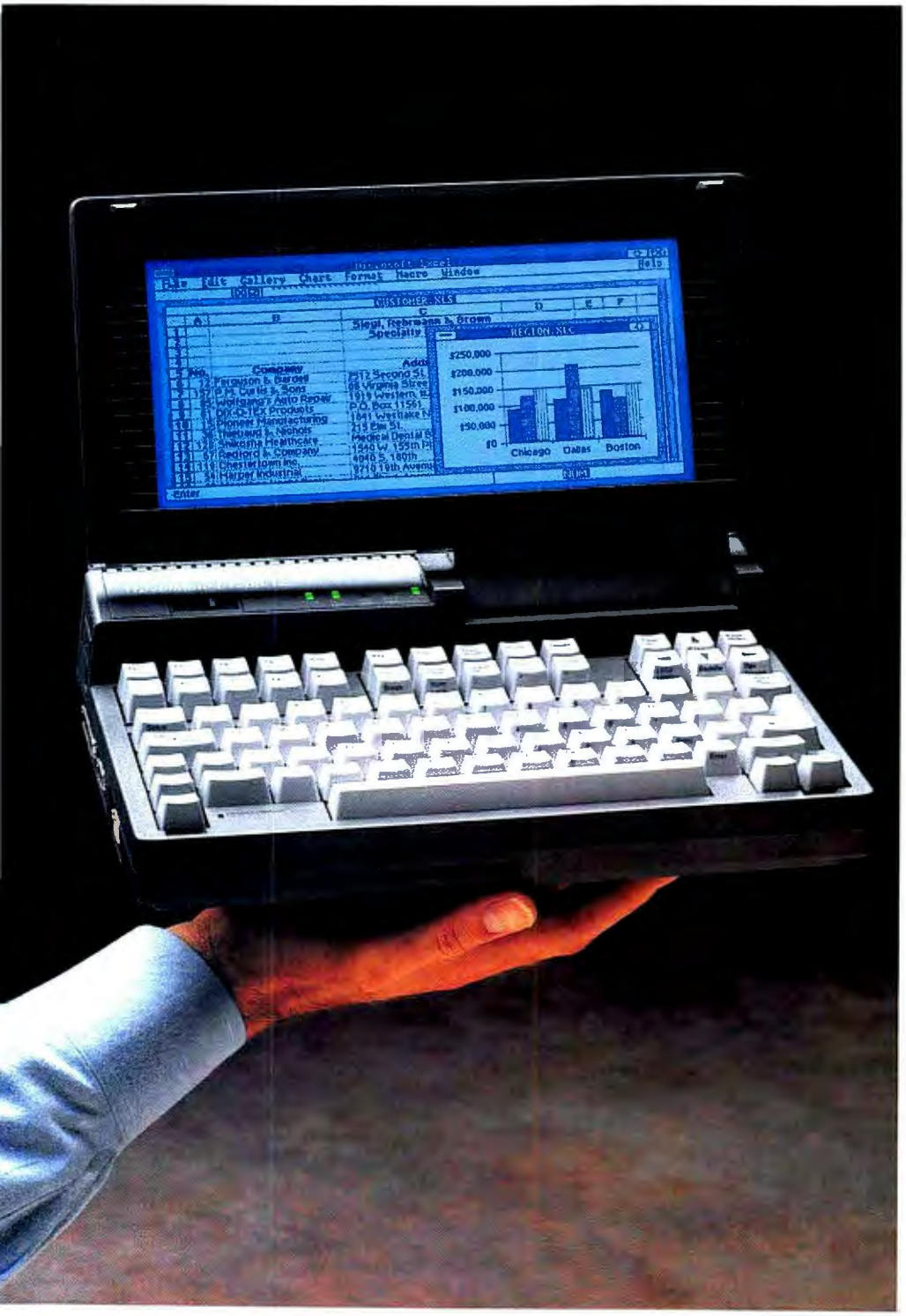
*Nora Van Hulle*
*Phoenix, Arizona*

# When Texas Instruments decided to offer their latest portable solutions, they focused on two things users really wanted in 286-class laptop computers.



# Light.

## TI introduces the TravelMate
## Full-function AT-compatibility, featuring two




### Model 12: All the power — half the weight.

Weighing a remarkable 6.7 lbs. — including battery and 20 MB hard disk drive — TI's TravelMate LT286 Model 12 delivers all the processing power of a desktop PC in a laptop. It's the perfect choice for professionals who need to work on-the-go.

Getting started couldn't be easier. That's because the Model 12 has MS-DOS 3.3® and LAPLINK™ in ROM. It also comes with a preformatted disk drive, making it ready to use right out of the box.

With the Model 12, you don't sacrifice performance for small size and weight. Business software runs fast, thanks to a 12 MHz 80286 microprocessor. There's plenty of storage for all kinds of software applications — the internal hard disk drive comes standard. Plus, you get 1 MB of RAM, expandable to 4 MB.

Not only does the Model 12 perform like a desktop PC, it has the same touch. The AT-style keyboard provides full-size, full-travel keys that give your fingers plenty of room.

Other features include an easy-to-read, enhanced Supertwist backlit LCD screen. A removable 3.5" high-density diskette drive provides additional flexibility and convenience — snap it on for loading software or remove it and travel light. And, sending critical work to your office takes only a phone call with an internal modem.

The TravelMate LT286 Model 12: the laptop that doesn't compromise performance for size.

*The removable 3.5" high-density diskette drive and internal modem are optional.*

# Bright.

## LT286 Series of laptop computers.
## The industry's lightest, brightest portable solutions.

### Models 25 and 45: Dazzling display for windowing and graphics.

If you want portability and an exceptional display for graphics, you'll appreciate the bright side of this solution. TravelMate LT286 Models 25 and 45 feature a brilliant black-on-white VGA display that rivals that of most desktop PCs.

This makes text easy on the eyes and provides crisp, well-defined graphic images for applications that use MS® Windows, like PageMaker® and Excel.™ The VGA screen is perfect for presentations to clients and prospects, plus your own personal use.

Not only do you get a superb display, you get superb performance as well. Like standard AT-compatible desktop PCs, Models 25 and 45 operate with a 12 MHz 80286 microprocessor for quick and powerful processing. You also get a 20 MB or 40 MB internal hard disk drive; an internal 3.5" diskette drive; 640K of RAM, expandable to 3.64 MB; an AT-style keyboard with full-size, full-travel keys; and an internal battery.

In addition, an intelligent power management system turns off the screen and fixed disk drive during periods of inactivity to extend battery life, allowing you to use the laptop longer.

Considering all these features and the performance and versatility they deliver, why would you ever need a desktop PC?

For computing on-the-desk or on-the-go, it's TravelMate LT286 Models 25 and 45: the 286-class laptops that combine might with bright.

# Two decades of portable solutions add up to lighter, brighter solutions.

Twenty years ago, TI introduced the world's first portable data terminals. Today, with nearly a million units sold, we've established ourselves as a market leader by offering products that increased in functionality and decreased in size.

This unparalleled experience has enabled us to provide you with the TravelMate LT286 Series – laptop computers that are powerful, innovative and durable. Qualities you have come to know and expect from TI. The choice for lighter, brighter portable solutions.

For more information, call TI today. **1-800-527-3500.**

TEXAS INSTRUMENTS

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DTBR003

# CONSUMER WATCH

**Advice and information for the computer consumer**

Should you buy a "gray-market" PC? You'll save money, but look out—what happens to the warranty may surprise you.

*Anita Amirrezvani*

## Shopping in a Minefield

Jerry Norris, a *PC World* reader in Dallas, bought a Compaq 386 from a mail-order company last August. Just a few weeks later, the hard disk died. Instead of sending the PC back to the mail-order company in Illinois, Norris decided to take it to a local Compaq repair shop. After dialing an 800 service number listed in the PC's documentation, he learned that the nearest shop was a Sears Business Center. Norris took the PC to Sears along with his mail-order invoice and left feeling great.

A week later, a Sears representative called Norris and asked him to authorize a $2200 fee for replacement of the hard disk. He refused; after all, the machine was only a few weeks old and should have been covered by the warranty. Not so, said the technician at Sears. Because the machine hadn't been purchased from an authorized Compaq dealer, the Compaq repair center could not honor the warranty.

After some tribulations, Norris managed to get the machine fixed. But he wasn't terribly pleased about the process. "It appears to me that Compaq is putting the consumer in the position of being a policeman for some type of distribution problem they have with their sales network," wrote Norris.

Jerry Norris had unwittingly bought a *gray-market* computer, a product sold by a retailer without the blessing of the hardware manufacturer. For consumers, gray-market products are appealing because they're extremely cheap. But as Norris discovered, there's a catch: Hardware companies such as Compaq, IBM, NCR, NEC, and Tandy refuse to honor their own warranties unless you purchase their PCs from authorized dealers.

This doesn't mean that consumers get stuck without any warranty, because sellers usually provide an alternate. As long as the seller is reputable, capable, and remains in business, there's no problem. Consumers run into trouble when the seller is far away, unable to get parts for repairs, not up to date on the product, or in shaky financial condition.

Gray-market products turn up in many different outlets—retail stores, VARs, mail-order companies, discount electronics outlets. As a matter of policy, Compaq, NEC, and IBM never authorize mail-order companies to sell their products. "We don't feel that support and service can be provided by a company 3000 miles away," says a spokesperson for IBM.

Hardware manufacturers say they set up authorized dealer networks with the best of motives: to provide quality service and support to consumers. In return for investing in a storefront and providing service and support, these authorized dealers get exclusive distribution rights, and they sign a contract that prohibits them from selling PCs to unauthorized dealers.

Knowledgeable insiders say that severe market pressures or greed sometimes induces these dealers to break their contracts. In the cutthroat world of retail sales, dealers may want to get rid of excess inventory, to move boxes for greater profit, or to tap into greater volume discounts by increasing their order of PCs from the manufacturer.

Hardware manufacturers say that they work hard to police their dealers and eliminate of-

*(continues)*

ANTHONY RUSSO

## How Good Is That Warranty?

*Some manufacturers refuse to honor their own warranties if you don't buy their products from authorized dealers.*

| Company | Manufacturer's warranty available no matter where the PC is purchased | Number to call to locate authorized dealers (n/a = not applicable) |
|---|---|---|
| AT&T | Y | n/a |
| Compaq | N | 800/231-0900 |
| Everex | Y | n/a |
| IBM | N | 800/426-3333 |
| NCR | N | 800/544-3333 |
| NEC Technologies | N | 800/632-4636 |
| Samsung | Y | n/a |
| Tandy | N | 817/390-3011[1] |
| Toshiba | Y | n/a |
| Wyse | Y | n/a |
| Zenith | Y | n/a |

[1]Ask for the Dealer Franchise Division. Naturally, all Tandy/Radio Shack stores are authorized.

fenders. Despite such efforts, *Consumer Watch* believes that it's wrong to tie warranty service to the source of purchase. It puts an unreasonable burden on consumers, and it can end up hurting honest buyers like Jerry Norris.

Fortunately, things are often negotiable in the world of sales and service: If you push hard enough, manufacturers may honor your warranty claim even if you've purchased the product from an unauthorized dealer.

Alternatively, you can purchase a PC from a vendor with more liberal warranty policies. "We don't penalize end users because of the source of their purchase," says Mark Shabsin, service programs manager for Toshiba. "As long as they've got a valid invoice for a Toshiba America product purchased in the United States, we will honor the warranty."

Samsung's philosophy is similar. Any Samsung customer can call an 800 number and be directed to the nearest service location. "I would rather consumers got too much service than too little," says general manager Gary McCabe. AT&T, Everex, Wyse, and Zenith also warranty their products no matter where you buy them; just be sure to hold on to the invoice.

Note, however, that some manufacturers won't provide warranty service unless the computer maintains its basic configuration. If a dishonest dealer replaces the motherboard or swaps out an expensive hard disk for an old clunker, you may have trouble getting factory-authorized repairs. "Nothing unusual should be done to change the system," says Zenith spokesperson Glen Nelson.

Before buying a PC made by Compaq, IBM, NEC, NCR, or Tandy, consumers should find out whether the retailer is authorized. The easiest way to do this is to ask the dealer or to call the dealer locator numbers listed in the table "How Good Is That Warranty?" Or check with ABCD, The Microcomputer Industry Association (312/240-1818). Its 1200 reseller members pledge not to sell gray-market products.

Consumers who want to take advantage of the tempting prices offered by gray-market dealers should shop with caution. Don't buy unauthorized PCs from a questionable retailer; satisfy yourself that the dealer can handle warranty problems, or purchase a separate service contract.

At present, checking on dealers is the best way for consumers to protect their investment. In the long run, *Consumer Watch* believes, hardware manufacturers should change restrictive warranty policies. No matter how their machines are sold, these manufacturers earn a profit. In return, consumers deserve hassle-free warranties.

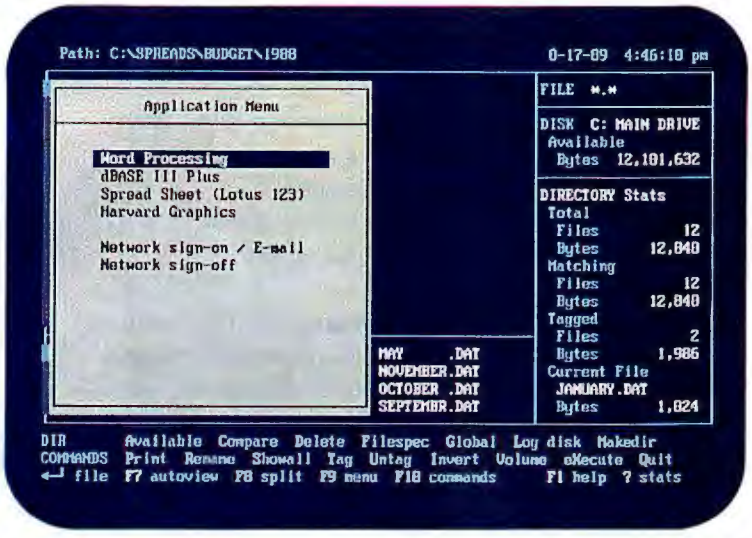
## SHOP TALK

### True Facts About Windows

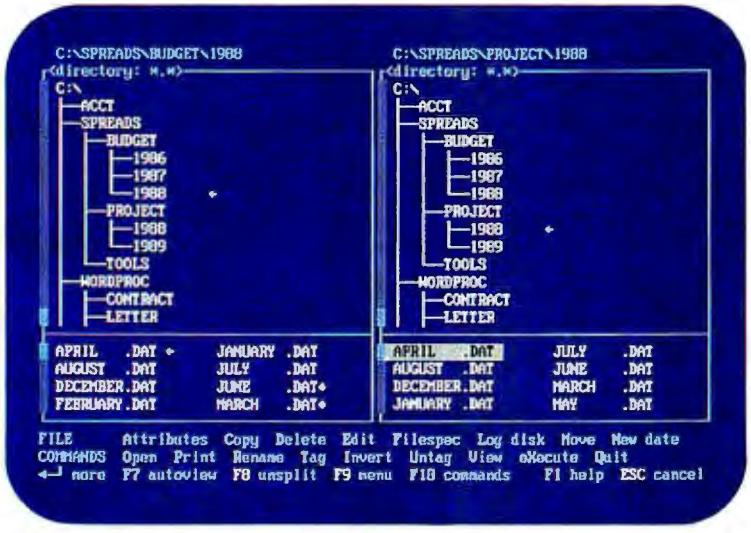
*PC World*'s October 1989 issue carries advertising for *Corel Draw*, and the July issue reviews the program very favorably. However, neither the ad nor the detailed review mentions that *Corel Draw* requires *Microsoft Windows*. Even small, inexpensive programs include a run-time version of *Windows*. Does *Corel Draw* still rate a Best Buy from *PC World?*

*Jack K. Burgess*
*Leonia, New Jersey*

*(continues)*




**Application Menu**—*Just point 'n shoot to run any application or commonly used procedure. MIS managers can easily create customized user environments.*




**Split Windows**—*Simultaneously view, compare and manipulate two separate directories or drives, and quickly locate files.*

**AutoView**—*Save time and guess-work by scrolling through file contents from the directory or file window.*

# Disk management enters a golden age.

## Discover XTreePro Gold. The most comprehensive file manager ever.

If you like the award-winning features of XTree and XTreePro, wait until you see the next generation....

XTreePro Gold goes beyond disk management to provide a complete hard disk user *environment.* With dozens of powerful new features that help you manage files, directories and disks more easily than ever before. And a streamlined DOS interface that eliminates cumbersome commands and automates repetitive operations.

With XTreePro Gold it's simple to view, extract, transfer and encrypt archived files. Search multiple files by contents. Execute applications and associated data files. Copy or move a block of text from one file to another. Even view the contents of files created by most popular word processing, dBASE and Lotus applications.

And XTreePro Gold was designed with the newest generation systems in mind, providing EGA/VGA graphics and integrated mouse support.

Whether you're a PC novice or guru, you'll soon find XTreePro Gold an indispensable productivity tool. If you already use a disk management product, you're even luckier: we'll upgrade users of any XTree Company software to XTreePro Gold for just $25.* And trade-in our competition for just $35.*† Call (805) 541-0604 or (416) 866-8592 in Canada for details. Or see your Authorized XTree dealer for a demo. And make the most of living in the golden age.

XTREE COMPANY

The world leader in disk management.

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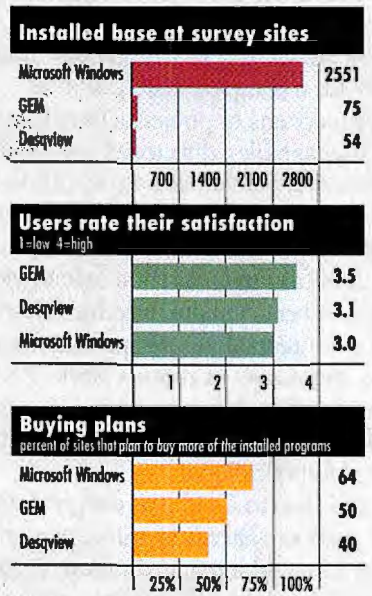
## RATE YOUR SATISFACTION: Windowing Environments

*Microsoft Windows'* popularity is supreme, according to this survey of 175 large organizations. That distinction may be due in large part to Microsoft's generous distribution policies: Many copies of *Windows* have been bundled gratis with the Microsoft mouse.

But despite *Windows'* prevalence, surveyed users don't give it particularly high marks. *GEM's* approval rating at the two survey sites that use it is much higher. Nevertheless, a majority of the companies that already have *Windows* say they intend to buy more of it.




*Source: International Data Corporation. From a survey conducted in May 1989 of 175 large organizations, each with at least 50 PCs.*

**Corel Draw responds:** We will be changing our ad copy to point out that *Windows* is needed to operate *Corel Draw.* We apologize to Mr. Burgess for any inconvenience.

*Jennifer Poulsen*
*Media Relations*

*Editor's note: Currently, less than half of all* Windows *applications come with run-time. According to a Microsoft spokesperson,* Windows 2.1 *will be the last version to offer run-time, although run-time licenses will be available indefinitely to software vendors who apply for them by March 1.* Windows *fans who want to use upcoming products should budget $99 for* Windows/286 *and $195 for* Windows/386.

### Not So Wyse

I bought a Wyse 2112 computer about a year ago, a 12-MHz 286. I was looking for a 286 machine that would be able to use *Desqview* as a multitasking system beyond 640K. With a 286, this usually means buying an EEMS board and disabling conventional memory.

I was looking for a computer that did not require disabling perfectly good memory. I thought I had found the right machine when I read the Wyse manual, which discusses a device driver that allows extended memory to conform to the EEMS specification. I also verified this information with a Wyse engineer.

I therefore bought *Desqview* and the Wyse with a 1MB extended memory board. Unfortunately, I could never get *Desqview* to work with the Wyse EEMS emulation. The Wyse engineer gave me several updates of the software emulation but to no avail.

After I wrote and called the company, a customer representative promised to test *Desqview* and get back to me, but I haven't heard anything. I suspect that the Wyse software can't get extended memory to emulate EEMS. Several knowledgeable people have told me that hardware is required to allow extended memory to conform to the EEMS standard.

*Marc G. Schildkraut*
*Washington, D.C.*

**Wyse responds:** Our technical support department has been working with Marc on the bug that he is experiencing and is close to resolving the issue. We were unable to contact Marc earlier in the year due to the loss of some information on one of our customer service data bases. Fortunately, the system is now up and running again.

*Fred D. Lowe*
*Director of Customer Service*

*Editor's note: The $399 Chargecard from All Computer (800/387-2744) enables users of 286 systems to use* Desqview *for multitasking without disabling conventional memory.*

### Misprint Echolalia

In June 1989 I was thinking about buying an Intel AboveBoard for my AT clone. While glancing through *PC World,* I came across an ad from VLM Computer Electronics offering the AboveBoard for $189. When I called, I was told by a pleasant, apologetic lady that it was a misprint. The AboveBoard was actually $399. Since this was more than I had planned to spend, I thanked her and hung up.

However, the next month the ad was the same. And the next month. I called VLM again and was told again that the ad had a misprint. Digging back a few issues, I found that from April to September 1989, the same company had run the same price

*(continues)*

# INSTEAD OF BUYING A BUNCH OF THESE....

# BUY ONE OF THESE.

**Lasernet Printer Sharing Systems give each office PC access to the printer.**

Every PC in the office needs access to the printer. You can't go out and buy an expensive printer for everyone, so make the office printer accessible to each PC. How? Easy—Lasernet® from Western Telematic.™

With Lasernet, as many as eight PCs can share up to two printers or plotters with full functionality, easily and inexpensively. And Lasernet eliminates the hassle of installing costly Local Area Networks. No matter if you're sharing plotters or printers, dot-matrix or laser, there's a Lasernet that offers all the capability you need without buying more than you need.

*AS EASY AS A, B, C.*

WTI has developed a family of printer sharing systems because

not all office requirements are the same. Lasernet models range from our "A" Series for simple, low-demand printer sharing, all the way to our "C" Series for graphics applications and heavy-demand workloads.

*SETTING THE STANDARD.*

The Lasernet Family has standard features that have set the standard for printer sharing. Up to 2 MB of memory. Easy menu-driven configuration and set-up. Serial/parallel inputs and outputs. Compatibility with all popular plotters, PostScript® printers and software packages like AutoCad,® Lotus 1-2-3® and WordPerfect.®

*RELIABILITY AND SERVICE.*

Lasernet Systems are quality built and American made, backed by a full **three-year** limited warranty—from the 25 year old company that invented automatic printer sharing. And don't worry about technical assistance after your purchase. WTI supports you with qualified technical representatives through our toll-free 800 number.

So if the PCs in your office need printer access, don't buy a bunch of printers or hassle with LANs, just get a Lasernet from Western Telematic.

LASERNET®

For more information on the Lasernet Family, call us toll free at ***1-800-854-7226.*** In California call 1-714-586-9950 or write Western Telematic Inc., 5 Sterling, Irvine, CA 92718.

wti western™ telematic inc.

*Making good connections.*℠

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**Circle 325 on reader service card**

All Video Display Terminals (VDT s) emit electromagnetic radiation that bathes the user through the screen. The figure on the left shows a visualization of electromagnetic radiation from the VDT s. and in red from the screen. The photo on the right shows that the NoRad Shield™ virtually eliminates screen-emitted E-field electromagnetic radiation.

# VDT Radiation Is it harmful?

*. . .The membranes of cells can be sensitive to even fairly weak externally imposed low frequency electromagnetic fields. Extremely small signal changes can trigger major biochemical responses critical to the functioning of the cell.* U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT REPORT

**Women who used VDTs for more than 20 hours each week in the first trimester of pregnancy suffered almost twice as many miscarriages as women in other types of office work.**
The New York Times

Now you don't have to accept the risks. NoRad Corporation has introduced the NoRad Shield which virtually eliminates the through-screen non-ionizing E-field electromagnetic radiation while disposing of glare, reflections, and the static electric field.*

**FREE BOOKLET** To get the facts, write or call and ask for our free booklet entitled, "VDT Health Hazards."

The NoRad Shield is available for all IBM PC and compatible screens, monitors, and displays.

Evidence mounts which shows a connection between non-ionizing radiation and skin irritation, eye damage, and an increase in miscarriages.

*99.999% E field attenuation from 20kHz to >200MHz. H field >50% above 30kHz.

NoRad

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Circle 180 on reader service card

on the AboveBoard. Has *PC World*'s ad department received a corrected ad, or is VLM using a bait-and-switch tactic?

*Charles M. Biggar*
*Centreville, Virginia*

**VLM responds:** We also ran the same ad in *PC Magazine* and *PC Week*. After we became aware of the misprinted price, we corrected it in those publications but inadvertently did not correct it in *PC World*. The reason was that we were canceling our ad and didn't realize that it was going to run for a few more months. We apologize to *PC World* readers.

*Vasu Tadikonda*
*General Partner*

*Take action! If you've got a complaint or a compliment, send it to* Consumer Watch. *We'll follow up and publish letters with the broadest interest. For more information, see How to Contact PC World, page 4.* ●

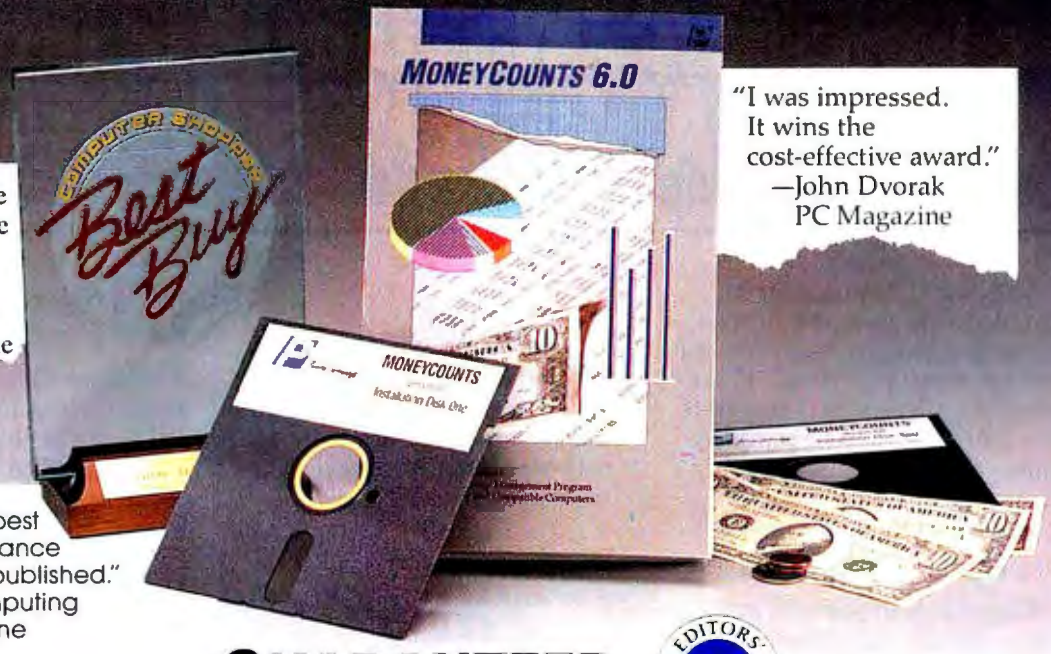
**POWER TIP NO. 88**

**Procomm's Dialing Diary**

You may not know it, but *Procomm Plus* automatically monitors on-line connections and records the name, number dialed, date, time, and duration of a connection. The information is stored in an ASCII file called PCPLUS-.FON. To view the file from a blank *Procomm* screen, press <Alt>-V and enter PCPLUS.FON.

*Steve Epperson*
*Portland, Oregon*

# ANNOUNCING THE NEW $35 MONEY MANAGEMENT SOLUTION...




"Comes with perhaps the friendliest user interface of any financial program . . . an excellent value."
—Compute! Magazine

"I was impressed. It wins the cost-effective award."
—John Dvorak
PC Magazine

"One of the best personal finance managers published."
—PC Computing Magazine

## GUARANTEED.

***"MONEYCOUNTS is one of the finest examples of just how good inexpensive software can be."***
*—Leonard Hyre, PCM Magazine*

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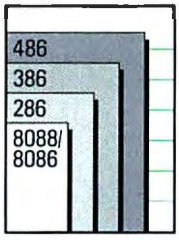
# Just three years ago, Compaq fired the shot heard around the world.

# Compaq introc

As PC technology has evolved, Compaq has been consistently among the first to tap its power. Now with the COMPAQ DESKPRO 486/25 and the COMPAQ SYSTEMPRO, Compaq brings new levels of performance to single and multiple users.

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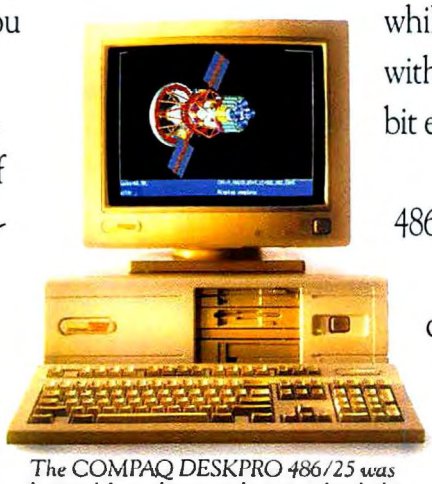

*The COMPAQ DESKPRO 486/25 was designed from the ground up to unleash the power of the 25-MHz 486 microprocessor.*

It's power you can put to work on the most demanding applications. To handle CAD/CAM/CAE, statistical analysis, portfolio modeling, project management and multitasking.

The Intel 25-MHz 486 microprocessor is the heart of the system. Its breakthrough design integrates the processor with a numeric coprocessor (to speed number crunching) and an 8-Kbyte cache (to reduce wait states).

To boost performance further, Compaq added a second-level cache memory controller with 128 Kbytes of high-speed static RAM. Combined with interleaved memory architecture, it lets your data fly between the microprocessor and memory.

The 486 works in concert with COMPAQ Flex Architecture, which integrates a processor/memory bus with the new EISA I/O bus. This enables information to be processed at the highest possible speed while maintaining compatibility with 8-, 16- and powerful new 32-bit expansion boards.

The COMPAQ DESKPRO 486/25 is open for customization.

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You can work with up to seven internal storage devices, choosing from a range of high-performance, high-capacity fixed disk

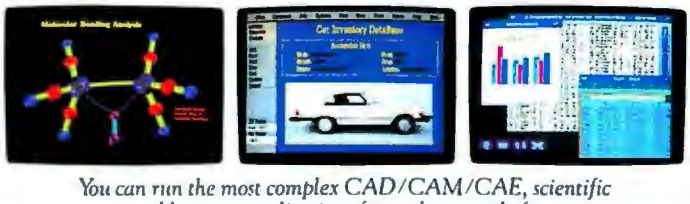
# luces performance
# For one.

drives (the 650- and 320-MB models have fast 1:1 interleave and ESDI controllers).

All told, you can store up to 1.3 gigabytes of data internally, or up to 2.6 gigabytes using the optional COMPAQ Fixed Disk Expansion Unit.

Compaq didn't stop there. Accelerated VGA graphics are built in, giving you a crisp, colorful display and freeing an expansion slot.

The system even has a socket for an optional Weitek 4167 coprocessor to blaze through calculations.



*You can run the most complex CAD/CAM/CAE, scientific and business applications faster than ever before.*

The COMPAQ DESKPRO 486/25. It's sure to bring a little thunder to your office.

# Now for the

In September 1986, Compaq introduced a personal computer that changed people's ideas about what a PC could do.

The COMPAQ DESKPRO 386 Personal Computer was the first PC based on the powerful 386 microprocessor. It gave people the speed and power to do more than ever before. It pushed out the envelope of technology. But did it in a way that let users continue to work with industry-standard software and hardware. With it, Compaq set a new standard in PC performance.

Compaq has done it again.

Introducing the COMPAQ DESKPRO 486/25 Personal Computer and COMPAQ SYSTEMPRO Personal Computer System.

Once again, Compaq has expanded the role of the PC—to meet the most demanding needs of both single and multiple users. And once again, Compaq has pushed out the envelope of technology to deliver new levels of performance and expandability, without sacrificing compatibility.

# sonic boom.

These new computers were designed from a simple observation: People use computers differently. One user using a PC has different needs than a group working together on a network or multiuser system.

The COMPAQ DESKPRO 486/25 is for the individual whose job depends on a PC. It was designed from the ground up to unleash the power of the evolutionary new Intel 25-MHz 486 microprocessor.

The COMPAQ SYSTEMPRO delivers an unprecedented combination of system performance and expandability to networks and multiuser systems. Its breakthrough design gives users the flexibility to work with both 33-MHz 386 and future 33-MHz 486 technology. It also provides the unmatched capability to work with multiple processors.

Inside both you'll find advances like cache memory designs that boost processor performance. Extended Industry Standard Architecture *(Extended ISA* or *EISA)* that accelerates input/output performance while maintaining compatibility. New drive and controller technology that increases fixed disk performance and reliability. And that's just the beginning of this story.

# that will have busi
# And all.

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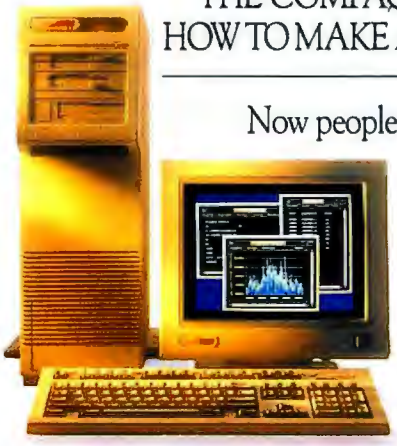

*The new COMPAQ SYSTEMPRO: an unprecedented combination of performance and expandability for multiple users.*

Every aspect of the new COMPAQ SYSTEMPRO has been engineered to bring unprecedented total system performance and expandability to demanding connected environments.

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It's an ideal server to handle advanced local area networking. To take advantage of new client-server applications like shared databases. And to manage multiuser transaction processing.

# ness booming.

Inside, you'll find a series of technological breakthroughs.

The first is a flexible system processor design that lets you work with both 33-MHz 386 and future 33-MHz 486 technology.

Initial models offer a 386/33 system processor that employs a 386 microprocessor optimized with a 64-Kbyte cache memory design and a socket for optional coprocessors. This drives software more than twice as fast as the IBM PS/2 Model 80, and surpasses most minicomputers.

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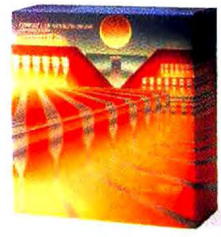
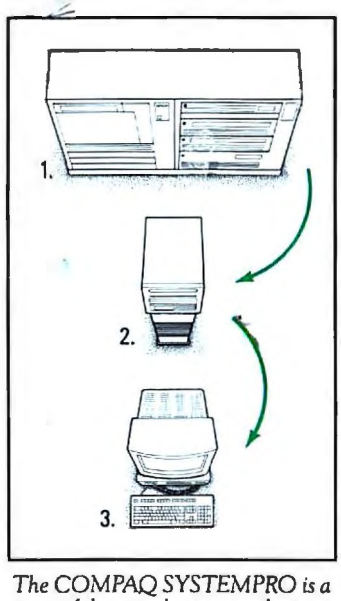


*The COMPAQ LAN MANAGER 386/486 optimizes the COMPAQ SYSTEMPRO for use in OS/2-based networks.*




*The COMPAQ SYSTEMPRO is a powerful network server and mainframe gateway, giving users the fastest access to departmental and mainframe data.*

As you add more users and more complex applications, the COMPAQ SYSTEMPRO grows right along with you. It's the first PC to actually increase in performance when you add options like system processors or drive arrays.

It grows in other ways that are simply amazing. You can expand the 4 megabytes of standard RAM to 256 megabytes, use up to 11 expansion boards, work with 11 storage options and store up to 4.28 gigabytes of data.

You're also free to work in your choice of network and multiuser operating system. This includes Novell NetWare 386, SCO UNIX System V/386, new COMPAQ LAN MANAGER 386/486 and others.

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# WINDOWS JOURNAL

**Firsthand dispatches from the Windows front**

And now for something completely different: what's wrong with Windows

*Stewart Alsop*

One of the worst-kept secrets in the PC industry is that Microsoft is planning to introduce a new version of its brainchild called *Windows 3.0*. If the rumors prove true (and they do seem well-founded), *Windows 3.0* will bring two significant new capabilities to the party: It will manage memory more effectively, and it will provide a more attractive and approachable interface.

Since neither *PC World* nor I like to evaluate products based on rumor, I can't give you any useful insights about *Windows 3.0*. But in the spirit of industry cooperation, I can use a few things I've learned recently about user interface design to tell you what's wrong with *Windows* now; when the time comes, you can decide whether Microsoft's new version signals the state of the art.

At an industry conference last fall, David Liddle presented a framework for evaluating user interfaces. Liddle is chairman of Metaphor Computer Systems, which has done pioneering work in how to present data to users so they can develop their own applications. He's a former manager at Xerox PARC, home of much of the original work on user interfaces. Liddle's presentation advanced my understanding of user interface design and helped me see what's wrong with *Windows*. Much of this column is based on that presentation.

A user interface has three basic components: the information display, the command invocation, and the user's conceptual model. Information display is how stuff is shown on screen—how the icons are designed, what the window borders look like, which fonts and colors are used, and so on. Presentation Manager improved considerably in this area with last fall's introduction of version 1.2 (which Microsoft has admitted contains many of the improvements that will be seen in *Windows 3.0*), with its 3-D icons, attractive colors, and proportional system fonts.

Command invocation refers to the way you tell the computer to do something—in *Windows*, for instance, the primary command invocation system is to click on the action bar, select a command from the pulldown menu, and use the mouse button. The command invocation system in Presentation Manager 1.2 was improved with the addition of what Microsoft calls a dropping-and-dragging protocol, which allows users to start the program and open the document in one action.

The user's conceptual model governs how the different parts of the graphic interface are represented; it determines how users will interpret what's presented on screen. When users see an icon of a printer, what should they do? If they click on a trash can, can the file they put there be retrieved, or has it been deleted forever? The key to the success of any conceptual model is how internally consistent and logical it is: Does everything that appears on screen fit into the conceptual model in a way that makes sense? When users act based on their interpretation of the model, does the result match their expectation?

The most common conceptual model used in graphic interfaces is the so-called desktop metaphor. The desktop metaphor is obvious (or seems so now), since most computers are designed primarily for office work and the common denominator in an office is the desk. But the point is not to recreate the office on screen but to provide users with a system for recognizing the components of the interface and responding to them intuitively.

*(continues)*

ANTHONY RUSSO

Based on his long experience with graphic interfaces, Liddle believes that information display accounts for only about 10 percent of the success of any user interface, command invocation for about 30 percent of that success, and the conceptual model for the remaining 60 percent.

So how does *Windows* measure up? It has a good information display, particularly if *Windows 3.0* takes its cue from Presentation Manager 1.2. It also has a fairly logical command invocation, since the menus and dialog boxes are consistently implemented and are supplemented by keyboard equivalents and visual highlights. The command invocation does get corrupted in some cases, however, to make veteran DOS users feel more comfortable.

In the case of the conceptual model, *Windows* falls flat. In fact, it doesn't have a conceptual model to speak of. Rather than being designed according to a consistent model for interaction between user and computer, *Windows* has been designed in response to Microsoft's and IBM's changing competitive strategies. The interface has ended up as an amalgam of different ideas and concepts, held together by high-tech chewing gum and baling wire. The fundamental principle that rules *Windows* is still that of files and directories, a model only a programmer or expert DOS user could love. And the desktop metaphor that *Windows* uses, theoretically like other graphic computer systems, has nothing on its desk—no folders, no trash cans or shredders, no copying machines or printers. Indeed, the only items on a *Windows* desktop are program icons, for which there are no physical equivalents in the desktop metaphor.

The main reason that people still find *Windows* (and by extension, Presentation Manager) hard to use and understand is that the designers of the interface have never been able to rely on a consistent, well-designed conceptual model to extend the functionality of the system. Instead, every time someone comes along who has an interest in *Windows*—with IBM leading the pack—they modify *Windows* to suit their own perception of the problem and their own political agenda. And *Windows* ends up as a kind of melting-pot inter-

*(continues)*


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face: sometimes attractive, often useful, but frequently maddening and confusing. For *Windows 3.0* to be truly successful, it will have to do more than pretty up the icons and manage memory more effectively. Microsoft will have to go back and rethink the underlying metaphor so that users will not have to jump through conceptual hoops to get their work done.

*If you'd like a free copy of a study written by Dave Liddle about the framework for evaluating user interfaces described in this column, please request a copy on your letterhead from Carol Gilbaugh, Metaphor Computer Systems, 1965 Charleston Rd., Mountain View, CA 94043. No phone calls, please.* ●

*This is Stewart Alsop's final entry in his* Windows Journal.

**POWER TIP NO. 89**

### One-Line Multiple Commands in R:base

*R:base for DOS* can process only one line at a time from its R> prompt. But that doesn't mean you're limited to testing a single command. You can test simple queries and other conditions by using semicolons. *R:base* interprets semicolons as line separators, allowing it to read and process a one-line multicommand routine, such as If VAR1 > 1 then; Beep; Endif, from the prompt.

*David McSpadden*
*Takoma Park, Maryland*

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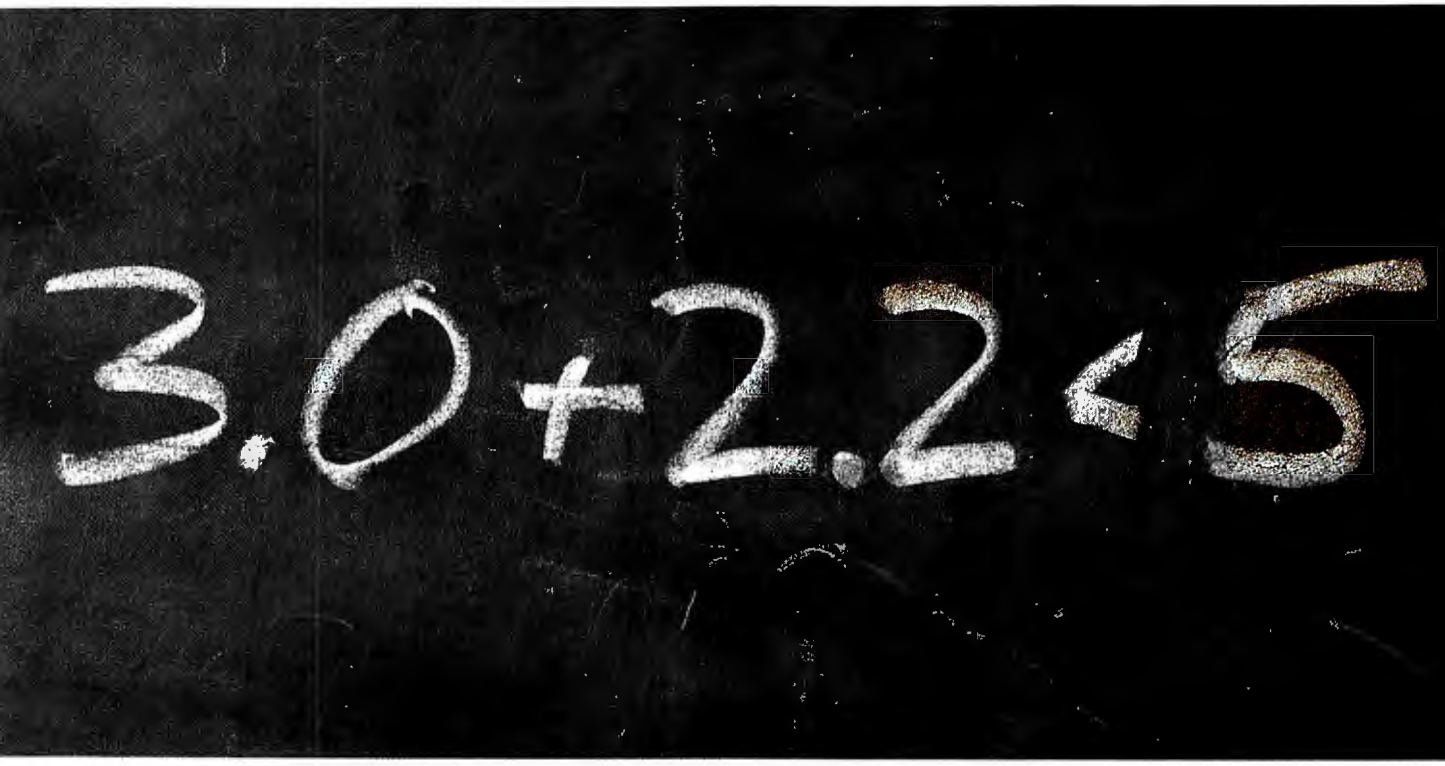


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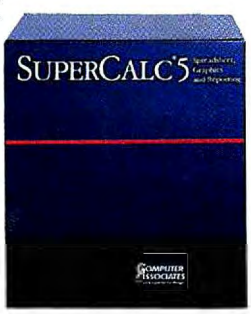


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*Edited by* ERIC BENDER

**Dual Microsoft Role Questioned**

# Windows Opening Wider

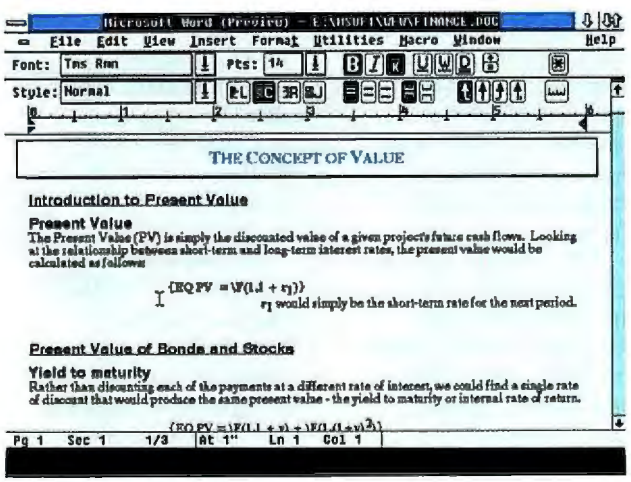
## *Upgrade to Break Memory Barriers*

New system software never drops out of a clear blue sky; dozens of software and hardware suppliers check it out long before its public unveiling. Microsoft's major *Windows* upgrade has been one of the industry's worst-kept secrets. But judging by the rumors and the recent wave of new *Windows* applications, the graphic environment will receive a lot less talk and a lot more customer investment in 1990.

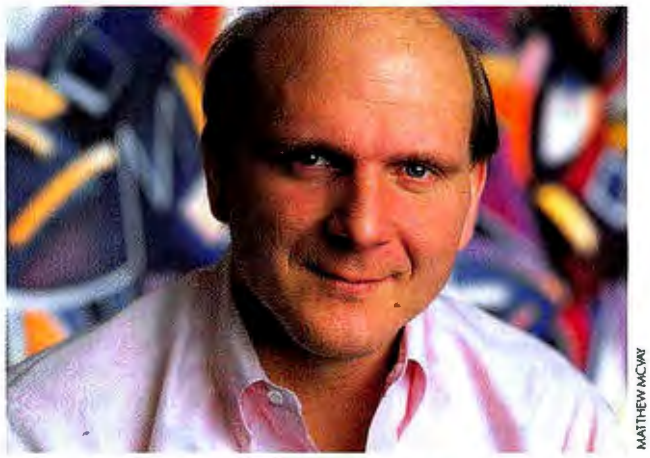
Expected sometime early this year, *Windows 3* should offer much faster performance by directly tapping extended memory on 286 and 386 machines via "DOS extender" technology. Equally important, it should show a friendlier user interface—including a long-overdue cleanup of *Windows*' klutzy file manipulation system.

Major applications like Microsoft's own *Word for Windows* promise to join *Excel* and *PageMaker* in the lonely ranks of best-selling *Windows* packages. WordPerfect Corporation and a few other leading skeptics are finally joining the *Windows* parade. And innovative packages like Asymetrix's *ToolBook*, an easy-to-use application builder à la *HyperCard* on the Mac, could hit it big.

Last fall *Windows* even garnered a public pat on the back from IBM, which has spent the past year watching *Windows* derail OS/2. But although the upcoming OS/2 for 386s remains *the* strategic platform for the nineties,




**Windows is attracting big titles from leading vendors—including Microsoft's own Word for Windows.**



MATTHEW MCVAY

**Microsoft will steadily enhance Windows while keeping memory requirements below 2MB, says Steve Ballmer.**

"there are millions of 286 machines out there with limited extendability, and it would be wrong to tell people that OS/2 is a great solution for those," says Lee Reiswig, director of software strategy, for IBM's Entry Systems Division. "OS/2 is never going to take less than 2MB of memory, and *Windows* fundamentally lacks many of the advanced features of OS/2. We need both things."

Despite the nice words, IBM offered zero in terms of concrete product or marketing moves, so most developers found no additional encouragement to work with *Windows*. In fact, some claim that behind the nonaggression pact lie Microsoft concessions that curtail *Windows*' long-term health. "*Windows* has had its wings clipped a bit," maintains Lotus chairman Jim Manzi.

However, "no deal was made," Reiswig says flatly. Adds Steve Ballmer, Microsoft's senior vice president for system software, "*Windows* will keep extending and enhancing, but it will always be targeted at the user with 2MB of memory or less. OS/2 and *Windows* are two separate design points."

But while OS/2 and *Windows* look more similar with each release, they're built on incompatible graphic and operating system foundations. And moving from *Windows* to OS/2 is likely to cost users dearly. Given that, many discard the IBM/Microsoft advice: Choose OS/2 if your machine has more than 2MB of memory and 30MB of storage, and *Windows* if it doesn't.

"That's a terribly artificial distinction," points out Bill Higgs, vice president for software research for InfoCorp of San Jose, California. He suggests that rather than let your hardware investment dictate your soft-

*(see Windows, p. 74)*

# 386SX Appeal Grows

## *Prices Drop Rapidly in Past Year*

If you're a chip manufacturer, you may or may not agree with Oscar Wilde that "each man kills the thing he loves," but you end up pulling the plug on every product so that its faster/better replacement can prosper. Only Intel, however, targets its own still-profitable, still-best-selling silicon with the marketing equivalent of tactical nuclear weapons.

Intel wants to replace its 16-bit 80286 processor as an entry-level business platform with the newer 80386SX chip, a hybrid that combines 32-bit internal processing with 286-like connections to the rest of the PC. Intel wants this so badly that it has splurged millions on billboards and newspaper advertisements, each showing "286" slashed out in red ink, followed by happy talk about the advantages of the 386SX.

While the public may wonder about this strange marketing strategem, Intel does offer solid evidence that customers should make the switch, and rising sales of 386SX machines indicate the lure of Intel's argument.

The chip is priced at $67 in volume, and 386SX systems cost little or nothing more to manufacture than 286 PCs, according to Intel. The chip gives you 16-MHz speed and the ability to run 32-bit software like *Desqview/386* and *Paradox/386*. "The 286 is dead, long live the 386SX," says John Murphy, senior analyst with Wohl Associates in Bala-Cynwyd, Pennsylvania. "That's been our line for a year."

Intel's campaign is not altogether altruistic: Unlike the 286, which is manufactured by second sources, the 386SX and all its 32-bit peers represent an Intel monopoly.

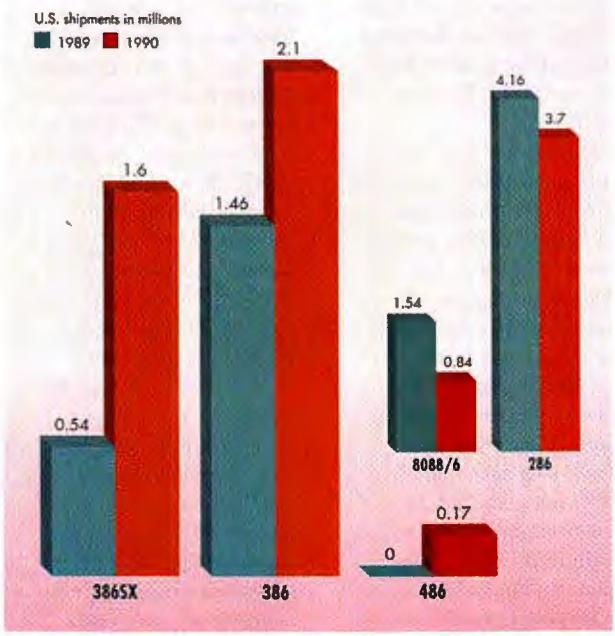
Compaq released the first 386SX PC in mid-1988, but sales of the machines began taking off last spring, as Compaq and NEC lowered prices and IBM jumped in. Now that you can get a 386SX machine for $2500 or less from major vendors, "people are moving toward this as their mainstream platform," says International Data Corporation analyst Bruce Stephen.

While vendors try to persuade you that you're getting a 386 machine at a 286 price, that's not quite the value equation. Take Dell Computer's 286 and 386SX PCs, which both won Best Buy awards in *PC World*'s December 1989 issue. Aside from the CPU and 1MB of additional memory, Dell's 386SX System 316 shares most specs with the 286-based System 210. At $3499, the 316 costs 59 percent more than the 210 and on average ran five DOS benchmarks only 28 percent faster.

ATs still make sense for price-conscious users in the home and in some businesses, where "single-user DOS applications may be fine," Stephen says. However, he suggests that pushing 286s to higher clock speeds is a doomed rearguard action. A year ago, chip vendors like Advanced Micro Devices beat the drums about high-speed 286s—one argument was that the current OS/2, optimized for a 286, actually runs faster on a 16-MHz 286 than on a 386SX—but these systems haven't fared well.

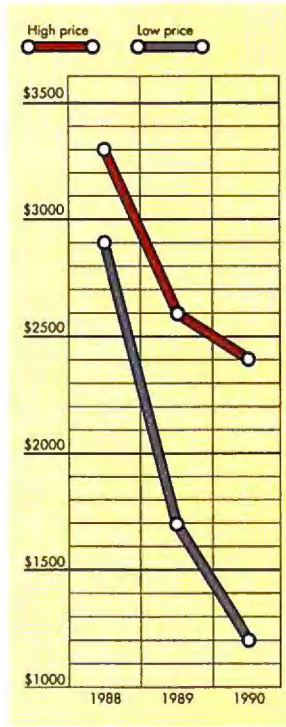
Will we see faster versions of the 386SX itself? Stephen expects a 20-MHz version to appear in systems by midyear; Murphy figures that Intel will take this step partly to create a chip with a low power consumption for battery-powered laptops. —*E.B.*

## SX Sales Skyrocket




U.S. sales of the 80286 peaked in 1989, with sales of portables playing a key role, but unit sales of the 80386SX should triple to a projected 8.4 million in 1990, according to International Data Corporation.

## 386SX PC Prices Slide




Costs of 80386SX machines have fallen drastically in the past year, and further cuts are forecast. These are Wohl Associates' estimates of pricing on SX machines from leading vendors, without a monitor but with VGA and a 30MB or 40MB hard disk.

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## SL

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**PC Magazine** [July 1989, Page 263]:
"The Buffalo SL peripheral sharing device is simple enough to use immediately yet sufficiently flexible to form the center of a fairly complex network. It's a good choice..."

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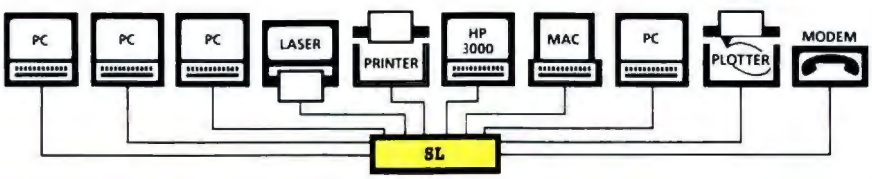


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Circle 215 on reader service card

# Integration Battle Rages

## *Microsoft, SPC Target New Users*

While a state of peace and goodwill spread across much of the globe during the holiday season, it was conspicuously absent among marketers of entry-level integrated software. Microsoft and Software Publishing Corporation (SPC) stepped up their high-stakes struggle for the hearts, minds, and dollars of novice users, business executives, and others shopping for an easy-to-use sampler of major applications.

This market has been a flash point since September 1987, when Microsoft launched its *Works* attack on the cozy 150,000-unit-a-year business of SPC's *PFS: First Choice*. The action heated up late last year with the introduction of *Works* version 2.0, which rolled in following a bombardment of dealer funds and consumer advertising not only from Microsoft but also from IBM—thanks to a bundling deal that put *Works* aboard some PS/2 models.

SPC fought back with heavy co-op advertising and other dealer support programs, and extensive bundling of *Choice* with both computers and other software. One offering paired the $159 *Choice* with a free copy of Intuit's popular *Quicken 3.0* (normally $60) and sold on the street for $89.

*Choice*, the 3-year-old trailblazer, has long held the high ground. Holiday season totals aren't yet tallied, but during September, *Choice* outsold *Works* 5200 to 3400 in computer retail stores, says JoeAnn Stahel, vice president at StoreBoard in Dallas.

But *Works* product manager John Nielson points out that computer dealers are only one means by which software gets to market, adding that the IBM deal alone will produce sales greater than the 175,000 units of *Choice* that he predicts will be sold this year.

SPC marketing director Stephen Cullen counters that most of *Works*' growth has come at the expense of integrated packages other than *Choice*—a proposition with which Nielson is forced to agree. Distributor giant Softsel reports that the two programs have been trading the number 10 and 11 spots on its HotList, without a clear leader for almost a year.

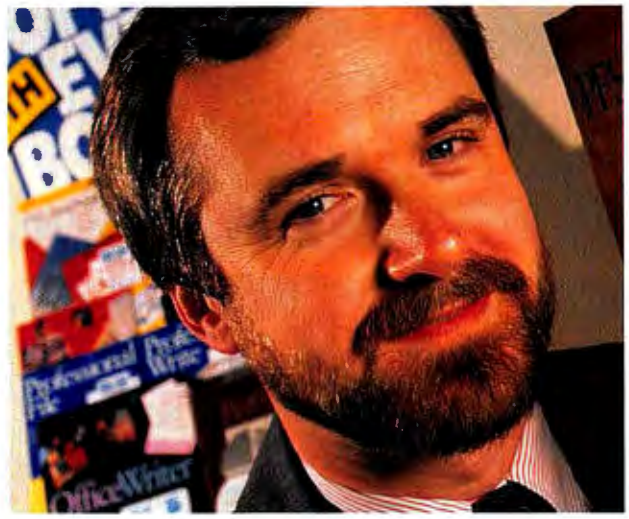
Nielson figures that the competition has boosted shipments of low-end integrated software by half, raising the U.S. total for all integrated packages to more than 800,000 copies a year. The two starter packages have all but eclipsed high-end offerings like Lotus's *Symphony* and Ashton-Tate's *Framework*.

Both Microsoft and SPC are willing to invest a little extra in order to entice users who may one day move up to applications with more features. Nielson and Cullen are critical of each other's product but effusive in their praise of each other's marketing techniques. Nielson enthuses about SPC's cash incentives for salespeople. Cullen raves about Microsoft's heavy marketing outlay, which, he maintains, will top $1 million in the fourth quarter. "We question whether they have an eye to profitability at all," he adds.

While dealers tend to feel strongly about one or the other, most will carry both packages so they can piggyback on the heavy advertising, notes Tony Buddes, operations manager of Los Angeles's Software Supermarket.

Enlisting the help of dealers like Buddes is key, because both products are designed primarily for users who come into a

*(see Integration, p. 74)*



ANNE HAMERSKY

**Like Nielson, Software Publishing's Stephen Cullen has made crucial hardware bundling deals, but he also sells First Choice with Intuit's Quicken.**

MATTHEW McVAY

**Microsoft's John Nielson estimates that fierce competition between Microsoft Works and First Choice has boosted overall sales of low-end integrated software packages by half.**

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PC MAGAZINE EDITOR'S CHOICE
March 14, 1989

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**Circle 252 on reader service card**

# PS/2s Take New RISCs

## *But MCA Bus Masters Still Lag*

WARD SCHUMAKER

What the PS/2's Micro Channel architecture (MCA) really needs is something unique to put on the bus. IBM's latest candidate is the Wizard, a $7000 board that turns Model 70s and 80s into serious competitors for the role of technical workstation (and not just the low-end variety).

The Wizard is the first announced product built around the 860 chip, Intel's mainstream entry into Reduced Instruction Set Computer (RISC) processing. This 64-bit, 1-million-transistor chip means to gobble up number-crunching tasks like statistical analyses and financial modeling, no matter how intimidating. Performance on such jobs is often measured in thousands of floating-point operations per second (MFLOPS); IBM says its Wizard demos work at up to 55 MFLOPS, arguably putting the hardware up against top-of-the-line Sun machines.

Such products "give PCs a real shot at the workstation market, offering comparable performance for a lot less money," says Bill Lempesis, analyst with Dataquest in San Jose, California. He cautions, however, that a workstation's success depends less on raw horsepower than on application support. David Marshak, analyst with Patricia Seybold's Office Computing Group in Boston, adds that the 860's general-purpose coprocessing muscle may make it much more important in distributed network use.

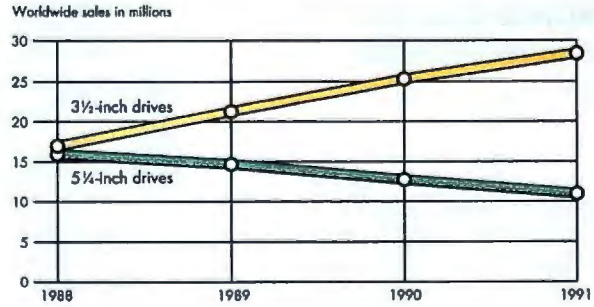
IBM doesn't promise general Wizard availability before midyear, so once again Big Blue may find itself in a throng of vendors when delivery actually begins. And other suppliers will offer 860 boards for alternate buses. But the MCA bus-master design lets it share system resources without bugging the CPU, so multiple Wizards can collaborate on a PS/2, each working on its own task under OS/2. At the COMDEX Fall show, IBM even showed true parallel processing, under UNIX, among three Wizard boards on networked Model 80s.

IBM also displayed an intriguing "work group computer" prototype stuffed with three 386SX cards and an attachment to a miniature System/370. The network-in-a-box allowed five users to hot key between PC and mainframe applications.

Most striking of the PS/2 plug-ins, though, was a "super server" meant to rebuff the challenge of Compaq's Systempro (see the sidebar "Super Servers" in "HP's EISA Breakthrough," January 1989). This demonstration packed a Model 80 with five bus-master boards—a 486, two SCSI hard disk controllers, and two Token-Ring adapters—and connected it to 2GB of hard disk storage. Running prerelease 32-bit OS/2 network software on two nets, the server shoveled 1MB of data to each of 16 workstations simultaneously. And the bus masters worked cooperatively without requiring any modifications to the application software.

Consumer warning: These were "technology" demos, not products, and MCA bus masters are only just appearing in force on the landscape. As one case in point, IBM has not shipped the SCSI controller it touted more than a year ago. One bottleneck has been the lack of bus-master interface chips; recent deals with Intel and Chips and Technologies should end the drought this quarter. In the meantime, backers of the competing Extended Industry Standard Architecture (EISA), who started more than two years after IBM but paid more attention to third-party components, can exhibit just as many bus masters. —*E. B.*

## 3½-Inch Floppies Dominate




The worldwide installed base of 5¼-inch floppy disk drives exceeds that of 3½-inch models by 87 million to 63 million, respectively, according to Disk/Trend. But in new shipments, the more compact models began to forge ahead in 1988. While 2-inch designs and very high density 3½-inch models (with 20MB or more) are arriving, none is close to being an industry standard, and nothing will soon challenge the leadership of the 3½-inch drive.

# Primo modem, mini moola.

*Intel MNP5 modems—they're new, they're primo, and, most importantly, they're available.*

Heaven knows, we tried to make our modems expensive.

For starters, we designed an MNP modem that's the last word in error-free communications. *Arrivederci* misconnects disconnects, garbled characters, and fouled-up files. Naturally, it had to be fast, too. So our new 2400 bps modems employ Class 5 data compression for effective throughput up to 4800 bps. Which can save you time, and a tidy sum of money on long-distance calls.

Nor did we stop there. Our internal modems feature a high-speed serial interface and buffering to operate flawlessly while multitasking, using Windows, working with Desqview,™ 386™ microcomputers, OS/2,™ and so on. We house our external modems in rugged aluminum cases. And all five Intel models are Hayes compatible, to get along famously with almost any software you choose. Speaking of which, each modem comes with free communications software. Plus you get a five-year warranty—the best in the industry—a toll-free technical support hotline, and of course, Intel quality.

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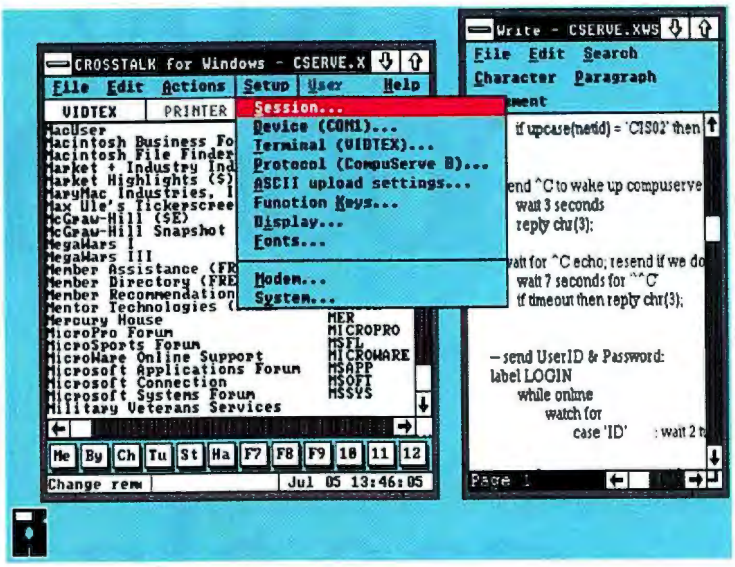
**Circle 109 on reader service card**

# Windows

*(continued from p. 67)*

ware strategy, you should consider application scenarios in order to answer such questions as whether you need OS/2's robust multitasking. The waters get even muddier because of IBM and Microsoft's new plan to take the current OS/2 and shrink it to 2MB of memory.

Software authors already committed to *Windows* worry less about OS/2 (where most of them already are moving) than about competition from Microsoft's own application group. "A lot of people are really concerned about Microsoft's dominance of the *Windows* market, which shades into the proprietary," says Jeffrey Tarter, publisher of the *Softletter* newsletter in Watertown, Massachusetts. Many developers declare that Microsoft should spin off its application group altogether.




**As the Windows applications suite grows, so do the benefits from cooperation among applications. Here, Crosstalk for Windows and Windows Write combine to tackle CompuServe communications tasks.**

As Tarter notes, *Word for Windows* gives more grounds for complaint. The package includes a "BASIC-like control language" that Microsoft will extend to drive other *Windows* applications. But Microsoft's application group (which is responsible for BASIC products) hasn't decided whether to license the language. "For *Windows* developers, it's a very crucial question whether they can plug into the control language," Tarter notes. If they can't, their offerings can't compete with Microsoft's in the full application integration that is *Windows*' key benefit.

Despite these squabbles, and despite IBM's and Microsoft's never-ending posturing on OS/2, the *Windows* snowball keeps rolling. International Data Corporation of Framingham, Massachusetts, estimates that more than 2 million copies shipped last year, half of those bundled with hardware. "*Windows* will be a major platform," adds InfoCorp's Higgs. —*E. B.*

# Integration

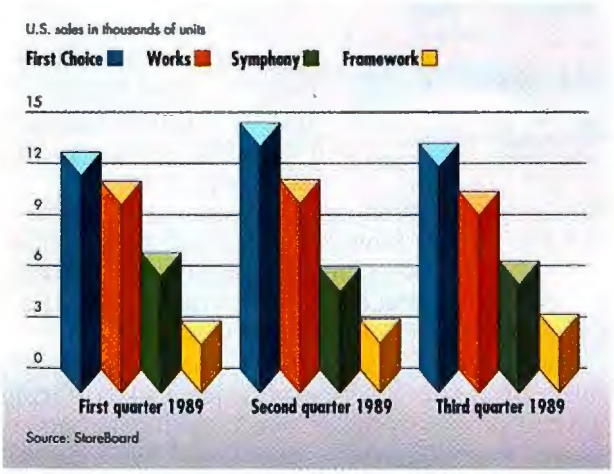
*(continued from p. 70)*

dealership with little idea what software to pick for their new computers. Dealers like such "idiot-proof" software because it doesn't result in lengthy support calls—or even worse, a returned computer.

Either package more than fills the bill. *Choice* offers a basic word processor, a spreadsheet, a filer, and a telecommunications suite you can select from an opening menu, and it uses similar commands across all applications. *Works* achieves an increased level of integration by adding multiple windows and expanded memory support. Eventually, though, most users move up to full-featured, single-task products or need to swap with company-standard applications. Both *Choice* and *Works* could do a much better job of linking with other packages.

The future holds periodic promotions, bundling with low-priced desktops, and action in the red-hot laptop market—a natural for these multitalented, low-memory packages. —*Mike Hogan* ●

## First Choice Leads Parade of Integrated Software




U.S. computer retail stores' quarterly unit sales figures for the four best-selling integrated packages. One reason for the great disparity between figures for the two leading products and the next two is that Ashton-Tate's *Framework* and Lotus's *Symphony* sell for more than four times the price of Software Publishing's *PFS: First Choice* and Microsoft's *Works*.

TWO-FISTED MANAGEMENT
There's no business like my business, there's no business I know...
Marek, 33
©1990
Hi. You know me. I'm one of the little guys. The backbone of every major corporation. The "grunt."
IN
OUT
I'M THE GUY WHO'S BEEN AROUND AS LONG AS ANYONE CAN REMEMBER.
Keeler, over there? He came with the building.
HAW
YUK YUK
WHEN THE BOSS SAYS, "JUMP," I ASK "HOW HIGH AND WHAT'S MY TIME FRAME?"
You can come down now.
IF THERE'S SOMEONE TO BLAME, IT'S USUALLY ME.
What a mess! Looks like a "Keeler."
TSK TSK
AND IF THERE'S NO ONE TO BLAME, IT'S STILL USUALLY ME THEY PIN IT ON.
WHEN IT COMES TO OVERTIME, YOURS TRULY IS DRAFTED FIRST.
Your wife sent a change of clothes and a sponge bath.
THE ONLY TIME I SEE A PROMOTION IS WHEN IT'S SOMEONE ELSE'S.
Bill, it's about time you moved out of Keller's level.
AND THE BOSS STILL DOESN'T GET MY NAME RIGHT
Listen, uh... Kruller, about that salary request — I'm sure you understand how it is. You did last time.
I KNOW, I KNOW. I SHOULD BE LOOKING THROUGH THE PAPERS. I SHOULD BE OUT POUNDING THE PAVEMENT, INTERVIEWING FOR A NEW JOB.
IN
OUT
IN AGAIN
OUT AGAIN
WELL, I DID.
THAT'S HOW I GOT THIS JOB.
KICK
Now, what's wrong with this coffee machine?!!
KEMPLER!...UH, KEEBLER!

MARK MAREK

# FOR $1899, YOU CAN GET A LOT OF COMPUTERS.

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And every Dell System comes with a one-year warranty, toll-free technical support and next-day desk-side service provided by the Xerox Corporation.Δ So for $1899, you don't have to buy a cookie cutter clone and go it alone.

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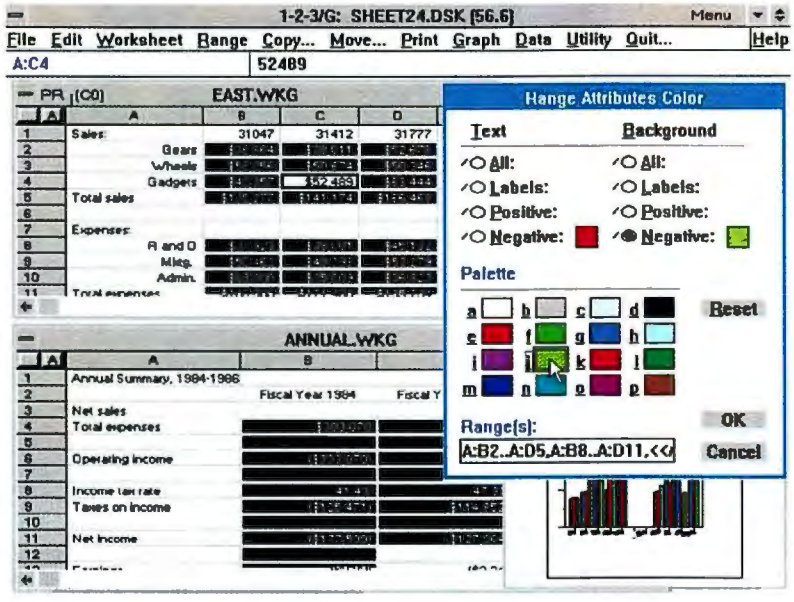
Circle 318 on reader service card

# 1-2-3/G: Good News for OS/2 Users

**The PM version of 1-2-3 hits new highs in ease of use and presentation graphics—**

**and it's keyboard compatible with earlier versions.**

*Robert Lauriston*




**Lotus's structured dialog box allows the Text and Background submenus to share the letters A, L, P, and N for the All, Labels, Positive, and Negative choices. In a standard SAA dialog box, the Background submenu would have to use L, B, O, and G instead, making menu choices hard to remember. Here, negative values in a range including parts of two files are formatted as red text on a yellow background.**

If *1-2-3/G* doesn't draw users to OS/2, nothing will. It has most of the features found in Lotus's aggressive competitors, particularly *Excel*, plus a few major new abilities all its own. Best of all, this power is organized into a remarkably well designed program that significantly advances the state of spreadsheet art.

Expected to arrive by midyear, *1-2-3/G* incorporates *1-2-3* release 3's advanced features like 3-D and data base links, but it doesn't stop there. Its Solver goal-seeking utility automates "what-if" analysis (see the sidebar "What-If Time-Saver"). Its graphing tools surpass those of any spreadsheet now available. As in *Excel*, ranges can be any shape and can even combine disconnected groups of cells. There's no limit to the number of fonts you can use in a single worksheet. And all this functionality is tied together with an innovative Presentation Manager interface that outdoes even the Macintosh by combining a mouse-driven WYSIWYG interface with familiar keyboard control.

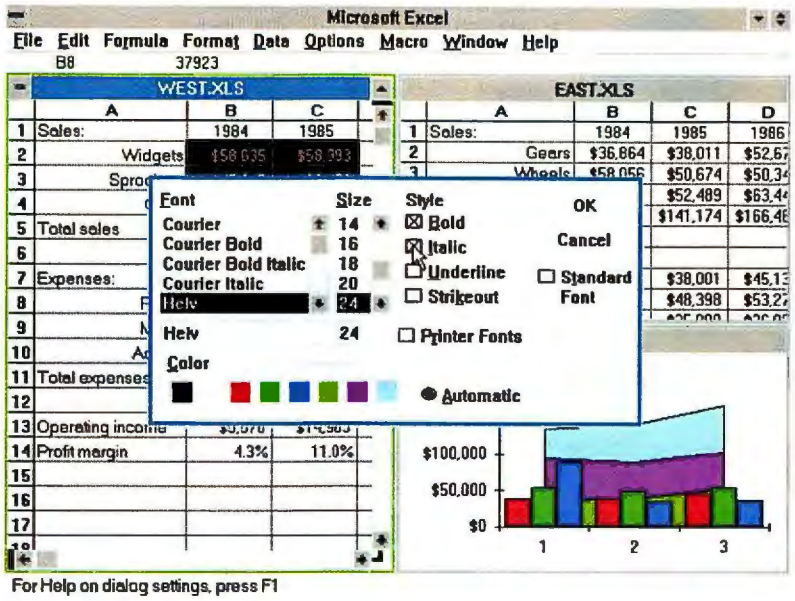
In addition, a new technical alliance with WordPerfect means that the OS/2 version of that company's heavyweight word processor will share *1-2-3/G*'s slick interface. Lotus and WordPerfect claim

**PC World previews are informal assessments of products that at press time were still in the development stage. Complete reviews—including features evaluations and performance testing—will appear only after a product is officially released.**

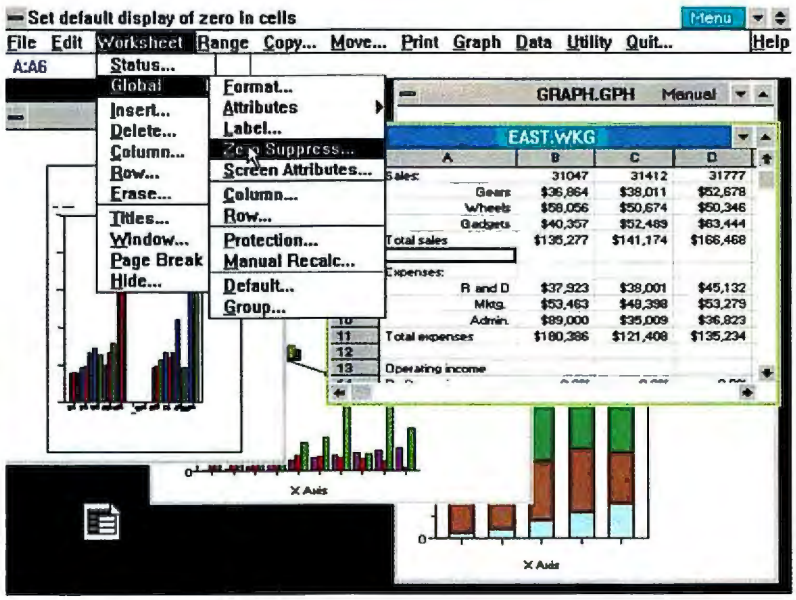
that the two programs will look "like they came from the same company."

### Impressive Interface

While *1-2-3/G* gives mouse users point-and-click access to every feature, it also remains keystroke compatible with the original *1-2-3*. Lotus's cascading menus and structured dialog boxes let you navigate menus by tapping initial letters, just as in earlier releases, so experienced users will be immediately productive. IBM was so impressed by Lotus's menu and dialog box designs that it has added them to its




**Excel for PM's standard SAA interface decrees that since S stands for Size, the Strikeout and Standard Font options are stuck with harder-to-remember K and R.**




**Lotus's cascading menus show your path as you navigate 1-2-3/G's submenus. In other respects, though, the menus shown strongly resemble earlier versions.**

## SNAPSHOT

**Lotus 1-2-3/G**

The industry-standard spreadsheet prepares to take the high ground in the OS/2 market.

**KEY FEATURES**

- **Graphic interface**
- **Keystroke compatible with earlier versions**
- **Dialog box previews**
- **Discontinuous ranges**
- **Automatic what-if calculation**
- **Superior graphing**

**AVAILABILITY**

1990 (date to be announced)

**PRICING**

Unavailable at press time

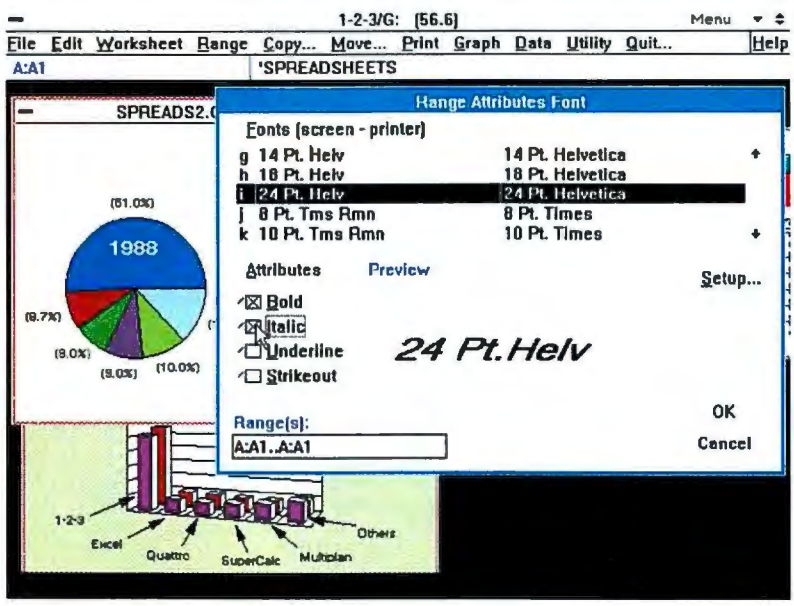
**Lotus**

55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500

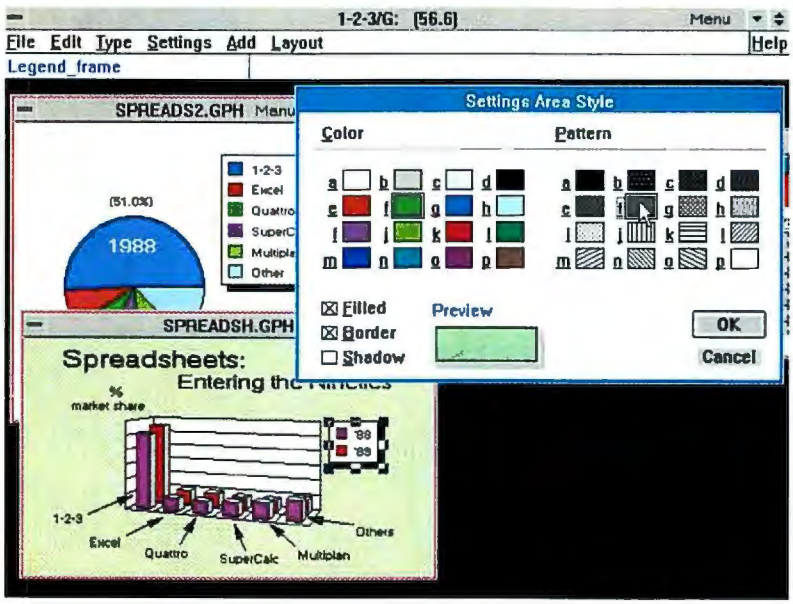
**Reader service no. 731**

Common User Access guidelines.

*1-2-3/G* outdoes *Excel* in fonts and text formatting. A preview window in the text format dialog box displays sample text that changes as you select different fonts, point sizes, text attributes, and colors. This lets you quickly view different combinations before you apply your final choice to the cells you've selected. As in *Excel*, you set colors simply by picking them from a palette, though *1-2-3/G* gives you 16 choices instead of 8. While *Excel* can assign colors only to text and borders, *1-2-3/G* can also paint backgrounds, and cells that meet certain




**In 1-2-3/G you pick fonts from a scrolling list. Lotus's preview window in the dialog box lets you try out various font attribute combinations before reformatting.**




**The Color and Pattern palettes give you a total of 256 combinations, and you can add borders and drop shadows. Both of the graphs shown here are hot linked to the same data.**

conditions—for instance, you can make all negative numbers automatically show up red on an aqua background.

*1-2-3/G* also bests *Excel* in formatting spreadsheets. As in *Excel*, you can set column width and row height with the mouse just by clicking on a border and dragging it to a new position. But you no longer need to set each column's width manually. Instead, you can select a whole set of columns and automatically adjust their width according to each one's longest entry.

Like *Excel*, *1-2-3/G* lets you define nonrectangular, even discontinuous data ranges. Lotus calls such ranges "collections" and surpasses *Excel* by letting them span files. Normally you just click the right mouse button and drag to select a block. If you hold the <Ctrl> key and click, dragging appends another block to those already selected. Unlike *Excel*, *1-2-3/G* lets you skip the <Ctrl> key and just click the *left* mouse button instead. (Keyboard equivalents also are available, of course.) A range thus defined is just like any other data range and can be operated on by any range command (except that multifile ranges can't be named).

Several new features simplify working with multiple worksheets and graphs. The beta version tested could open 17 windows in a single *1-2-3/G* session—more than will display readably on a standard VGA monitor. The Group command lets you copy formats, fonts, colors, borders, and other settings between worksheets, and the whole group can be linked to update every worksheet when the layout of any one is changed. "Desktop" files let you save working sets of open files and windows.

*1-2-3/G* expands on release 3's Perspective mode by synch-scrolling five overlapping worksheets at once. However, this release 3 holdover is unnecessary in the PM environment. It would be less confusing and more flexible if Lotus let you cascade and synchronize the scrolling of multiple worksheet windows, perhaps suppressing their borders to recreate Perspective mode's clean appearance.

### Presentation Power

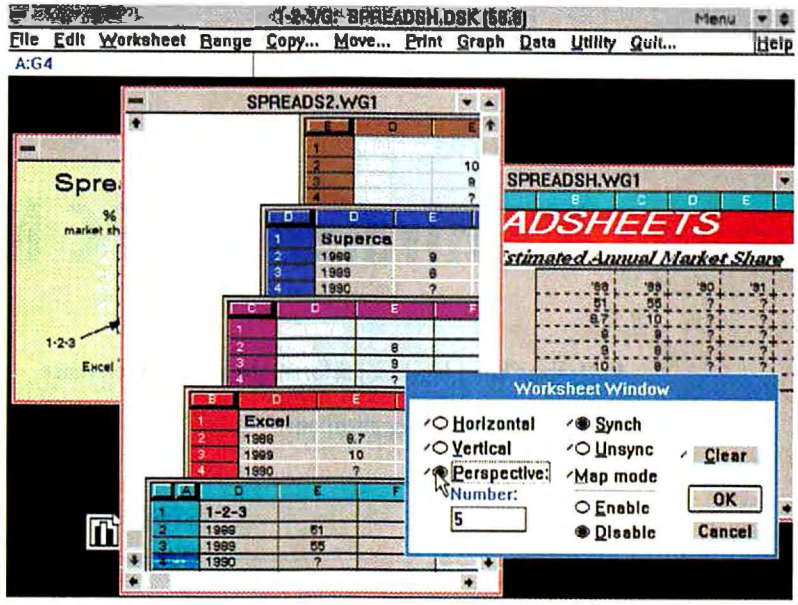
*1-2-3/G*'s graphs beat those in any available spreadsheet, and you can customize them in ways until now possible only with presentation graphics programs. As in *Excel*, worksheets and graphs can be displayed simultaneously on screen, and graphs can be updated in real time as worksheet data changes. Fonts, colors, borders, drop shadows, and arrows let you give your graphs a

more professional appearance. But *1-2-3/G* is more flexible when combining various chart types, and it includes overlapping and 3-D bar charts. In marked contrast to *Excel*, *1-2-3/G* lets you easily add additional data ranges or text items and move or resize chart elements, individually or in groups, with a touch of the mouse. However, you still need a separate presentation graphics program to print graphs and worksheets on the same page, add graphic elements, or create full-screen slide shows.

Lotus's alliance with WordPerfect should make it easy to prepare text documents incorporating *1-2-3/G* tables and graphs. Once the Presentation Manager version of *WordPerfect* is released, you'll be able to use the OS/2 clipboard to cut and paste between the two programs without losing fonts, attributes, borders, colors and so on.

Alternatively, you'll be able to create hot links between spreadsheet and word processing documents. For example, you could update a chart in your quarterly report—a *WordPerfect* file—simply by changing the original data in the linked *1-2-3/G* spreadsheet. Both programs should work together on a machine with 4MB of memory, according to the vendors.

As in *1-2-3* release 3, Lotus's DataLens feature lets you access external *dBASE*-compatible data bases as if they were part of your spreadsheet. Support is planned for *R:base*, *Paradox*, *SQL Server*, and OS/2 Extended Edition Data Manager.




**Perspective mode shows five pages of a 3-D spreadsheet at a time. For fancy presentations, you can assign a different color to each using the new Screen Attributes command.**

### Catch /G If You Can

In comparison with *1-2-3/G*, *Excel*—the only OS/2 spreadsheet actually shipping at press time—seems unfriendly and awkward. *Wingz* may be *1-2-3/G*'s equal in presentation graphics but seems unlikely to match its analytical and number-crunching features. And a PM version of Ashton-Tate's *Full Impact* is still just a rumor. So for the moment, and assuming Lotus prices the package reasonably, *1-2-3/G* looks like a winning bet for OS/2 spreadsheet users.

But is OS/2 a workable operating system for *1-2-3* users? Not quite yet—even the recent 1.2 release is still too buggy for general use. Consequently, it's little used except by software developers, and large corporations with on-staff programmers. Despite *1-2-3/G*'s super design, solid feature set, and potent pairing with WordPerfect, conservative managers will take a long, hard look at OS/2 before making any plans to upgrade. ●

*Robert Lauriston is an assistant editor for* PC World.

## WHAT-IF TIME-SAVER

**Nice as the interface improvements are, what's really going to sell *1-2-3/G* is its goal-seeking Solver. Traditionally, *1-2-3* users have done forecasting and what-if analysis by setting up a model and trying various data values to achieve the required result. Plugging in the numbers and documenting the result is a laborious, time-consuming process.**

**With Solver, that approach is no longer necessary. You merely enter which cells to vary, the constraints on various cell values, and the cell for which you want to find the optimum value. Then Solver presents one or more combinations that fit the bill. It can also prepare reports showing the different solutions, how they were calculated, how they compare with each other, the upper and lower limits for adjusted cells, and which constraints actually affected the solutions.**

**Solver will be particularly useful to managers trying to fit department budgets to a fixed bottom line or balancing real-world business limitations with projected profit goals. A few of the many other areas where it should prove a boon include tax planning, inventory control, lease/buy comparisons, and juggling investments for the right mix of growth and current earnings. —*R. L.***

# A Miniature Mainframe for PC Networks

**NetFrames bring big-iron performance and fault tolerance to heavy-duty server applications.**

*Eric Knorr*

When a PC on somebody's desk goes down, it's bad news. When the server goes down, it can be a disaster for the entire work group. So why not design network servers specifically for their mission-critical tasks?

NetFrame Systems' answer is threefold: NetFrames 100, 300, and 400. Designed to run special versions of *NetWare/386* (shipping now) and *OS/2 LAN Manager* (shipping this quarter), these systems bring minicomputer power and mainframe fault tolerance to the hubs of PC networks.

From memory error correction to astonishing throughput to a built-in maintenance system that can call a tech support line, these black, monitorless towers fulfill the traditional mainframe function: reliable handling of large data bases for many users. But get set for large-system pricing.

The NF100 goes for $22,500, while the NF300, with twice as much room for peripherals and memory, costs $35,000. Both systems began deliveries last fall, and each comes standard with a 25-MHz 386 CPU, 8MB RAM, a 380MB SCSI drive, and an intelligent I/O board. The $45,000, 486-based NF400 will be available this quarter; like the NF300 it has room for eight full-height, 5¼-inch drives (both 380MB and 780MB units are available). The only real difference between the NF300 and the NF400 is the CPU—and $10,000.

### Performance Plus Headroom

NetFrames have been built to spec for large multiuser applications. At 100MB per second, the peak throughput of these systems is more than twice that shown by either Micro Channel or EISA systems to date. In fact, NetFrames have two of these high-speed buses; one between the CPU and system memory and the other between system memory and a custom "data server" subsystem.

**Designed as fault-tolerant network servers, NetFrames 100 and 300 deliver throughput far beyond that of EISA and Micro Channel systems.**

The data server subsystem handles four (two for the NF100) 25MB-per-second channels, each of which can support two intelligent peripheral boards running at a full

12.5MB per second.

NetFrame claims this multiple hierarchical bus architecture lets the CPU and intelligent peripherals communicate far more effectively than CPUs and bus masters do in EISA and Micro Channel systems. In addition, NetFrames speed I/O by exploiting any free RAM in memory for disk caching.

The NF100 has a four-slot I/O bus, while the NF300 and NF400 have eight slots each. All base models fill one slot with an I/O Server—a motherboard-size expansion board incorporating a SCSI controller, an ethernet adapter, a serial port, and a LocalTalk port for Apple nets. I/O Servers also employ a 16-MHz Intel 80376 (a 386SX without DOS compatibility) to offload interrupt handling, running of network drivers, and other low-level tasks from the CPU.

Ethernet I/O Servers cost $5000 apiece, and a token ring I/O Server will be available this quarter at the same price. Adding I/O Servers increases the number of workstations NetFrames can handle; for simple file serving, the company claims that a single I/O Server can handle between 100 and 200 users, depending on the application.

Running server-based applications for very large networks, however, calls for more computing muscle. The other NetFrame expansion board, the Application Server, provides the added punch. An Application Server is basically a motherboard; it can function as a stand-alone computer running a separate LAN with a different operating system, or it can help the host system run network software. The first Application Server will be available late second quarter for between $4000 and $5000 and will include a 486 CPU and sockets for 16MB of its own RAM.

### Bulletproof Computing

The steel chassis of a NetFrame looks like it could take considerable abuse, and the keylocked door and the lack of a keyboard discourage tampering. You perform network administration remotely from any 286 or 386 PC on the network. The tower's only external controls (which can be disabled) are three buttons, which you use to flip through and execute menu choices on a small LCD readout.

NetFrame's Server-Activated Maintenance (SAM) system is a built-in 8088-based computer with modem that monitors the system constantly. When trouble occurs, SAM dials a dealer support line and uses voice synthesis to tell the repairperson there's a problem. Future versions will allow SAM to describe specific problems and will permit some remote troubleshooting.

The most important difference in reliability between NetFrames and standard PC servers is the NetFrame ECC (error correction circuitry) system memory. Standard equipment in minis and mainframes, ECC memory both detects and corrects single-bit errors that will crash a PC. As you increase memory in a system, the likelihood of errors rises. The NF100 holds up to 32MB of RAM, while the NF300 and NF400 hold 64MB; NetFrame is betting that you'll want the safety of ECC.

Along with *disk mirroring* (redundant drives hooked to the same controller) and *duplexing* (redundant drives with separate controllers), NetFrames offer redundant buses. The NF100 I/O bus has two independent branches; the NF300 and NF400 I/O buses have four branches each. For the ultimate in reliability, NetFrame Systems recommends I/O Servers connected to redundant drives on separate branches of the I/O bus.

Other fail-safe features—such as optional redundant power supplies and a disk-based record of what happened when a system went down—should make NetFrames the most dependable servers yet for PC networks. And as for cutting-edge performance, what other servers let you add the latest-model motherboard? Applications that rely heavily on server processing power and mainframelike mass storage don't quite exist yet for PC networks. But NetFrames have power to spare for software like *SQL Server* and should be able to handle any back-end applications the future can deliver. ●

*Eric Knorr is a senior editor for* PC World.

**SNAPSHOT**

**NetFrame**

A "miniature mainframe" dedicated to PC network service, the NetFrame offers power, reliability, and easy administration—at a hefty cost.

**KEY FEATURES**

- **Ultra-high-performance multibus, multiprocessor architecture**
- **Error-correcting memory, other reliability/redundancy features**
- **Built-in–maintenance computer dials out voice-synthesized alerts**

**AVAILABILITY**

NF100 and NF300 now, NF400 this quarter

**PRICING**

NF100 $22,500, NF300 $35,000, NF400 $45,000; NetWare for NetFrame $7995

**NetFrame Systems Inc.**
960 Hamlin Ct.
Sunnyvale, CA 94089
408/745-0633

**Reader service no. 741**

## INSIDE PRODUCT OUTLOOK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Adobe's autotracer expands your ability to manipulate bit-mapped and scanned images.

85 **Control Room**
Customize your PC's configuration with an Ashton-Tate application that helps solve RAM cram.

86 **NEC Pinwriter P2200XE, Okidata Microline 380**
Now available—24-pin printing with multiple fonts at a price that fits a home-office budget.

86 **Proteus 386/33 MX**
With improved service and support, this 80386 system stands out from the mail-order crowd.

88 **480C PC Viewer**
The first color LCD overhead projection panel—a presentation breakthrough from In Focus Systems.

88 **ProQube**
Formalsoft's 3-D spreadsheet gives you a fresh perspective on data without high-priced hardware.

90 **LANmagic, Map Assist, Printer Assist**
Make life easier on your LAN with products that let *NetWare* users share printers and disks.

90 **Switch-It**
Switch between tasks easily without losing performance or shelling out for a new environment.


## UPDATE


92 **MultiMate 4.0**
An old standard tries to capture *WordPerfect*'s flag in the grueling game of features tag.

94 **OverDrive 2, Perfect Complement 2**
Mail merge and form creation are easier with the help of two add-ins for *WordPerfect* and *Word*.

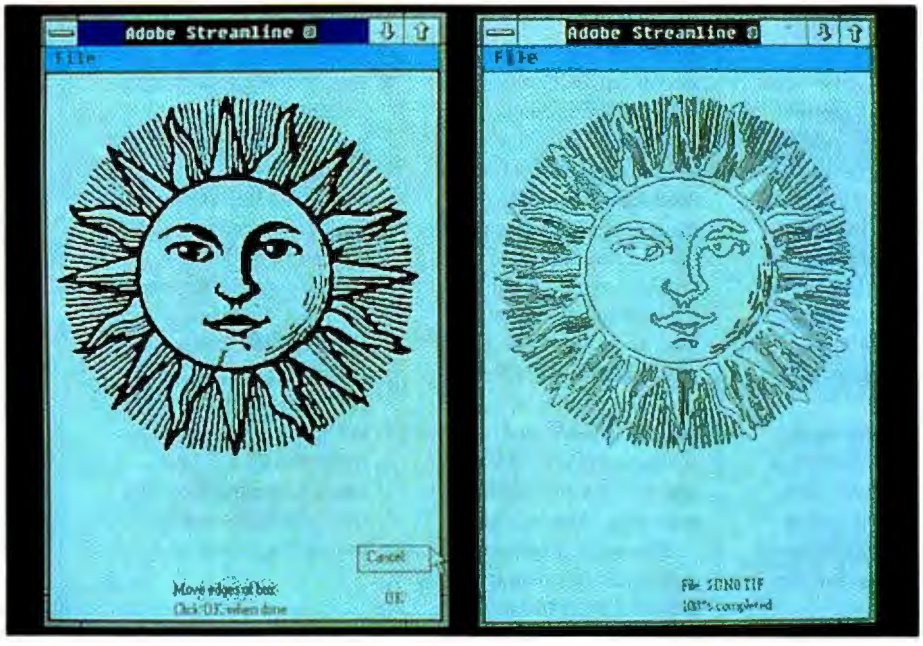
94 **SideKick for Presentation Manager 2.0**
Multiuser features and a new interface bring the OS/2 version of Borland's best-seller up to date.

96 **Clipper 5.0**
Automatic memory allocation and speedy linking should appeal to dBASE developers.

96 **PC Paintbrush IV Plus**
Virtual-memory and scanner support give this *Paintbrush* a broader range of expression.

98 **Procomm Plus Network, Mirror III LAN**
Streamline LAN communications by sharing modems and dialing directories.

98 **Banyan Vines/386 Team**
Connect up to ten users with a net that gives you easy installation and maintenance at a low price.


**Adobe's Windows-based Streamline is an easy-to-use autotracer that quickly cleans the errant pixels from a poor image or turns a line-art image into a sharp, more editable vector graphic.**

Adobe Streamline

## A Sharp Tool to Trace Away Those Bit-Map Blues

Desktop publishers and word processors use bit-mapped images generated by scanners and paint programs all the time—and hate it, because editing bit maps is a pain. Stretch the bit map, and the dots that make up the image expand as well, turning a sharp image fuzzy. Another headache—bit maps (especially TIFF files) eat up disk space. The solution? Adobe's *Windows*-based *Streamline*, a program that automatically traces the bit map inside and out, tosses it aside, and leaves a sharp, malleable vector graphic you can manipulate to your heart's content.

Autotracers built into draw packages like *Corel Draw* or *Micrografx Designer* give you a cookie-cutter outline and not much more. *Streamline* takes a fine bit-mapped image—such as a drawing of a leaf—and reproduces both the outline *and* the detail inside. Even better, the program can automatically improve poor hand-scanned images. You simply specify the level of "noise" (errant pixels) to suppress, and *Streamline* cleans up as it converts.

*Streamline* also acts as a file translator, turning TIFF, PCX, and PNT (*MacPaint*) files into Encapsulated PostScript, *Adobe Illustrator*, *Corel Draw*, or *Micrografx Designer* format. This feature alone puts it several steps ahead of built-in autotracers—but it goes one step further by being easy to use, fast, and able to convert batches of files unattended.

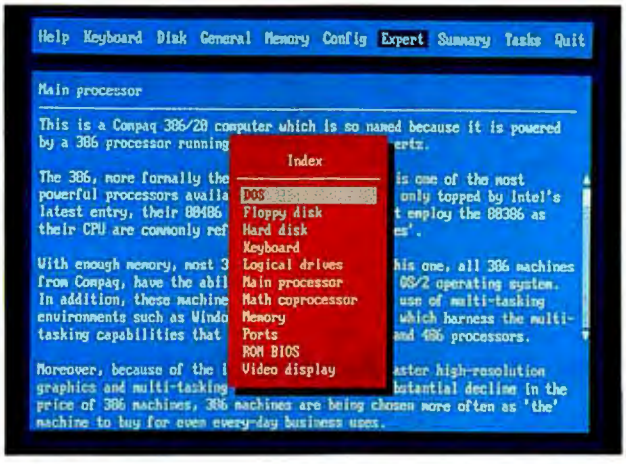
The drawback? *Streamline* costs $399, and competitors are likely to improve their draw programs' integrated autotracers in the near future. In the meantime, if you have a diskful of bit maps to beautify, *Streamline* is the tool for the job.

*Adobe Streamline 1.0* requires *Windows/286* or */386* and 1MB of memory. Adobe Systems, 1585 Charleston Rd., Mountain View, CA 94043; 800/344-8335, 415/961-4400. *—Matt Lake*

**Reader service no. 700**

Control Room

## Ashton-Tate Puts You in Charge of the Complete System




**Control Room includes an expert-system panel that explains the TSR in easy-to-understand terms. It also lets you make adjustments to your keyboard from an installation panel.**

The DOS utility market is like a great old tune; just when you thought you knew every variation, a new arrangement hits the airwaves. With *Control Room*, Ashton-Tate has taken all the old familiar passages—unerase, diagnostics, system settings—and molded them into a whole new sound.

*Control Room* starts by tackling the RAM-cram problem. Many of the tools normally associated with RAM-resident programs—macros, key-repeat-rate control, print to disk, disk cache, and screen blanker—are listed as options to the main program. Pick your favorites and *Control Room* will create a single, tightly packed memory-resident program tailored to your needs.

You also get extensive system diagnostics, the results of which can be reported as either an abbreviated table for experienced users or an extensive, explanation-heavy report for novices. A hypertext-based facility offers pop-up definitions of most words on the screen.

Other features include unerase, file encryption, automatic hardware and software inventory, and an antiviral scan. One intriguing feature is the CMOS-to-floppy backup, which saves a copy of your hardware configuration on a bootable floppy—protection against the day your system battery fails.

*Control Room*, which retails for $129, requires DOS 3.0 and 384K of memory. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90509; 213/329-8000. *—Lincoln Spector*

**Reader service no. 703**

NEC Pinwriter P2200XE, Okidata Microline 380

## So Long, 9-Pin Printers—24-Pin Models Drop to $500

**Pinwriter P2200XE offers more speed, more fonts, and better output than NEC's P2200 for the same $499; Microline 380 prints at two-thirds the speed and half the graphics resolution of the ML390 but costs $170 less.**

Near–letter-quality printing with multiple fonts is no longer strictly an office affair. Okidata and NEC are shipping narrow-carriage 24-pin printers for around $500—a price that could make small-business and home-office users kiss their 9-pin units goodbye.

NEC's Pinwriter P2200XE is a beefed-up edition of its low-end model P2200, offering faster printing, more fonts, and higher-quality output for the same $499. The 12-pound unit claims speeds of more than 80 characters per second (cps) using its proprietary NLQ font; other resident fonts print at a respectable 190 cps in draft and 54 cps in NLQ, and graphics mode offers full 360-by-360-dpi resolution.

The $529 Okidata Microline 380, a scaled-down version of Okidata's ML 390, prints at two-thirds the speed and half the graphics resolution of its midrange sibling but costs $170 less. The 16-pound Okidata churns out text at 180 cps in draft and 60 cps in NLQ; graphics print at up to 360 by 180 dpi.

And you can keep your old fonts: The Pinwriter comes with 8 resident typefaces, the Microline with 7; both support Prestige, Helvette, and Courier. The NEC also offers 18 optional font cartridges at $50 apiece, but if you want to add more fonts to the Okidata you'll have to download them.

Front-panel LED controls and printable menus make both machines easy to configure, freeing users from the hassles of setting DIP switches. Both units are designed to handle three-part forms and come with nonexpandable 8K buffers and Epson LQ emulation.

The P2200XE comes with a push/pull tractor and a front "convenience" slot for manually feeding cut sheets and envelopes. An automatic single-sheet feeder costs $149. A push tractor is standard on the ML 380; a bottom feed slot is also provided, but to use it you'll need to buy a $55 pull tractor. Okidata's single-sheet feeder will run you $169. —*Daniel Tynan*

NEC Pinwriter P2200XE, NEC Technologies, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719; 508/264-8000.

**Reader service no. 701**

Okidata Microline 380, Okidata, 532 Fellowship Rd., Mount Laurel, NJ 08054; 800/654-3282, 609/235-2600.

**Reader service no. 702**

Proteus 386/33 MX

## Mail-Order Vendor Aims for Distinguished Service Medal

In a market where dozens of suppliers delivered 33-MHz 386 machines a few weeks after Intel began shipping the chip, it's hard to rise above your competitors. Proteus's plan is to provide a little service—a particularly striking notion for a mail-order vendor.

With its 386/33 MX, Proteus has boosted the standard 12-month service contract to 15 months of on-site service from 450 independent resellers who are registered as Proteus service centers. Proteus offers toll-free tech support and, if you want it, an unconditional refund within the first 30 days.

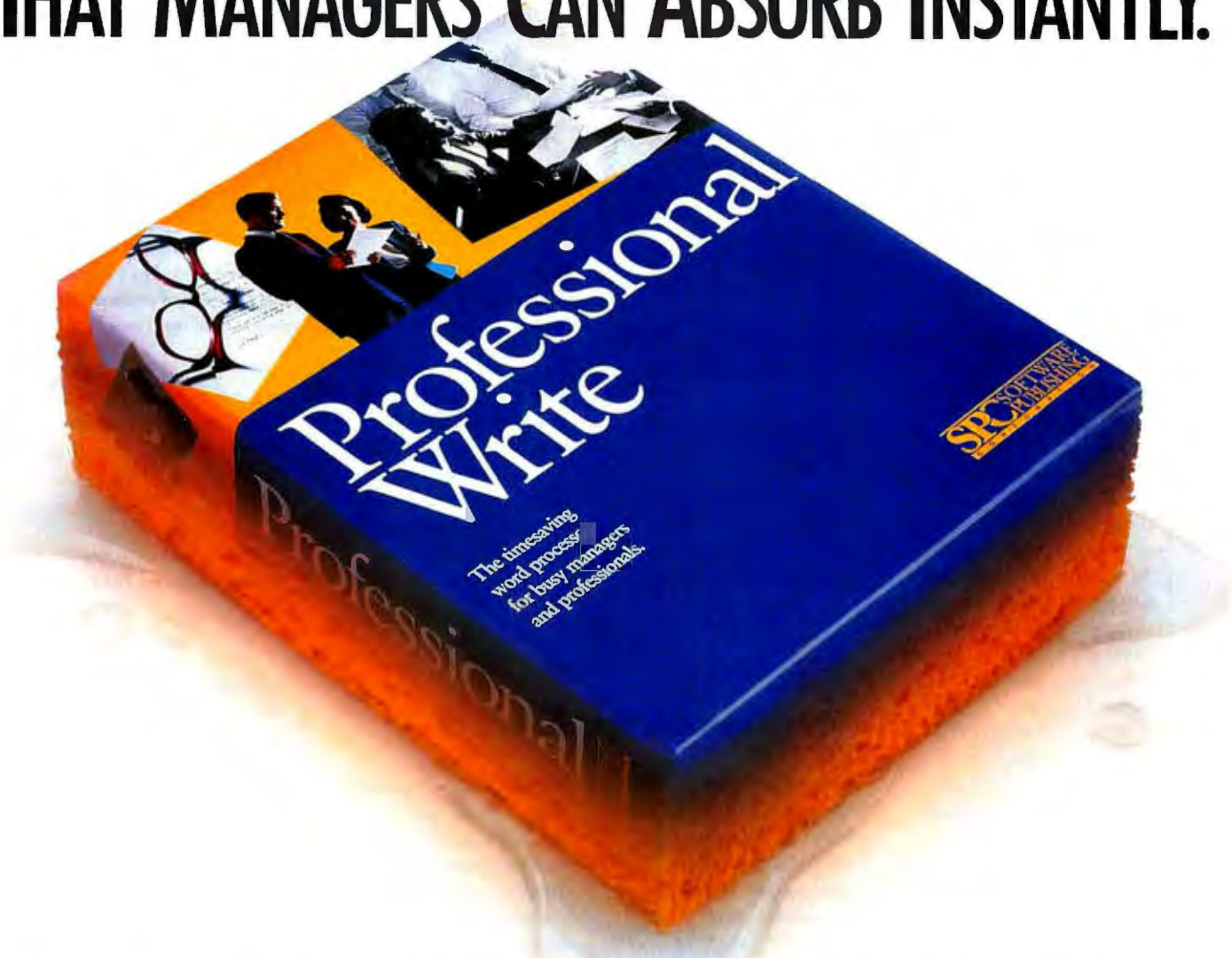
And you don't need to sacrifice features in exchange. The 386/33 MX carries a system board designed by Proteus that holds up to 8MB of memory (4MB ships standard). Plug a Proteus memory card into the proprietary 32-bit expansion slot, and you can expand memory to 16MB. An Intel 82385 cache controller ships standard, backed by 32K of 45ns memory.

For peripherals, you start with five 8/16-bit and two 8-bit slots, but two 8/16s will go to a graphics card and the dual ESDI/floppy controller, while an I/O card with two serial ports and one parallel port will fill an 8-bit slot. You get 1.2MB 5¼-inch and 1.44MB 3½-inch floppies, which leaves three half-height bays for other storage devices.

Drive choices include either 45MB or 80MB 22ms drives or 150MB, 340MB, or 750MB ESDI drives with average access times of 13ms. Your outlay for a machine with 4MB, a 150MB hard drive, and an 800 by 600 VGA graphics card and multiscan monitor will come to $6095. Proteus Technology Corp., 75 Kingsland Ave., Clifton, NJ 07014; 800/782-8387, 201/614-7000. —*Mark Henricks*

**Reader service no. 708**

# WORD PROCESSING SOFTWARE THAT MANAGERS CAN ABSORB INSTANTLY.




Busy professionals need a word processor which will quickly soak up their ideas and help them create impressive-looking documents. New from Software Publishing, Professional Write 2.1 incorporates all the features managers want into an easy to use program. Follow-along tutorials, pull-down menus and context-sensitive help will have managers pouring out memos and reports in less than an hour with no special training or MIS support. What's more, its Preview feature wipes out wasted printing runs by showing what a report will look like before it's printed. Professional Write even shares files with other popular word processing programs. And supports high quality laser and dot matrix printers, providing managers access to a flood of fonts. So call today for a free trial disk. Professional Write will have managers instantly producing sophisticated documents, instead of wringing their hands over complicated software.

FOR FREE TRIAL DISK
CALL 1-408-648-4391
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480C PC Viewer

## Flat Panel Brings a Colorful New Dimension to Overhead Projections

Showing color graphics to a large group of people used to involve expensive color slides, crummy transparencies, or bulky video projection equipment. In Focus Systems gives you another option—the 480C PC Viewer, the first color LCD overhead projection panel.

This breakthrough device fits atop any overhead projector to provide a reasonably bright, big-screen image in up to eight vivid colors. The $4495, 10-pound unit plugs into the VGA port of your PC (or your PC's VGA board) and produces 640 by 480 resolution using a special subtractive-color LCD panel that measures 8¾ by 6⅝ inches.

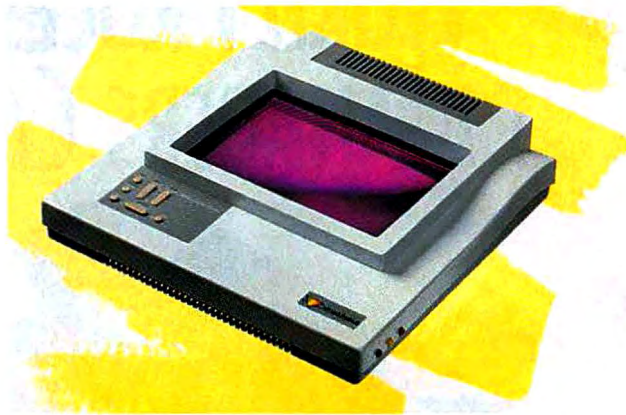
Black-and-white LCD projection panels have existed for years. They offer escape from the shuffling of plastic transparencies, plus the possibility of fancy dissolves and animation (with software such as *Show Partner*) without an interim printout or plot to slow you down.

*Show Partner* is also a far cry from the so-called color LCD panels that produce only dim images in various shades of purple. The 480C PC Viewer uses an innovative three-layer design—essentially red, blue, and green LCD panels sandwiched into one. Not only does this technique produce dramatically better results than those the pseudo-color units provide, but image quality surpasses that of the NEC ProSpeed CSX, the first transportable commercially available with a color LCD.

High price aside, the only downside to the 480C PC Viewer is its umbilical connection to the VGA, which means you have to bring a VGA-equipped PC along with you. (Some black-and-white panels offer nonvolatile RAM plus software to create a run-time show, letting you execute the presentation sans PC.)

A note for laptop users: The PC Viewer's three-layer process, which employs Kyocera technology, may soon migrate to laptop color displays. While the rival active-matrix LCDs offer better color, they're difficult to manufacture and outrageously expensive—which suggests that the PC Viewer may be a precursor of future fireworks on the flat screen. In Focus Systems, 7649 S.W. Mohawk St., Tualatin, OR 97062; 800/327-7231, 503/692-4968. *—Eric Knorr*

**Reader service no. 704**



**No more dim purple images—the 480C PC Viewer is the first true-color LCD overhead projection panel, fitting atop any standard overhead projector so that you can demonstrate graphics in eight vivid colors.**

ProQube

## Thrifty Spreadsheet Does 3-D

If you've heard about the high-end, 3-D spreadsheet sweepstakes but figure that you lack the hardware, budget, or computer expertise to get involved, Formalsoft has a way for you to ease in slowly. Its $99 spreadsheet *ProQube* performs 3-D consolidation on a 640K machine. In fact, you may use some of its innovative features in conjunction with *1-2-3*.

For starters, *ProQube* doesn't support worksheets as large as *1-2-3* release 3's—you're limited to 512 rows by 512 columns—but it extends the 3-D field twice as far: You can have up to 512 pages in a worksheet. All pages are automatically consolidated. The new wrinkle is that *ProQube* lets you rotate and "slice" into that cube of spreadsheets to view data from a different angle.

If each page covers 12 months' operations, you can rotate to the right and slice out January's field, for example, to get a new page comparing the first month of all the years in your spreadsheet. And you can manipulate this page just as you can all the others—printing, sorting, or exporting in *1-2-3* release 1A or 2.*x*, *dBASE*, ASCII, or DIF format. *ProQube* can't yet export to *Excel*, *1-2-3* release 3, or *Lucid 3-D*, though its nongraphic interface uses pop-up windows and a horizontal scroll bar similar to *Lucid*'s menuing scheme.

*ProQube* will let you store your worksheets in expanded memory (EMS 3.2 or 4.0), but its own 440K has to be in conventional memory. And it doesn't read *1-2-3* macros.

You also sacrifice many of the presentation graphics features of the leaders. You can't create as many three-axis graphs, and you can't merge those graphs with large blocks of text. You won't find *Excel*'s extensive proportional font support either.

But *ProQube* can be a powerful first step toward worksheet consolidation. It requires DOS 2.0 or a later version, 640K, and a hard disk. Formalsoft, P.O. Box 1913, Sandy, UT 84091-1913; 801/565-0971. *—Mark Henricks*

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LANmagic, Map Assist, Printer Assist

## Add-Ins Give NetWare Peer Power

Novell *NetWare*'s dedicated server orientation can be inflexible at times. If you want a network printer next to your workstation, you have to run a printer cable back to the server. Want to copy files from your workstation's hard drive to another workstation? You must first upload them to the server, then download them to the second workstation. Your files on the server get backed up automatically, but you can't back up your workstation's files on your office mate's tape drive.

Wouldn't it be nice just to plug the printer into your workstation or copy your workstation files straight across to other nodes? D-Link's *LANmagic* and Fresh Technology's *Map Assist* and *Printer Assist* provide full peer-to-peer printer and disk sharing on *Advanced NetWare* LANs. *LANmagic* is a version of D-Link's *LANsmart* network operating system, which runs on Novell's IPX network driver. *Map Assist* and *Printer Assist* are two tiny memory-resident utilities that run over any hardware.

*LANmagic* actually runs simultaneously with *NetWare*. You can assign some logical drives to *NetWare* server directories and others to workstation drives shared via *LANsmart*. You can mix and match printer ports the same way, assigning LPT1 to the server's laser printer and LPT2 to your neighbor's dot matrix. But *LANmagic* runs only over D-Link Ethernet boards, and loading two network shells means less RAM in which to run applications.

*Map Assist* and *Printer Assist* are simpler. You just copy them to your *NetWare* server, where every workstation on the LAN can share these memory-resident utilities. *Map Assist*, which provides complete peer-to-peer file access, takes 7K. *Printer Assist* does the same for printers in only 4K.

A $1245 *LANmagic* starter kit includes two 8-bit D-Link Ethernet boards, *LANsmart*, a *NetWare* driver, a 20-foot cable, and terminators. It requires *NetWare 2.1* or a later version; workstations require 512K of RAM and DOS 3.1 or a later version. Additional Ethernet boards are $369 each. A 16-bit starter kit is $1445, and additional boards for that are $465. *Map Assist* and *Printer Assist* cost $249 and $99 per server, respectively. Both require *Advanced NetWare 2.1* or a later version. —*Robert Lauriston*

*LANmagic*, D-Link Systems, Inc., 5 Musick, Irvine, CA 92718; 714/455-1688.
**Reader service no. 705**

*Printer Assist* and *Map Assist*, Fresh Technology, 1478 N. Tech Blvd. #101, Gilbert, AZ 85234; 602/497-4200.
**Reader service no. 706**

**A version of the LANsmart network OS, LANmagic lets you plug the printer into your workstation and copy files to other workstations without uploading and downloading files to and from the server.**

Switch-It

## Task Switching With a Light Touch

**Switch-It gives you 90 percent of what you want from a multitasking environment without the hardware overhead—namely, fast, effortless switching between tasks by means of hot keys.**

Wouldn't you like to run several programs simultaneously and switch effortlessly between them? This is a seductive vision, but the reality of difficult installations, slow application performance, and high hardware overhead removes the romance from environments like *Windows* and Presentation Manager.

*Switch-It* is a task-switching utility rather than a multitasking environment, so it won't let you download a file in the background while writing a letter in the foreground. But by allowing you to *(see Switch-It, p. 92)*

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## Switch-It

*(continued from p. 90)*

switch effortlessly between applications, *Switch-It* offers 90 percent of what you really want from multitasking.

Under *Switch-It*, background programs are suspended until you next access them. Since they don't alternate use of the CPU with your foreground operation, you'll see no change in the latter's performance. They also can be tucked away on a hard disk, in extended memory, or in an extended memory RAM disk.

*Switch-It*'s automated installation routine searches your hard disk and builds a menu based on what it finds there. Load *Switch-It*, and you'll get a menu of these applications ready for launch. You use this menu for quickly switching among those programs by putting check marks beside their names.

You denote the amount of memory devoted to each program and its location (directory or expanded memory). You also can assign each program a hot key for launching or switching to it from inside other programs.

*Switch-It* lets you mark blocks of screen text from one application and transfer them to another. It also incorporates a command-line editor and a phone directory/dialer.

With all this, *Switch-It* is amazingly compact and compatible. It uses only 25K of RAM itself, with other code remaining on disk until needed. According to Better Software, *Switch-It* is compatible with *Windows* and *GEM* applications and even works in the OS/2 compatibility box.

*Switch-It* lists for $79.95 and requires 512K of RAM, DOS 2.1, and a hard disk. Better Software Technology, 55 New York Ave., Framingham, MA 01701; 508/879-0744.
*—Lincoln Spector*
**Reader service no. 709**

# UPDATE

MultiMate 4.0

## Keeping Up With WordPerfect

Ashton-Tate's *MultiMate* joins the stampede toward SAA-compliant, mouse-and-menu-based versions of old standards. But more important, version 4.0 narrows the features lead held by market champ *WordPerfect 5.0*, which has been wooing and winning dissatisfied *MultiMate* users for years.

*MultiMate 4.0* keeps up with *WordPerfect 5.0*'s desktop publishing features, print preview (based on *Inset*), macro editor, document comparison, improved printer and font support, and special legal features. In addition, improvements have been made to *MultiMate*'s spelling checker, thesaurus, and column and math features.

*MultiMate 4.0* adds several features *WordPerfect* still lacks. A grammar checker based on *Grammatik III* from Reference Software analyzes readability and lets you find and correct improper usage and punctuation using a choice of several style manuals. A streamlined version of Action Technologies' *The Coordinator* lets LAN *MultiMate* users exchange E-mail messages, and MHS compatibility helps them link to fax and mainframe gateways.

The program also recognizes and automatically converts files from popular programs such as *WordPerfect*, *Microsoft Word*, *WordStar*, and *1-2-3* and exports data in the same formats. You can even merge addresses from *dBASE*-compatible DBF files. And not only can you import clip art, scanned images, or files from paint and draw programs, but you can create simple graphics using lines, circles, and rectangles.

*MultiMate 4.0* retails for $565 and requires DOS 3.1 or a later version (3.2 or later to run on 3½-inch disks) and 384K of RAM. A price has not yet been set for the multiuser LAN version. Upgrades from *MultiMate Advantage II* or earlier versions are $75. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90509; 800/437-4329, 213/329-8000.
*—Robert Lauriston*
**Reader service no. 711**

**MultiMate 4.0 closes in on WordPerfect 5.0 with comparable desktop publishing power and state-of-the-art mail merge. It also has features that WordPerfect 5.0 lacks, such as a grammar checker and E-mail.**

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OverDrive 2, Perfect Complement 2

## Add-Ins Subtract Tedium From Merges

Do you waste hours assembling sets of nearly identical documents for your clients or customers? Tear your hair out mail-merging records from your company data base? Two similar add-ins promise to solve these problems, and more.

*OverDrive 2* and *Perfect Complement* streamline mail merge, help you organize libraries of standard forms, let you assemble documents from "boilerplate" paragraphs, and give you direct access to data base files. For those without an external data base, they offer flat-file mailing list managers. Both work with *WordPerfect 5.0* and let a single copy of each standard form be shared on a network. *OverDrive* is available for *Microsoft Word 5.0* as well.

Both programs let you merge data directly from *dBASE*, *1-2-3*, *Paradox*, *WordPerfect Notebook*, and comma-delimited ASCII files. *Perfect Complement* adds *Oracle* and *R:base*; *OverDrive* adds *Excel*.

Assembling documents is very simple. You just bring up a list of forms, choose the ones you want filled in, pop up the data base display, and pick the records you want merged with the forms. The program does the rest. For instance, it can merge Cover Letter, Agreement, UPS Airbill, and Memo to Accounting in your forms library with several client records from your master *dBASE* file. You can also specify records by range —to send, for example, a Past Due form to all clients showing aged accounts in your *1-2-3* file. Moreover, you can define blocks of text to be used only for records matching certain criteria, and forms can prompt you for keyboard entry.

*OverDrive 2* gets you started by including 88 customizable forms: airbills for all major carriers, standard labels and envelopes, agreements, leases, corporate documents, and more. *Perfect Complement* includes a more modest set of 20 documents.

Though they boast similar features, the two programs take different approaches. *Perfect Complement* forms are created in *WordPerfect* by inserting data base field names in brackets. *OverDrive 2* has an interactive routine for turning any *WordPerfect* document into a form.

**OverDrive 2 lets you pick and merge up to 88 word processing forms at once from an OverDrive Library and from dBASE, 1-2-3, Paradox, WordPerfect, and ASCII files.**

*OverDrive 2* costs $149 and requires DOS 2.0 or a later version, 512K, a hard disk, and either *Microsoft Word 5.0* or *WordPerfect* version 4.2, 5.0, or 5.1. *Perfect Complement* costs $149.95, and $69.95 for each additional copy; it requires DOS 2.0 or a later version, 640K, a hard disk, and *WordPerfect* version 4.2, 5.0, or 5.1. It supports Novell *NetWare* and 3Com *3+* networks. —*Robert Lauriston*

*OverDrive 2*, OverDrive Systems, Inc., 23811 Chagrin Blvd. #260, Cleveland, OH 44122; 800/284-7600, 216/292-3425.
**Reader service no. 713**

*Perfect Complement*, Perfect Complement Corp., 4979 Mercantile Rd., Baltimore, MD 21236-0094; 800/444-9544, 301/256-2000.
**Reader service no. 714**

SideKick for Presentation Manager 2.0

## PM Accomplice Flexes Work-Group, Data Base Muscle

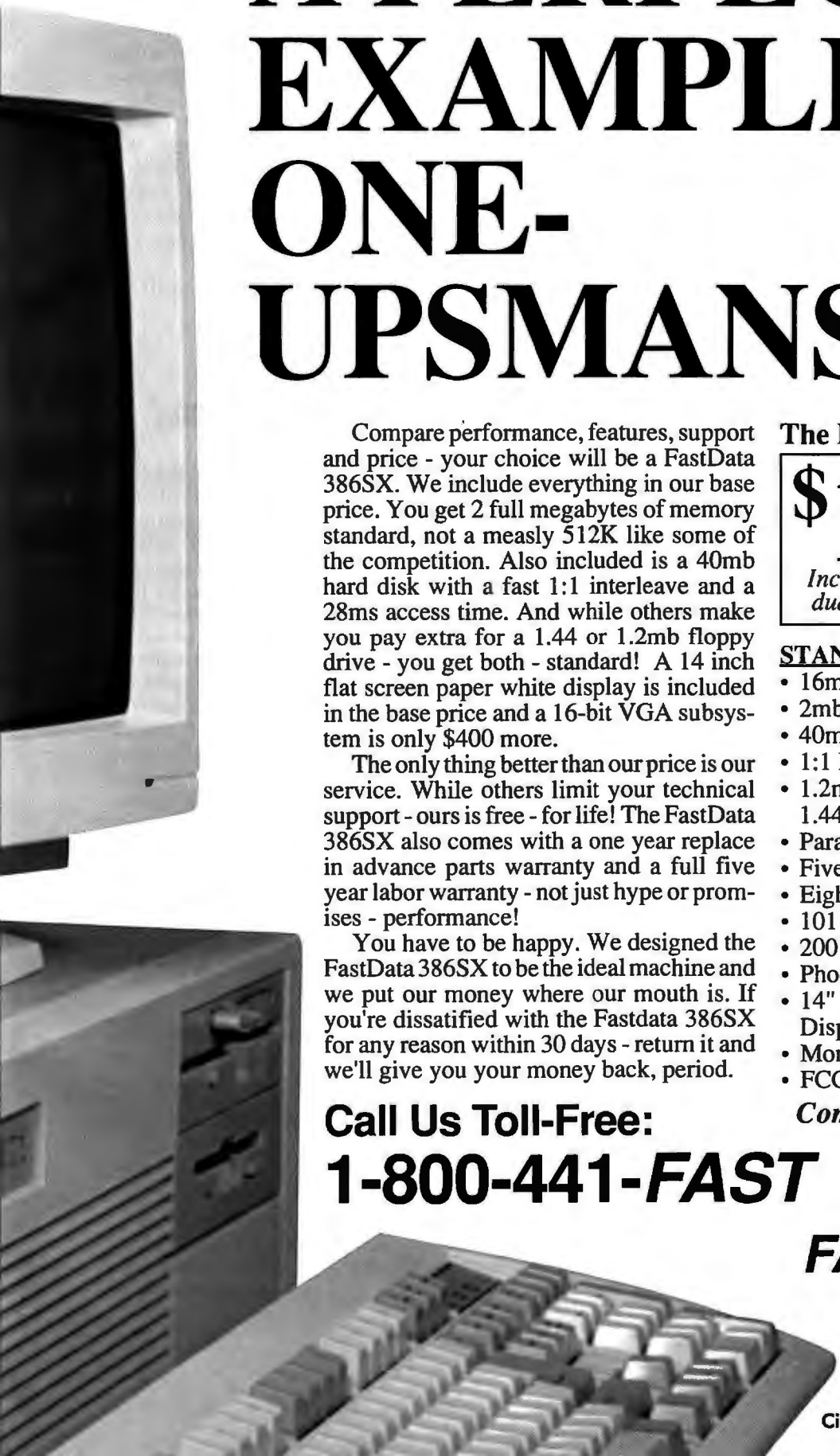
Borland's *SideKick for Presentation Manager*, the first application under OS/2's graphic interface, gains broad new powers for a multitasking/multiuser environment with the inclusion of Borland's new *Paradox* engine.

Like its predecessor, *SideKick for Presentation Manager 2.0* is actually a bundle of four OS/2 applications: a time planner, a phone book, a notepad, and a calculator. Two of these, the time planner and the phone book, store their data in *Paradox* tables, where it can be accessed by multiple *SideKick* or *Paradox* users simultaneously. To ensure privacy, password protection has been added.

Considering that *SideKick* was the first PM application shipped, it's not surprising that the interface needed improving. With *2.0*, enhanced querying, customized views, font support, and resizable windows have all been added.

*SideKick for Presentation Manager* is being bundled with IBM's version of OS/2. For non-IBM OS/2 users, the product lists for $199.95; a $59 upgrade is available for *1.0* users. The program requires OS/2 1.1 and 3MB of RAM. Borland Int'l, P.O. Box 660001, Scotts Valley, CA 95066; 408/438-8400. —*Lincoln Spector*
**Reader service no. 710**

# A PERFECT EXAMPLE OF ONE-UPSMANSHIP



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Clipper 5.0

## Nantucket Charts New Course for Its dBASE Flagship

While the publishers of many dBASE language products scramble to follow Ashton-Tate's lead, Nantucket is taking its *Clipper* compiler in a different direction. With *Clipper 5.0*, Nantucket opens up the dBASE language in unique ways and shortens the cycle for in-house developers.

In the past, if a *Clipper* application was too big to fit into available memory, the developer was forced into a complex process of assigning subroutines to overlays. With version 5.0, memory allocation is handled automatically, effectively breaking the 640K barrier and freeing developers from most overlay chores.

The linking operation, an unavoidable step in creating executable program files, has always been a big time-consumer for *Clipper* adherents. To speed that process up, Nantucket has replaced its former linker with a proprietary bundled version of Pocket Soft's much faster *.RTLinker*, an incremental linker that doesn't waste time redoing code that has already been linked.

The user-defined function was one of *Clipper*'s major contributions to the dBASE language. Version 5.0 adds user-defined commands (UDCs), letting you create specialized dBASE commands for your applications. While *Clipper* is technically not object oriented, UDCs definitely point it in that direction. Furthermore, because data base and I/O drivers are now replaceable, developers can use data formats other than the dBASE standard.

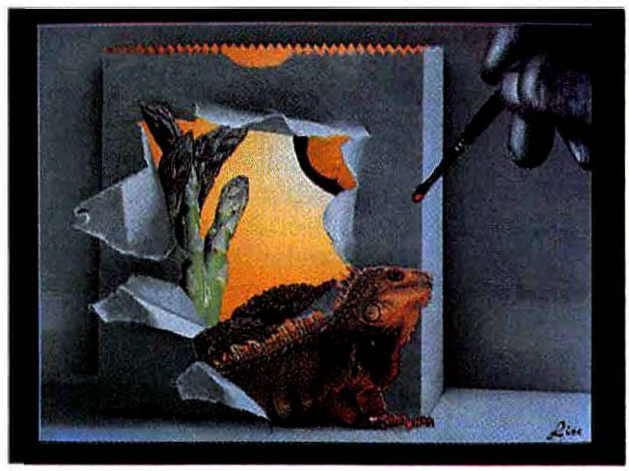
Nantucket has also borrowed user-modifiable GET commands from its Macintosh data base, *McMax*. By redefining the GET command, you can build custom user interfaces. Arrays can now be multidimensional and can even be placed inside other arrays.

The $795 *Clipper 5.0*, which comes bundled with Peter Norton Computing's RAM-resident *Guide to Clipper* reference, requires DOS 3.1, 512K of memory, and a hard disk. Upgrades are free to anyone who bought *Clipper* between June 1 and November 1, 1989; otherwise, they're $195. Nantucket Corp., 12555 Jefferson Blvd., Los Angeles, CA 90066; 213/390-7923. *—Lincoln Spector*

**Reader service no. 715**

PC Paintbrush IV Plus

## Fully Powered Paintbrush Learns to Handle Big Files



**PC Paintbrush IV Plus adds scanner support so you can save memory and prevent mistakes by prescanning images at low resolution and slicing out only the part you want for high-resolution editing.**

Z-Soft's *PC Paintbrush IV*, the popular graphics package that debuted in mid-1989, brought a near–SAA-style interface and a dazzling mix of image enhancement tools to desktop publishing and presentation graphics jobs. But it simply couldn't deal with scanners or large images. *PC Paintbrush IV Plus* fills those gaps with scanner support and memory management, housing those jumbo high-resolution files in disk space or expanded or extended memory.

You get more than simple scanner support. Among the niceties: You can save memory and prevent mistakes by prescanning images at low resolution and slicing out only the part you want to edit at high resolution. And you minimize hassle by saving scanner configurations for later recall.

Virtual memory support is the most significant addition, though, letting you scan and edit even multimegabyte-size files on a 640K system. If you do have expanded or extended memory, the package can take advantage of those as well.

A new menu option lets you resize and rotate whole images, and *PC Paintbrush IV Plus* also upgrades your hard copy halftones. For instance, when scanning 256-color images for conversion to 16 color, the program calls on seven algorithms for a more realistic conversion.

*PC Paintbrush IV Plus* requires DOS 3.0 or a later version, a hard drive, a graphics display, and a drawing device. Expanded or extended memory is recommended. It retails for $199; upgrades are available for $50 for *PC Paintbrush Plus* users and $69 for *PC Paintbrush IV* users. Z-Soft Corp., 450 Franklin Rd. #100, Marietta, GA 30067; 404/428-0008. *—Mark Henricks*

**Reader service no. 712**

# M.V.P.

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## Top Communications Packages Adapt to Network Life

**Mirror III LAN lets you share modems and dialing directories on a network without sacrificing other capabilities.**

You share everything else on a local area network—why not modems and communications software? *Mirror III* and *Procomm Plus* are now available in LAN versions that save you not only the cost of a modem for each PC but also the $50 to $100 installation charge and $15 monthly service fee for each data line. Of course, you also need to figure in one or more asynchronous communications server (ACS) boards, which cost from $1200 to $1600 each and are usually capable of managing four modems. In the case of *Mirror III LAN*, you must also dedicate a gateway PC to communications tasks.

Both products employ similar modem-sharing techniques and allow LAN users to share dialing directories and modems. The actual number of simultaneous file transfers is limited by the communications hardware available.

Like its stand-alone version, *Mirror III LAN* includes the sophisticated Prism scripting language, *Crosstalk* compatibility, and ten file-transfer protocols. The only major difference is that you can't run background transfers.

The LAN version provides both public and private dialing directories and the capability to select certain modems by name. Users also can swap files and chat on line across the LAN once they've gained access with their passwords. In addition to the dedicated gateway PC, you'll need 320K on each PC, and your ACS's must support a NETBIOS, NASI/NCSI, or NETCL standard. *Mirror III LAN* costs $595 for eight licensed workstations and $95 for each additional licensee.

If you can't spare the gateway PC or that much RAM, *Procomm Plus Network* offers an alternative. Equipped with the same flexible interface that made *Procomm Plus* so popular, the LAN version supports 12 file-transfer protocols and requires only 192K at each PC. But the program permits only public directories for everyone or private directories for each user, not both. Background transfers are prohibited, and remote users can't hop out of the host mode to DOS, although this function can be regained if you use a multitasking environment such as *Desqview* or *Windows/386*. Your ACS's must support the NCSI/NASI, EBIOS/INT14, BAPI, ACSI, or NETCL protocol.

*Procomm Plus Network Version* costs $595 for five licensed workstations and $79 for each additional workstation. —*Susan Lusty*

*Mirror III Lan*, SoftKlone, 327 Office Plaza Dr. #100, Tallahassee, FL 32301; 800/634-8670, 904/878-8564.
**Reader service no. 716**

*Procomm Plus Network Version*, Datastorm Technologies, P.O. Box 1471, Columbia, MO 65205; 314/443-3282.
**Reader service no. 717**

Banyan Vines/386 Team

## Baby Banyan

Price and a ten-user maximum are the only differences between *Vines/386 Team* and Banyan's flagship *Vines/386*. The pint-size local area network operating system aims to bring its big brother's easy installation and management to the smaller LANs that most need it.

*Vines/386* is nearly as fast as Novell *Advanced NetWare/286*, but it's far easier to install and manage. Its distributed naming system makes it the easiest operating system for a multiple-server LAN or wide area network, and WAN add-ons are exhaustive. A peer-to-peer printing option lets you connect printers to any workstation you like.

*Vines/386's* one big problem is price—a whopping $4995. Since you can get *NetWare* for $2000 less, *Vines/386* is a very costly choice for small LANs. *Vines/386 Team* cuts that price in half. At $2495 it would even undercut *NetWare*—if it weren't for Novell's eight-user ($1495) and four-user ($695) *ELS* versions. But *NetWare* can't match *Vines/386*'s ease of use and simple WAN navigation.

*Vines/386 Team* supports all *Vines/386* software and hardware options (except local server-to-server communications) and requires an 80386-based server with 4MB of RAM and DOS 2.1 or a later version. Banyan Systems Inc., 115 Flanders Rd., Westborough, MA 01581; 508/898-1000. —*Robert Lauriston*
**Reader service no. 718**

**For more information about any product, contact the manufacturer or circle the number on the reader service card.** ●

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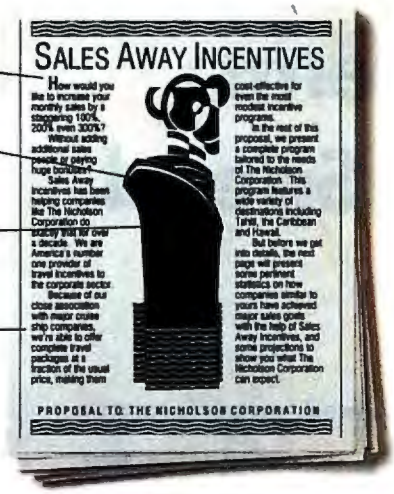


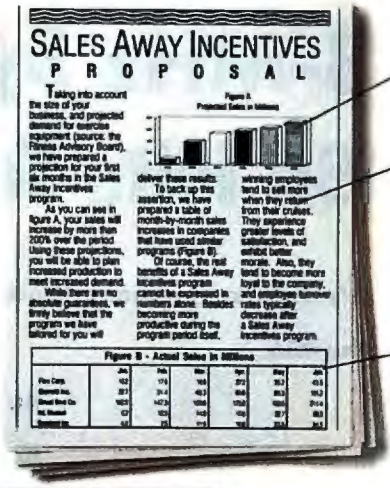


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# Ten 33-MHz Systems: The 386 Hits Top Speed

**It's the last stop on the road to the 486.**

**But if you need top performance now, one of these lightning-fast systems may be a smart buy.**

*TJ Byers*

With each advance in PC speed, the same question arises: Who needs it? How much of an increase in productivity will a data base user or a word processor get by jumping from 25 MHz to 33 MHz? Answer: Very little.

There *are* businesses, however, such as those using CAD/CAE or running a UNIX-based multiuser host, for which every incremental improvement in processing speed translates directly into big savings of time and money. Many of these users are waiting anxiously for 486 systems—but the first 486s are going to be expensive. Moreover, those machines have been slow rolling off the assembly lines, due to delayed delivery of the chips.

While 33-MHz 80386 machines deliver lower throughput than even a 25-MHz 486, they are blazingly fast in comparison with anything else in the PC department. And they're available right now. In fact, many of these PCs provide an excellent short-term solution for budget-minded users with top-performance tastes.

To find out which 33-MHz PC has the most go for the dough, *PC World* and National Software Testing Laboratories (NSTL) put 10 machines to the test: Acer's 1100/33, ALR's FlexCache 33/386, Austin's 386/33 Cache, Everex's Step 386/33, Fivestar's System 33D, Fortron's Netset 386 Model 333, Gateway's 2000 386/33, Micro Express's ME386-33LC, Tandon's 386/33, and Zeos's 386/33. Performance was compared under both DOS and OS/2. Since these machines are ideally suited for running OS/2, the latter scores are particularly pertinent.

The key buying issues for both CAD/CAE and multiuser applications are price, slot and device capacity, CPU-speed RAM ceiling, and, of course, performance (see the sidebar "33 MHz—Who Needs It?" for more details). With a few exceptions noted in text, NSTL's DOS tests show these systems performing at speeds so close that it's almost pointless to designate winners and losers—particularly on the key *AutoCAD* benchmark. The spread

on OS/2 tests was a bit greater but still fairly small.

Other features thus become all the more significant. For CAD/CAE, you'll want to make sure you've got adequate capacity to accommodate special input devices, graphics, and printer controllers. For multiuser host computing, which entails users running their applications in host memory, the ceiling for CPU-speed RAM (as opposed to memory that is installed in boards on the slower expansion bus) is critical; all but the Acer (which can handle 24MB) top out at 16MB for CPU-speed RAM. While this is acceptable for a moderate-size multiuser installation, it doesn't leave much headroom.

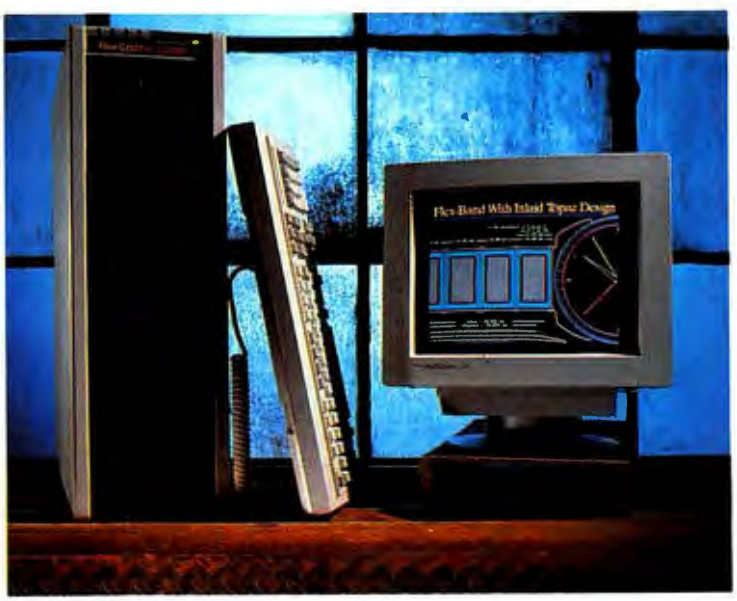
To help you compare costs, we priced these systems in a standard configuration that comes as close as possible to 4MB of RAM; a 1.2MB floppy drive; a 150MB ESDI hard disk and controller; a VGA board and color monitor; at least one parallel, serial, and mouse port; a 101-key keyboard; and DOS. Exceptions are noted. Remember, too, that while six of these systems are sold directly by the manufacturer via mail order for a fixed price, four (Acer, ALR, Everex, and Tandon) are sold through dealers—which means you may be able to knock a few dollars off the list price.

## Acer 1100/33

At $10,525 in the *PC World* configuration, the Acer 1100/33 is the most expensive machine in the roundup. However, that high price buys you the biggest capacity for CPU-speed RAM of any system here, making the 1100/33 a serious contender in the multiuser arena. DOS performance was above average, but OS/2 scores were less impressive.

Theoretically, the 1100/33 can accommodate a huge 40MB of CPU-speed RAM—

**Acer's high-priced 1100/33 has a generous 24MB of CPU-speed RAM, but OS/2 performance is below average.**



**Although ALR's FlexCache 33/386 is pricey, it delivers top performance and the best slot and drive capacities in the roundup.**

ROBERT CARDIN

## FEATURES EVALUATION

# Rock-Bottom Prices, Top-Flight Values

*With performance scores so close, the low price and 11-MHz expansion bus offered by the Gateway and the Micro Express are telling pluses. The Acer's large capacity for CPU-speed RAM is also notable, especially if you're looking for a multiuser host.*

● Yes
○ No
◒ Deficient

| | Acer 1100/33 | ALR FlexCache 33/386 | Austin 386/33 Cache | Everex Step 386/33 | Fivestar System 33D | Fortron Hotset 386 Model 333 | Gateway 2000 386/33 | Micro Express ME386-33LC | Tandon 386/33 | Zeos 386/33 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Standard features** | | | | | | | | | | |
| List price | $10,525[1] | $9988[1] | $5995[2] | $10,215[2] | $7895[3] | $5890[1] | $5295[2] | $5494[1] | $9898[4] | $6612[5] |
| Coprocessor support | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W | 80387/W |
| Disk-caching software | ● | ● | ● | ● | ◒[6] | ○ | ● | ○ | ◒[6] | ○ |
| Built into motherboard | | | | | | | | | | |
| Parallel port | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Serial port | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Floppy disk controller | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Video adapter and mouse port | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **CPU-speed RAM**[7] | | | | | | | | | | |
| Capacity | 24MB | 16MB | 16MB | 16MB | 16MB | 16MB | 16MB | 16MB | 16MB | 16MB |
| **Expandability** | | | | | | | | | | |
| 32-bit expansion slots/number free | 2/2[8] | 0/0 | 1/0 | 0/0 | 1/0 | 1/1[9] | 1/0 | 1/0 | 1/0 | 1/1[9] |
| 8/16-bit expansion slots/number free | 6/3 | 7/4 | 5/3 | 6/4 | 5/3 | 6/3 | 5/3 | 5/3 | 5/3 | 6/3 |
| 8-bit expansion slots/number free | 1/1 | 1/1 | 2/1 | 2/1 | 2/1 | 1/1 | 2/1 | 2/1 | 2/1 | 1/1 |
| Half/full-height storage device bays | 5/2 | 5/3 | 5/2 | 5/2 | 5/2 | 5/2 | 5/2 | 5/1 | 5/2 | 6/3 |
| 300MB or larger hard disk available from maker | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Ergonomic design** | | | | | | | | | | |
| Switchless setup | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ |
| Compact footprint | ○ | ◒[10] | ○ | ○ | ○ | ○ | ○ | ● | ○ | ◒[10] |
| Complete documentation | ● | ● | ● | ● | ● | ○ | ○ | ● | ● | ○ |
| Tilt-and-swivel monitor | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Front-panel reset button | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| Front-panel on/off switch | ● | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ● |
| **Service and support** | | | | | | | | | | |
| Warranty period (months) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 24 | 12 | 12 |
| On-site service | ◒[11] | ◒[12] | ● | ● | ● | ● | ● | ● | ◒[12] | ◒[12] |
| Toll-free support number | ● | ○ | ● | ○ | ● | ● | ● | ● | ◒[12] | ● |
| Daily support (hours) | 10.5 | 10 | 13 | 10 | 12 | 9 | 10 | 9 | ◒[12] | 24 |
| Weekend support | ○ | ○ | ● | ○ | ● | ○ | ○ | ○ | ◒[12] | ● |
| BBS | ● | ○ | ○ | ● | ● | ○ | ○ | ○ | ○ | ○ |

[1] Price based on standard PC World 33-MHz 80386 system configuration: 4MB RAM, 1.2MB floppy drive, 150MB ESDI hard disk and controller, at least one parallel and one serial port, mouse port, VGA video board and color monitor, 101-key keyboard, DOS 3.3 or later version.
[2] Same as footnote 1, except with 160MB ESDI hard disk.
[3] Same as footnote 1, except with a caching hard disk controller and a math coprocessor.
[4] Same as footnote 1, except with 330MB ESDI hard disk and a caching disk controller.
[5] Same as footnote 1, except with 160MB ESDI hard disk and caching disk controller.
[6] Cache in hardware.
[7] Includes motherboard memory and RAM installable in proprietary slot accessed at full CPU speed.
[8] Slots for memory expansion only.
[9] Slots can double as 8-bit.
[10] Tower design.
[11] Only first four months on site.
[12] Available at extra cost.

8MB on the motherboard and the rest in two dedicated 32-bit memory slots. However, current versions of the memory expansion board are too big to allow two of them to fit on the motherboard, effectively limiting RAM to 24MB. According to Acer, new memory expansion boards will be available by the time you read this.

In addition to the memory slots, the motherboard holds six 8/16-bit slots and one 8-bit slot—but after you add video and hard and floppy disk controllers (one parallel and two serial ports are built in), you're down to four free slots. Furthermore, one of the 32-bit memory expansion slots is aligned with an 8/16-bit slot, which prevents the use of one board or the other.

The 1100/33 comes in a standard AT-size cabinet that accommodates five 5¼-inch half-height drive bays, three of which are externally accessible.

Service and support are fairly good. You get four months of on-site service, but afterwards you have to carry in the system to an authorized Acer service center. Phone support is toll free, and the quality is quite respectable. To evaluate support we made three phone calls—one in the morning, one at noon, and one in the afternoon. The first call was answered immediately; the second was answered after 4 minutes on hold; the third time we had to leave a message, but the support person called back 15 minutes later.

With current support for 24MB of RAM and potential support for 40MB, the 1100/33 is a tempting choice as a multiuser UNIX box. However, its high price and below-average OS/2 performance limit its appeal.

## EXECUTIVE SUMMARY

### Acer 1100/33

*33-MHz 80386-based computer*

This machine currently supports up to 24MB of CPU-speed RAM; soon that limit will rise to 40MB, making the Acer ideal as a multiuser host. However, bring a fat wallet; this is the most expensive system in the roundup. And OS/2 performance could be faster.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | | | ● |
| Service and support | | | | ● |
| Performance | | | ● | |
| Overall value | | | ● | |

**Reader service no. 650**

**The Austin 386/33's low price and capable Micronics motherboard are appealing, but the system is the slowest reviewed.**

## ALR FlexCache 33/386

Like the Acer, the ALR FlexCache tower is premium-priced ($9988 in the *PC World* configuration), but it boasts top performance on both DOS and OS/2 tests and outstanding board and drive capacity, making it an excellent platform for CAD/CAE users. ALR also offers several high-end CAD/CAE video options from IGS. (There's also a small-foot-

### NSTL BENCHMARK TESTING

The exclusive test facility for *PC World*, **National Software Testing Laboratories (NSTL)**, is an independent organization that specializes in evaluating personal computer hardware and software. A recognized pioneer in state-of-the-art test design, **NSTL** believes that the most useful benchmark tests measure how well products perform when executing typical business tasks. **NSTL** testers follow detailed test plans that simulate normal operating conditions. A controlled testing methodology ensures objective, accurate, and consistent results and gives consumers a sound basis for making purchase decisions. **NSTL** publishes its test results in *Software Digest Ratings Report*® and *PC Digest*.™ Neither publication accepts advertising. **NSTL** is located in Philadelphia, Pennsylvania.

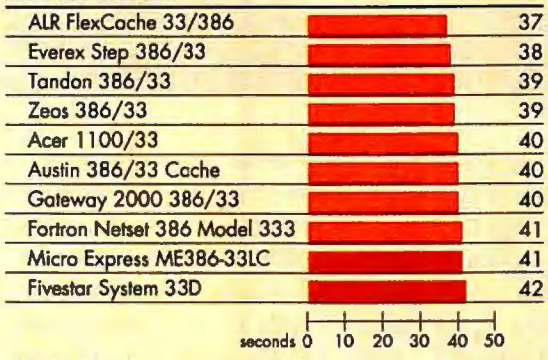
ROBERT CARDIN

# 33-MHz Speedsters: OS/2 Tests Tell the Tale

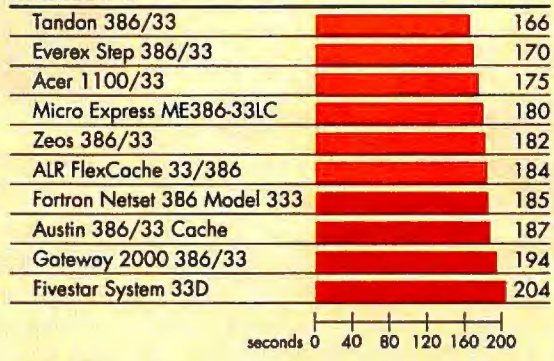
These high-performance systems pack up so closely (especially in the DOS tests) that it's hard to separate the contenders. In OS/2 tests, which provide a slightly wider spread, the ALR FlexCache 33/386 is fastest overall, with the Austin 386/33 noticeably slower than the rest.

## DOS

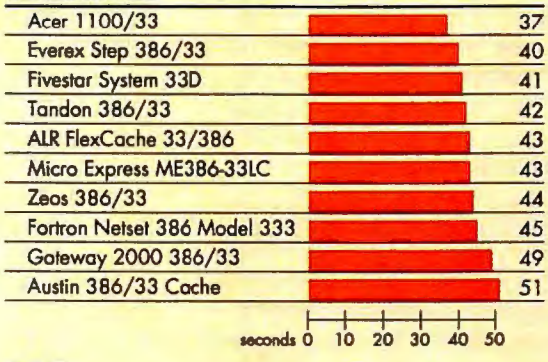
### Microsoft Word



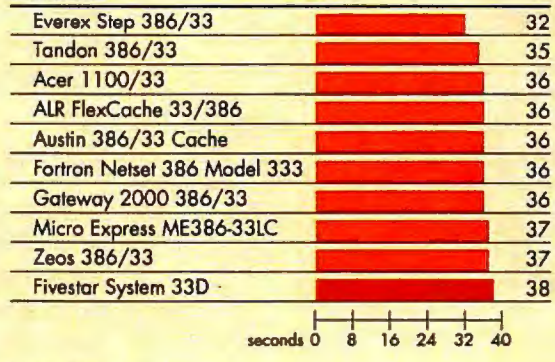

### Microsoft C



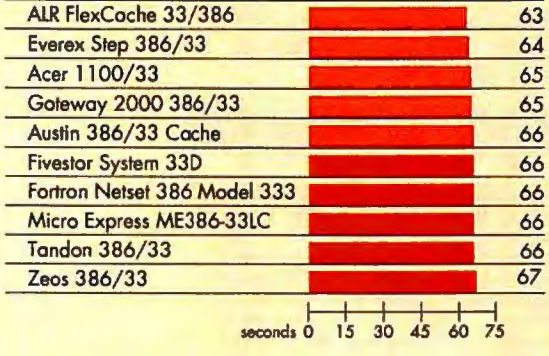

### dBASE III Plus




### AutoCAD




### 1-2-3



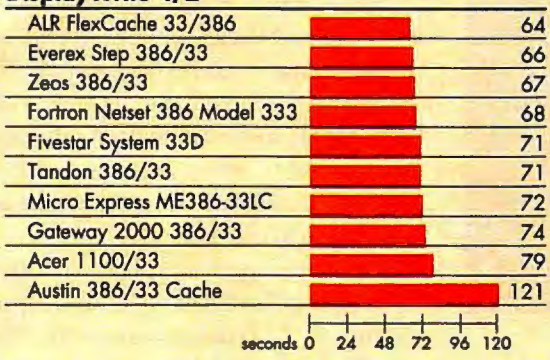

**Methodology**
All machines were tested with a coprocessor and a 256K extended memory disk cache (except in the *1-2-3* benchmark). Each system was tested with 4MB of RAM. Systems were configured with 150MB hard disks, except the Austin 386/33 and Zeos 386/33, which were equipped with 160MB hard disks, and the Tandon 386/33, which was configured with a 330MB hard disk.

**Microsoft Word 4.0**
A *Microsoft Word* macro loads a 35-page, 140-paragraph document and performs search-and-replace and spell-checking operations. The first page of the document is then printed. Although the results of the benchmark depend primarily on processor and memory access speeds, display adapter and hard disk speeds are also contributing factors.

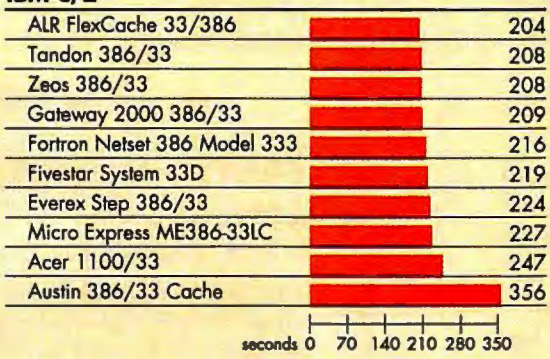
**dBASE III Plus 1.1**
The *dBASE III Plus* test measures the time required to prepare and print a report of past-due invoices. The report includes calculated fields and is based on three files: a 500-record customer file, a 1000-record invoice file, and a 2000-record item file. When disk caching is not used, the random access speed of the hard disk is, after processor speed, the most significant factor in this benchmark. With disk caching, sequential read performance becomes more important than random access.

## OS/2 Single-Tasking

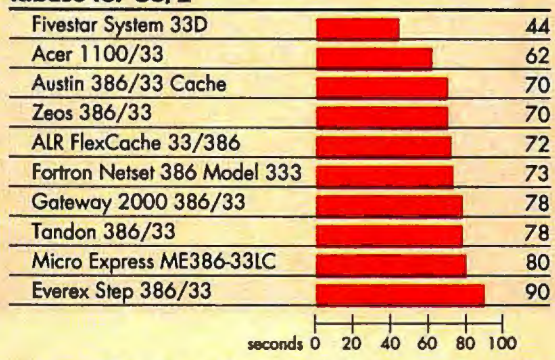
### DisplayWrite 4/2



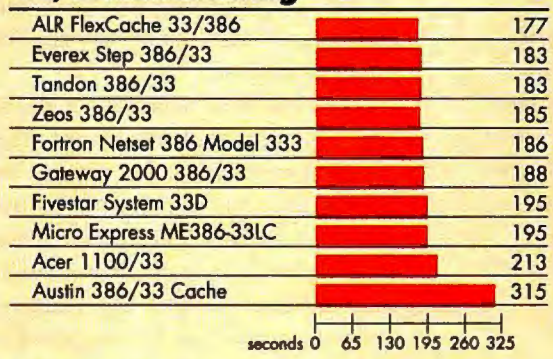

### IBM C/2




### R:base for OS/2




## OS/2 Multitasking




**1-2-3 2.01**
In this benchmark, a *1-2-3* macro executes a series of recalculations using five different formulas within a 75-by-75-cell matrix. Because there are few screen updates and no disk access is required, the results depend almost entirely on processing and memory access speeds.

**Microsoft C 5.0**
The *Microsoft C* benchmark measures the time required to compile and link *XLISP*. The most important factors in this benchmark are processor and memory access speeds. The performance of the hard disk is also a factor; generally, disk caching has little effect.

**AutoCAD 9**
In this benchmark, a three-dimensional sample drawing is retrieved and displayed using *AutoCAD*'s EGA driver. The zoom function is used to display the drawing from various perspectives; then the full drawing is printed. The results of the benchmark depend primarily on the speeds at which the processor and coprocessor operate and at which memory is accessed. The performance of the display adapter and the hard disk also have some effect.

**DisplayWrite 4/2**
Although the hard disk access rate plays a small part in this benchmark, processing and memory access speeds are the most significant factors. Memory architecture affects memory access speed: Systems that require additional memory in standard expansion slots to run OS/2 exhibit below-average performance.

While *DisplayWrite 4/2* is loading, the keystrokes to start a *DisplayWrite* macro are entered. The macro loads a 35-page, 140-paragraph document, replaces each occurrence of the word *today* with *tomorrow*, uses the built-in spelling checker to look for any incorrectly spelled words (there are none), paginates the document, prints the first page to an IBM Proprinter II, and exits *DisplayWrite*.

**IBM C/2**
In this benchmark, processing and hard disk sequential access speeds are the most important factors. The benchmark measures the time required to compile the 25 source code files that make up *XLISP*, a public-domain LISP interpreter.

**R:base for OS/2**
Processing and hard disk random access speeds are the most significant factors in this benchmark. Disk caching dramatically improves apparent disk access speed. This benchmark measures the time it takes to produce a report based on a three-file join, select, and sort.

**OS/2 Multitasking**
In two sessions, IBM's *C/2* compiles the 25 C source code files that make up *XLISP*. The results of this benchmark are determined by calculating the difference between the first session's starting time and the second session's ending time.

**Data based on tests designed and conducted by National Software Testing Laboratories (NSTL). All rights reserved.**

**Strong performance and a 486 upgrade path make Everex's Step 386/33 a tempting package—except for its high price.**

print version of this machine, the FlexCache 33/386Z: The price is lower but so is performance, and board and device capacities are similarly limited.)

The FlexCache can handle 16MB of CPU-speed RAM on the motherboard. There are eight expansion slots, and with the standard configuration you end up with five free slots (one 8 bit and four 8/16 bit). The drive capacity is the best of any system reviewed, with four half-height 5¼-inch bays (three externally accessible), one full-height 5¼-inch bay, and space for one 3½-inch internal drive (although proper mounting hardware was missing in the review unit, and power supply wires crowd this "bay").

Service and support are in surprisingly short supply for this high-priced system. You have to pay extra for on-site service, you foot the long-distance charges for technical support calls, and there's no BBS. Quality of technical support is also disappointing. On one call we spent 8 minutes on hold (with the long-distance meter ticking); on calls two and three we had to leave a message, and it took 3 hours and 3½ hours, respectively, for a support person to call back.

With its top speed and impressive drive capacity, the FlexCache 33/386 is a capable platform for CAD users—especially if they can afford one of the IGS video options. But have your money ready, because nothing about this machine is cheap.

**EXECUTIVE SUMMARY**

**ALR FlexCache 33/386**

*33-MHz 80386-based computer*

This tower is the fastest machine in the roundup and boasts outstanding board and drive capacities, plus several video options from IGS that serious CAD users will find hard to pass up. But it's pricey—and service and support leave a lot to be desired.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | | ● |
| Ergonomic design | | | ● | |
| Service and support | ● | | | |
| Performance | | | | ● |
| Overall value | | | ● | |

**Reader service no. 651**

## Austin 386/33 Cache

The Austin 386/33 Cache is one of four machines in this review priced below $6000; it costs $5995 in the *PC World* configuration. Unfortunately, it is the slowest system tested, especially under OS/2—but since it boasts a motherboard with a variable-speed expansion bus that can run as fast as 11 MHz

**EXECUTIVE SUMMARY**

**Austin 386/33 Cache**

*33-MHz 80386-based computer*

Built around a Micronics motherboard with an 11-MHz expansion bus, this is a low-priced system with outstanding service and support—but it's also the slowest system tested. If speed is the name of your game, look elsewhere.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | | ● | |
| Service and support | | | | ● |
| Performance | | | ● | |
| Overall value | | | ● | |

**Reader service no. 652**

ROBERT CARDIN

(compared with the industry-standard 8 MHz), you may be able to speed throughput and video performance.

Like three other machines here, the Austin 386/33 is built around the fine Micronics motherboard. This board holds no RAM at all. Up to 8MB of CPU-speed memory resides on a board that plugs into a dedicated 32-bit memory slot; a piggyback board adds another 8MB for a 16MB total.

You switch between 8-MHz and 11-MHz bus speed by moving a jumper. This can provide a major boost in video performance, a big plus for CAD users who want to squeeze every microsecond of velocity from their high-speed video cards—and get top LAN throughput. But beware: Not all adapter boards run properly at 11 MHz. (NSTL testing was done with the bus running at industry-standard 8 MHz. You may get much better results if you find boards that run at 11 MHz.)

**Fivestar's System 33D boasts a Micronics motherboard and a caching disk controller. But the price is high, and performance is unimpressive.**

The motherboard includes two 8-bit and five 8/16-bit slots; with an I/O board, a video board, and a disk controller installed you end up with four free slots (three 8/16 bit and one 8 bit). The system's AT-size case holds five half-height 5¼-inch bays, three externally accessible.

Austin's service and support are outstanding. Service is on site, via General Electric, and technical support is toll free, 13 hours on weekdays and 8 on Saturday. Two phone calls were answered instantly; the third required 6 minutes on hold to leave a message and was returned half an hour later.

The Austin 386/33 Cache is reasonably priced, but you can get a faster machine from Gateway, with the same Micronics motherboard, for $700 less. Under the circumstances, this system isn't a smart buy.

## Everex Step 386/33

The Everex Step 386/33 is one of the fastest systems tested, and it took top place (by a hair) in the *AutoCAD* test. Not only that, but Everex has announced a forthcoming 486 daughterboard that will let you convert the 386/33 to a 486/25! The expansion bus will run at 11 MHz, and slot capacity is tops. Nonetheless, even without the 486 upgrade,

## 33 MHz—WHO NEEDS IT?

**Naturally, CAD/CAE users, who are always looking for faster number crunching and screen redraws, need the fastest CPU they can get. This is also true of business users running their work groups on terminals hooked to a multiuser host—particularly those using UNIX, where every increase in speed translates into a higher number of happy users.**

**Another performance issue for both CAD/CAE and multiuser shops is expansion bus speed. Traditionally, this has been held at a conservative 8 MHz, limiting performance of peripherals like high-resolution video boards, scanners, network interface boards, and board-based serial ports. Recently, some high-performance systems have begun offering a variable-speed expansion bus that runs as fast as 11 MHz. Not all expansion boards will work properly at this speed, but if yours will you may see startling improvement in screen redraws and multiuser network throughput.**

**CAD/CAE users also need generous expansion capacity to accommodate peripherals like mice, multiple video boards, plotters, digitizing tablets, scanners, and multiple printers.**

**In the multiuser arena, capacity for CPU-speed RAM is critical. Every increase in RAM translates into a higher number of possible users.**

**So, who needs 33-MHz performance? You do—if you're a CAD/CAE user or run a multiuser shop, and have an appetite for chateaubriand performance on a hamburger budget. —*TJB***

**Fortron's Netset 386 Model 333 is fairly speedy and quite inexpensive. High-end display options increase its appeal for CAD users.**

you'll have to pay a whopping $10,215.

The motherboard accommodates up to 16MB of custom-made memory modules and comes with an expandable 64K memory cache; for our tests, we topped off the cache at its limit of 256K. Two 8-bit and six 8/16-bit slots are built in; five remain free in the standard configuration. As with the Micronics motherboard, bus speed is adjustable between 8 MHz and 11 MHz—but the Step lets you switch it with a ROM-based setup routine. The drive bay setup is standard: five half-height 5¼-inch bays, three externally accessible.

Service and support are good but not great. A year of on-site service comes free, and there's a BBS—but you pay long-distance tolls for technical support calls. Two of our calls were answered after 4 and 8 min-

## EXECUTIVE SUMMARY

### Everex Step 386/33

*33-MHz 80386-based computer*

For users who want high speed right now and a 486 upgrade path later, there's no beating the Everex Step 386/33. But be prepared to pay top dollar.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | | ● |
| Ergonomic design | | | | ● |
| Service and support | | | | ● |
| Performance | | | | ● |
| Overall value | | | | ● |

**Reader service no. 653**

## PC WORLD TAKES THE MEASURE OF SERVICE AND SUPPORT

*Michael Goodwin*

**Computers don't break down nearly as often as automobiles, but until someone makes one with *no* moving parts, service and support will continue to be critical factors in choosing a PC. To help our readers make their smartest buy, *PC World* has added a service and support category to this article's Features Evaluation; results are included in individual Executive Summaries.**

**Some service and support features are more important than others. At least 12 months of warranty coverage, on-site service, and a toll-free technical support number are extremely desirable—so much so, in fact, that to receive an "excellent" rating, a machine must offer all three. Less essentiol, but still important: Support lines should be open at least 10 hours a day to enable calls from either coast; weekend hours, while rare, are also very handy. Additional support, such as a BBS, makes it easier to get help at *your* convenience. All these features are factored together (with on-site service and toll-free support carrying the most weight) to determine a preliminary Executive Summary rating.**

**To arrive at the final rating, *PC World* evaluates the *quality* of phone support by moking three calls to the technical support number—one in the morning, one at noon, and one in the afternoon; naturally, we pretend to be an innocent customer, not a magazine. We note how long we're stuck on hold (if we are) and how long it takes to get an answer to a simulated technical question. Then we adjust the preliminary rating accordingly.**

***Michael Goodwin is an associate editor for* PC World.**

utes on hold (with the meter running). On the third call it took 7 minutes to leave a message.

Top speed, a 486 upgrade path, an expandable memory cache, and an 11-MHz bus makes the Step 386/33 a dream machine today and into the near future. Moreover, its cache should help large-memory applications run at full speed—although with a 16MB ceiling on CPU-speed RAM this advantage becomes a bit less pertinent. But at more than $10,000, this system is hardly an impulse purchase—you may want to wait just a bit for a real 486.

## Fivestar System 33D

The Fivestar 33D is another Micronics motherboard machine. The base system includes a cache controller for the hard disk, but overall performance is still unimpressive. Moreover, Fivestar is not serving a free lunch; in the *PC World* configuration (with the cache controller and a math coprocessor), this machine checks in at a hefty $7895. (At press time, Fivestar told us that a stripped-down model without the cache controller and math coprocessor, the 333, was available for $5165, but it was too late to get one for testing.)

In any case, while the disk cache may speed *loading* a CAD file, it doesn't help redraws at all; NSTL's *AutoCAD* scores were extremely close, but the Fivestar's numbers were still the worst in the roundup.

CPU-speed memory capacity (16MB), free slots (four), bays (five 5¼-inch half-heights), and the 11-MHz expansion bus are all standard for the Micronics motherboard in an AT chassis.

Fivestar's service and support are much better than standard. You get a year of on-site service, toll-free technical support on weekends as well as weekdays, and a BBS. However, the quality of technical support could be better. On all three test calls we had to leave a message; a support person called back after 45 minutes, 3 hours, and 4½ hours, respectively.

Given its hefty price tag and under-average performance, the Fivestar 33D probably isn't worth the extra money unless you plan to use it for disk-intensive applications.

**Gateway's 2000 386/33 is the lowest-priced system reviewed—and it comes with a Micronics motherboard and a Mitsubishi multiscan monitor.**

ROBERT CARDIN

### EXECUTIVE SUMMARY

**Fivestar System 33D**

*33-MHz 80386-based computer*

This midpriced system combines the excellent Micronics motherboard (with its 11-MHz bus) and a cache controller for the hard disk, but testing shows that its performance is actually worse than that of systems costing $1900 less. You can do better.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | | ● | |
| Service and support | | | | ● |
| Performance | | | ● | |
| Overall value | | ● | | |

**Reader service no. 654**

## Fortron Netset 386 Model 333

The Fortron Netset 386 Model 333 is one of the least expensive machines in the roundup: $5890 in the *PC World* configuration. It's also relatively fast, especially on OS/2. Moreover, several high-end video options (like a 19-inch CAD station monitor with an 8514/A video board) available from Fortron make it especially appealing to the CAD/CAE user.

The Model 333 is one of two machines re-

**Micro Express's ME386-33LC small-footprint system is surprisingly inexpensive—and comes with two years of on-site service.**

viewed here that's built around an AMI motherboard. This board holds up to 8MB of CPU-speed system RAM; to get beyond 8MB you need to install a memory board in a CPU-speed expansion slot. However, this slot can double as a standard 8-bit slot if you don't need it for memory. In addition, the motherboard sports another 8-bit and six 8/16-bit slots; in our configuration (with the 32-bit memory slot doubling as an 8 bit), you get five free slots. The system comes in a standard AT chassis, providing space for five 5¼-inch drives (three externally accessible).

Service and support are quite good. One year of on-site service comes with the system, and technical support is toll free—but available only 9 hours a day, and not on weekends. Support quality is mixed. Two calls were answered instantly; the third time we couldn't even leave a message but were asked to call back in half an hour.

For the user on a budget, the Fortron Netset 386 Model 333's low price and large selection of CAD options make it a serious contender. And while its AMI motherboard lacks the 11-MHz expansion bus capacity of the Micronics-based systems, good OS/2 performance makes up for it.

**EXECUTIVE SUMMARY**

**Fortron Netset 386 Model 333**

*33-MHz 80386-based computer*

This fast, low-priced machine offers an abundance of extra-cost CAD options. While it's neither the fastest nor the cheapest system reviewed, it's still a solid value.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | | ● |
| Ergonomic design | | | ● | |
| Service and support | | | | ● |
| Performance | | | | ● |
| Overall value | | | | ● |

**Reader service no. 655**

**EXECUTIVE SUMMARY**

**Gateway 2000 386/33**

*33-MHz 80386-based computer*

BEST BUY

This fast, Micronics-based system delivers the goods (including a Mitsubishi multiscan monitor, a 64K memory cache, a fast hard disk, and an 11-MHz bus) at the lowest price in the roundup. Recommended.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | ● | | |
| Service and support | | | ● | |
| Performance | | | | ● |
| Overall value | | | | ● |

**Reader service no. 656**

## Gateway 2000 386/33

At $5295 in the *PC World* configuration, the Gateway 2000 386/33 is the cheapest machine in the roundup. But don't let the low price fool you. Gateway uses the same feature-laden Micronics motherboard (with its 11-MHz expansion bus) you'll find in the $5995 Austin, and it's added features for which you might expect to pay a lot extra—like a 64K memory cache, a hard disk that's among the fastest reviewed, and a Mitsubishi multiscan monitor. Performance is average, which in this crowd means very fast.

CPU-speed memory capacity (16MB), free slots (four), bays (five 5¼ half-height), and

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**Tandon's 386/33 is expensive, but you get a 330MB hard drive and a caching disk controller. Even so, performance is only average.**

the 11-MHz expansion bus are all standard for the Micronics motherboard and the familiar AT chassis.

Service and support are quite good. You get 12 months of on-site service, and technical support is toll free. Phones work 10 hours a day, weekdays only. Support quality is less impressive. We had to leave a message each time we called; support people returned the calls after 1, 3, and 7 hours, respectively.

With a multiscan monitor, an 11-MHz expansion bus, a fast hard disk, and a super-low price, the Gateway 2000 386/33 is an amazing value. It will make waiting for an 80486 a lot less painful. Go for it.

## Micro Express ME386-33LC

The ME386-33LC is an equally impressive, low-priced, Micronics-based system. It lists for a scant $5494 in the *PC World* configuration and boasts the smallest footprint in the roundup. (Micro Express also makes the ME386-33, based on the AMI motherboard; it's larger, slower, and more expensive.)

The 33LC has 16MB of CPU-speed memory capacity, four free slots, and an 11-MHz expansion bus—the regular Micronics complement. And despite its small footprint, there's room for five half-height drives—three 5¼ inch (all externally accessible) and two 3½ inch (one externally accessible).

Service and support are impressive—at least on paper. Micro Express guarantees the system for a full two years and provides on-site service for the entire period. Technical support is toll free, 9 hours a day on weekdays, but quality is uneven. One call was answered instantly. We had to leave messages on calls two and three; number two was returned after 2 hours, but number three was never returned at all.

The ME386-33LC is worth your attention. It costs only $200 more than the Gateway, and it provides the same Micronics motherboard, the same "average" (quite fast) performance, a full two-year warranty, and on-site service—plus an attractive small-footprint chassis. There's a lot here to like.

### EXECUTIVE SUMMARY

**Micro Express ME386-33LC**

*33-MHz 80386-based computer*

BEST BUY

This is a fast, low-priced, Micronics-based system with an 11-MHz expansion bus—and users with limited desk space will appreciate its attractive small-footprint chassis. Its two-year warranty is a welcome plus; uneven technical support its only serious minus.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | | | ● |
| Service and support | | | ● | |
| Performance | | | | ● |
| Overall value | | | | ● |

**Reader service no. 657**

## Tandon 386/33

At $9898 (in the standard configuration, but with a 330MB hard disk and a disk cache controller), the Tandon 386/33 is the priciest "Micronics" system in the roundup. Even with the extra equipment, however, its performance is not outstanding. NSTL tests show that despite the cache controller and 64K, two-way associative memory cache, overall performance is only average.

CPU-speed memory capacity (16MB), free slots (four), and the 11-MHz expansion bus are all standard for the Micronics mother-

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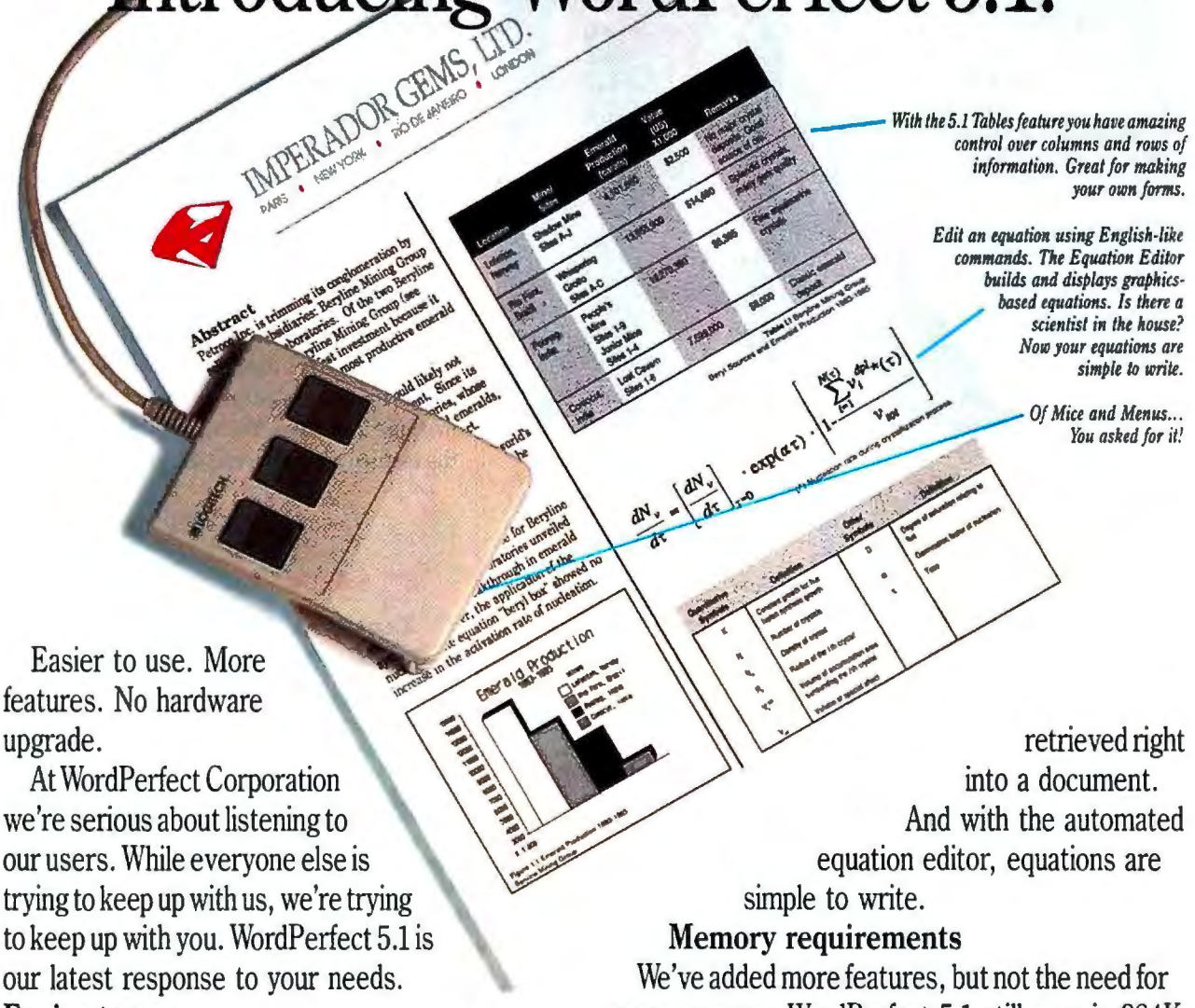


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**Zeos's 386/33 tower includes a caching disk controller and good device capacity, but performance is only average, and the price is not cheap.**

board. The system is housed in a traditional AT chassis with five 5¼-inch bays, all externally accessible.

Service and technical support are handled through local Tandon dealers. While that isn't necessarily bad, it makes it impossible to generalize about quality. We called Tandon dealers in eight major cities. Four offered on-site service; three offered on-site service within the local area; one provided only carry-in service. Only one offered unlimited toll-free long-distance phone support. Technical support lines were open an average of 9½ hours a day, but only two of the eight dealers offered Saturday support, and none were available Sunday. Six of the eight had fax machines.

With most of the systems reviewed, performance differences are so slight that speed is not a factor. But given the Tandon 386/33's high price, its merely average performance knocks it out of the running.

**EXECUTIVE SUMMARY**

**Tandon 386/33**

*33-MHz 80386-based computer*

The "basic" Tandon system, based on the Micronics motherboard, comes with a 330MB hard disk and a cache controller, raising its price to nearly $10,000—but despite the expensive extras its performance is only average. Look around for a better value.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | ● | |
| Ergonomic design | | | ● | |
| Service and support | | | ● | |
| Performance | | | | ● |
| Overall value | | ● | | |

**Reader service no. 658**

## Zeos 386/33

With a price of $6612 in the *PC World* configuration, the AMI motherboard–based Zeos 386/33 tower is no bargain. True, the base machine includes a disk cache controller, but the feature adds $1000 to the price and does little to improve DOS performance, which is only average. The system does a bit better than average under OS/2.

**EXECUTIVE SUMMARY**

**Zeos 386/33**

*33-MHz 80386-based computer*

A disk cache controller comes standard with this machine and raises the price by about $1000—but performance does not improve accordingly. This isn't a bad machine, just a bit pricey for what you get.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Memory bus capacity | | | | ● |
| Expandability | | | | ● |
| Ergonomic design | | | | ● |
| Service and support | | | ● | |
| Performance | | | | ● |
| Overall value | | | ● | |

**Reader service no. 659**

As is true of the other AMI system, the Zeos 386/33 has a 16MB ceiling for CPU-speed RAM, and five free slots in the *PC World* configuration (with the 32-bit memory slot doubling as an 8 bit). However, it comes in a tower cabinet that boasts excellent device capacity. You get six 5¼-inch half-height bays, all externally accessible.

Zeos has an odd combination of middling

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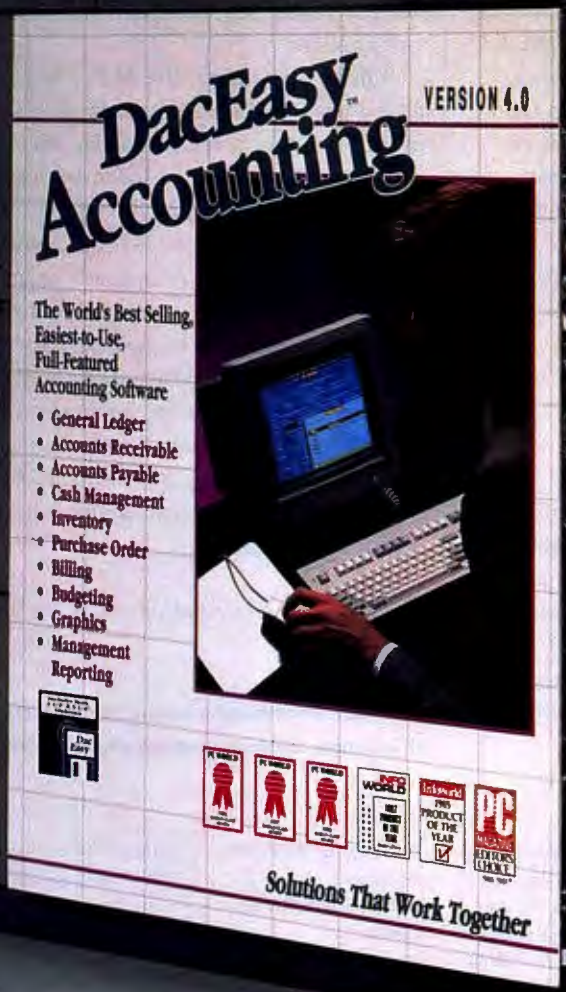


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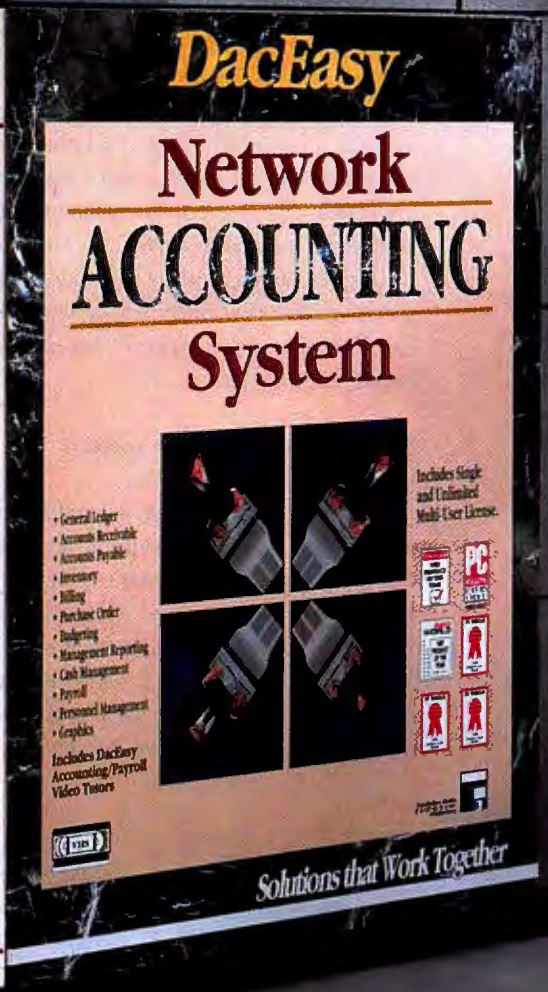


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**Minimum Hardware Requirements:** DacEasy Accounting Network System supports Novell Network, IBM PC NET and any DOS 3.1 Net Bios Compatible LAN • DacEasy Accounting Version 4.0 requires 512K memory (640K with graphics), IBM or compatibles. Hard disk only. MS-DOS or PC-DOS 2.1 or later. Monochrome, CGA, VGA and EGA monitor. Mouse optional. • MS-DOS, PC-DOS, IBM and Microsoft are trademarks of their respective corporations. DacEasy and Lucid 3-D are trademarks of DacEasy, Inc. Copyright © 1989, DacEasy, Inc. All rights reserved.

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service (12 months, but you pay extra for on-site) and outstanding technical support (it's toll free, and the lines are staffed 24 hours a day, seven days a week). We tested the 24-hour support line by calling after midnight; a support person answered instantly. Overall, however, support quality is a mixed bag. One call was answered instantly; another was returned 90 minutes later; a third was never answered, and when it was placed again the next day it was not returned.

Despite the chancy service and support, there's nothing seriously wrong with the Zeos 386/33 except its price. You can do better, and pay less.

### 33-MHz Performance: Instant Gratification

The Gateway, Micro Express, and Fortron systems are all strong values at under $6000. For top price and performance, there's no beating the bargain-priced Gateway 2000 386/33 with its multiscan monitor and 11-MHz expansion bus. For a couple hundred dollars more, the Micro Express ME386-33LC gives you same good Micronics motherboard, plus a two-year warranty and a handy small-footprint chassis. CAD users will want to take a close look at the speedy Fortron Netset 386 Model 333 with its many video options.

If price is no object, the ALR FlexCache 33/386 tower is the fastest machine here overall, and the most expandable. The Everex Step 386/33 is also a speedster, especially in DOS—and it earned the top performance score on the *AutoCAD* test. Moreover, its forthcoming 486 upgrade means you won't be stuck with an outmoded system. The machine with the largest capacity for CPU-speed RAM (and thus the best choice for a multiuser host) is the high-priced Acer 1100/33. However, if money is *really* no object, and you can delay gratification for a few months, you may be much happier with a 486-based system. ●

*TJ Byers is a contributing editor for* PC World.

**For more information about all products in this article, circle reader service no. 909.**

**WHERE TO BUY**

**Acer 1100/33**
Acer America
401 Charcot Ave.
San Jose, CA 95131
408/922-0333
LIST PRICE: with 4MB RAM, 32K memory cache, 1.2MB floppy drive, one parallel and two serial ports, mouse, 101-key keyboard, DOS 3.3, GW BASIC, Windows/386, disk caching, EMM $7895
ACCESSORIES: 4MB SIMMs kit $1195; unpopulated memory expansion board $655; 150MB ESDI hard disk $1460, 340MB ESDI hard disk $2030, ESDI controller card and mounting hardware $215; 1.44MB floppy drive $167; 8-bit VGA board $220, 16-bit VGA board $445; VGA monochrome monitor $169, VGA color monitor $510, multiscan monitor $560; OS/2 with PM $350
WARRANTY: one year parts and labor, first four months on-site via TRW, remaining eight months carry-in to dealer
EXTENDED WARRANTY: via TRW
TECHNICAL SUPPORT: toll-free number, M–F 7:30–6
OTHER SUPPORT: CompuServe BBS
**Reader service no. 650**

**ALR FlexCache 33/386**
Advanced Logic Research, Inc.
9401 Jeronimo
Irvine, CA 92718
714/581-6770
LIST PRICE: Model 150 with 2MB RAM, 128K cache, 1.2MB floppy drive, 150MB ESDI hard disk, 16-bit VGA board, one parallel and one serial port, 101-key keyboard $8990; Model 340H (same as Model 150 except with 340MB ESDI hard disk and caching controller) $10,990; Model 650H (same as Model 150 except with 650MB ESDI hard disk and caching controller) $12,990
ACCESSORIES: 1MB RAM $185; 1.44MB floppy drive $175; ALR FlexCAD high-speed video board $1395; VGA color monitor $499; IGS video subsystem with 15-inch monitor $3300, IGS video subsystem with 21-inch monitor $5300; 80387 math coprocessor $1097; DOS 4.01 $129
WARRANTY: one year parts and labor; on-site available at extra cost via Intel
EXTENDED WARRANTY: via dealer or Intel
TECHNICAL SUPPORT: toll number, M–F 7–5
OTHER SUPPORT: via dealer
**Reader service no. 651**

**Austin 386/33 Cache**
Austin Computer Systems
10300 Metric Blvd.
Austin, TX 78758
512/339-7932
LIST PRICE: with 1MB RAM, choice of floppy drive, 32K cache, one serial and one parallel port, DOS 3.3 $3195; with 4MB RAM, 64K cache, 1.2MB floppy drive, 1.44MB floppy drive, 160MB ESDI hard disk, one parallel and two serial ports, VGA board, VGA color monitor, 80387 math coprocessor, 101-key keyboard, no DOS $5995
ACCESSORIES: 1MB RAM $199; 4MB piggyback memory board $999, 8MB piggyback memory board $1795; 110MB IDE hard disk $895, 160MB ESDI hard disk $1195, 330MB hard disk $1795; 16-bit VGA board and color monitor $539, 512K VGA board and multiscon monitor $795; 40MB tape back-up $395; 80387 math coprocessor $595; DOS $89
WARRANTY: one year parts and labor, on-site vio GE
EXTENDED WARRANTY: ovailoble
TECHNICAL SUPPORT: toll-free number, M–F 7 a.m.–8 p.m., Sat 10–6
OTHER SUPPORT: none
**Reader service no. 652**

**Everex Step 386/33**
Everex Computer Systems Div.
48504 Kato Rd.
(continues)

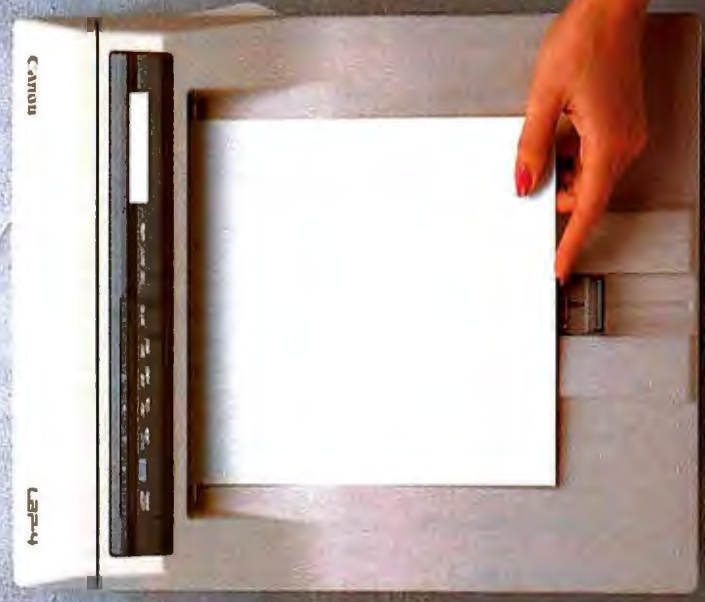
Before you make any big decisions over which laser printer to buy, we'd like to point out a few little things about the new Canon LBP-4.

The first of which is size. Unlike most "desktop" printers that need a space the size of a football field to fit in your office, the LBP-4 is compact. So it actually fits on top of your desk.

It also fits your budget. With an equally compact price of only $1,545.*

And it's the only laser printer in its class to offer built-in scalable fonts that let you set type from the smallest fine print to headline size. Without options or add-ons.

Plus a lot of other little extras that make it easy to print high-quality text and graphics right down to the smallest detail. Including Canon's convenient EP-L replaceable cartridge, and a versatile front-loading paper tray. It even prints envelopes.




# Very little to get excited about.

So call toll-free 1-800-441-5454 or stop by your Canon Dealer and see an LBP-4 for yourself.

It's the first compact, affordable laser printer with scalable fonts, standard. And that's something to get excited about.

A printer driver kit is provided free with each new LBP-4 containing all printer definition files currently available for this printer on diskette, plus complete installation instructions.

*Manufacturer's suggested retail price.

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**Canon**
**LBP-4**
LASER BEAM PRINTER

Working to improve your image.™

Circle 18 on reader service card

## WHERE TO BUY

Fremont, CA 94538
800/356-4283
LIST PRICE: with 2MB RAM, 64K cache, 1.2MB flappy drive, one parallel and one serial part, 101-key keyboard, DOS 3.3, GW BASIC $6799; with 4MB RAM $7399
ACCESSORIES: 2MB RAM $659, 3MB RAM $959, 4MB RAM $1259; memory cache module $299; 90MB ESDI hard disk $1100, 160MB ESDI hard disk $1625, 330MB ESDI hord disk $2600; 16-bit VGA board $279; VGA monochrome monitor $199, VGA color monitor $613, multiscan color monitor $799; 80387 math coprocessor $995; OS/2 $340
WARRANTY: one yeor parts and labor an-site via NCS
EXTENDED WARRANTY: via dealer
TECHNICAL SUPPORT: toll number, M–F 7–5
OTHER SUPPORT: BBS
**Reader service no. 653**

### Fivestar System 33D

Fivestar Computers
2100 N. Greenville Ave.
Richardson, TX 75801
800/752-5555
LIST PRICE: with 4MB RAM, 64K cache, 150MB ESDI hard disk with 512K coche controller, 1.2MB floppy drive, 1.44MB floppy drive, one parallel and two serial ports, 101-key keyboard, 16-bit VGA board, NEC 3D MultiSync monitor, 80387 math coprocessor, DOS 3.3 or 4.01 $7895
ACCESSORIES: 4MB piggyback memory board $1000; 4MB RAM $425; 320MB ESDI hard disk $1749, 613MB ESDI hard disk $2770; 19-inch NEC XL monitor with high-resolution video board $2495; Weitek 3167 math coprocessor $1470; 150MB tape backup $995, 320MB tape backup $1595; tower cobinet $100
WARRANTY: one year parts and labor, on-site vio GE
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M–Sat 7–7
OTHER SUPPORT: in-house BBS
**Reader service no. 654**

### Fortron Netset 386 Model 333

Fortron/Source Corp.
6818-G Patterson Pass Rd.
Livermore, CA 94550
415/373-1008
LIST PRICE: with 1MB RAM, 64K cache, 1.2MB floppy drive, one parallel and two serial ports, game part, 101-key keyboard, DOS 3.3, GW BASIC, EMM $3100
ACCESSORIES: unpopulated 8MB memory board $295; 4MB RAM $695; 1.44MB floppy drive $100; 110MB ESDI hard disk $1100, 150MB ESDI hard disk $1295, 320MB ESDI hard disk $2000, 600MB ESDI hard disk $4500; monochrome board and monitor $175, EGA board and color monitor $450, VGA board and color monitor $600, 16-inch high-resolution color monitor $1050, 16-inch high-resolution color monitor with 8514/A graphics card $1399, 19-inch CAD station monitor with 8514/A graphics card $2695; 80387 math coprocessor $695, Weitek 3167 math coprocessor $1495
WARRANTY: one year parts and labor, on-site via GE
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M–F 8–5
OTHER SUPPORT: none
**Reader service no. 655**

### Gateway 2000 386/33

Gateway 2000
P.O. Box 2000
Sergeant Bluff, IA 51054
800/523-2000
LIST PRICE: with 4MB RAM, 64K cache, 1.2MB and 1.44MB floppy drives, 160MB ESDI hard disk, 16-bit VGA board, multiscan color monitor, one parallel and two serial ports, mouse port, DOS 4.01, 101-key keyboard $5295
ACCESSORIES: 4MB piggyback memory board $900; 4MB RAM $500; 300MB ESDI hard disk $1550, 766MB ESDI hard disk $3000, 150MB tape backup $650; NEC 4D monitor $700 (purchased with system) $1200 subsequently, NEC 5D monitor $1500 (purchased with system) $2000 subsequently; 80387 math coprocessor $600; tower case $200
WARRANTY: one year parts and labor, on-site via TRW
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M–F 8–6
OTHER SUPPORT: 24-hour answering service
**Reader service no. 656**

### Micro Express ME386-33LC

Micro Express
1801 Carnegie Ave.
Santa Ana, CA 92705
800/642-7621,
714/852-1400
LIST PRICE: ME386-33LC with 1MB RAM, 32K cache, 1.2MB floppy drive, one parallel and two serial ports, 101-key keyboard $2749
ACCESSORIES: 1MB RAM $200, 3MB $420, 4MB $500; 1.2MB or 1.44MB floppy drive $120; 100MB ESDI hard disk $999, 150MB ESDI hard disk $1500, 336MB ESDI hard disk $2155, 750MB ESDI hard disk $3400; EGA board and color monitor $500, 16-bit VGA board ond color monitor $750; 60MB tape backup $799, 150MB tape backup $1099; B0387 math coprocessor $725, Weitek math coprocessor $1895; DOS 3.3 $75, DOS 4.01 $85, OS/2 $275
WARRANTY: two years parts and labor, first year on-site via Nationwide Warranty Corp.
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M-F 9-6
OTHER SUPPORT: none
**Reader service no. 657**

### Tandon 386/33

Tandon Corp.
301 Science Dr.
Moorpark, CA 93021
805/523-0340
LIST PRICE: Model 33/1 with 1MB RAM, 64K cache, 1.2MB or 1.44MB floppy drive, one parallel ond one serial port, 101-key keyboard, DOS 3.3 $4899; Model 33/110 (same as Model 33/1 except with 110MB IDE hard disk) $6221; Model 33/330 (same as Model 33/1 except with 330MB ESDI hard disk) $7999
ACCESSORIES: piggyback memory board with 1MB RAM $515; 4MB expansion RAM $1899; 1.2MB floppy drive $150, 1.44MB floppy drive $190; 8-bit VGA board $363, 16-bit VGA board $409; VGA monochrome monitor $226, VGA color monitor $637
WARRANTY: one year parts ond labor, on-site via participating dealer
EXTENDED WARRANTY: via dealer
TECHNICAL SUPPORT: via dealer
OTHER SUPPORT: via dealer
**Reader service no. 658**

### Zeos 386/33

Zeos Int'l
530 5th Ave. NW #1000
St. Poul, MN 55112
612/633-4591
LIST PRICE: with 1MB RAM, 80MB SCSI hard drive, 1.2MB floppy drive, one porallel ond two seriol ports, gome port, Hercules video boord, monochrome monitor, 101-key keyboord $4495
ACCESSORIES: unpopulated 2MB memory boord $199, unpopulated 8MB memory boord $199; 2MB RAM $299, 4MB RAM $499, 8MB RAM $1399; 16-bit VGA board and color monitor $495; VGA monochrome monitor $1995, VGA color multiscan monitor $695; 120MB RLL hard disk $295, 160MB ESDI hard disk $1025, 340MB ESDI hard disk $1995, 674MB ESDI hard disk $3325; DPT hard disk controller with 512K disk cache $995; 60MB tape backup $298; 80387 math coprocessor $699, Weitek math coprocessor $1995, Weitek 80387 daughterboord $150; DOS 3.3 $98, DOS 4.01 $119
WARRANTY: one year mail-in to company
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, 24 hours every day
OTHER SUPPORT: none
**Reader service no. 659**

# HARD DRIVES

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|---|---|---|---|---|---|---|---|
| **Seagate** | | | | | | | |
| ST225 | 20MB | 65MS | 1/2 HEIGHT | MFM | 229 | 199 | CALL |
| ST238R | 30MB | 65MS | 1/2 HEIGHT | RLL | 249 | 209 | CALL |
| ST250R | 40MB | 70MS | 1/2 HEIGHT | RLL | 285 | 235 | 230 |
| ST251 | 40MB | 40MS | 1/2 HEIGHT | MFM | 372 | 314 | 309 |
| ST251-1 | 40MB | 28MS | 1/2 HEIGHT | MFM | 412 | 354 | 349 |
| ST277R | 65MB | 40MS | 1/2 HEIGHT | RLL | 434 | 374 | 369 |
| ST277R-1 | 65MB | 28MS | 1/2 HEIGHT | RLL | 454 | 394 | 389 |
| ST4096 | 80MB | 28MS | FULL HEIGHT | MFM | 589 | 540 | 535 |
| ST296N | 85MB | 28MS | 1/2 HEIGHT | SCSI | 549 | 509 | 504 |
| **MITSUBISHI ELECTRONICS** | | | | | | | |
| MR535 | 66MB | 23MS | 1/2 HEIGHT | M/R | 454 | 404 | 399 |
| **KALOK** | | | | | | | |
| KL320 | 20MB | 40MS | 3.5 INCH | MFM | 239 | 199 | CALL |
| KL330 | 30MB | 40MS | 3.5 INCH | RLL | 265 | 218 | CALL |
| **MiniScribe** | | | | | | | |
| 8450 | 40MB | 45MS | 3.5 INCH | RLL | 297 | 247 | 242 |
| 3650 | 40MB | 65MS | 1/2 HEIGHT | MFM | 332 | 274 | 269 |
| 3085 | 71MB | 22MS | 1/2 HEIGHT | MFM | 589 | 539 | 534 |

EXTRA BONUS: QUIK-MENU HARD DRIVE ORGANIZER-REGULARLY $49.95, ONLY $14.99 W/PURCHASE OF ANY POWERKIT!
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- MOUNTING HARDWARE
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- RAIL MOUNTING SCREWS
- ONTRAK PARTITIONING SOFTWARE (FOR 40MB's & LARGER)
- PHONE-IN CUSTOMER SERVICE AND SUPPORT!!

SEE PAGES 210, 211 & 212 ALSO!

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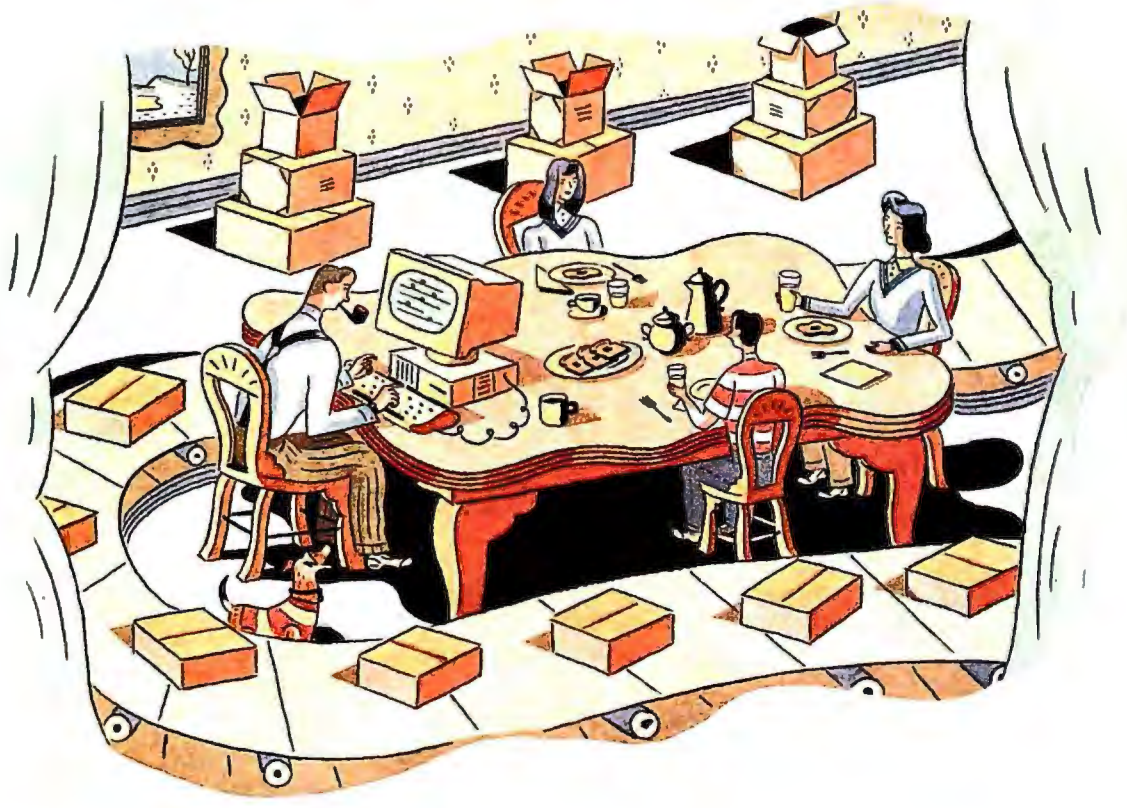
*Prices and availability subject to change. Prices shown are US currency and reflect a 3.5% cash discount. COD's and Prepays by cashier's check only - personal and company checks take 10 days to clear. All returns must be accompanied by a valid EMM RMA#. Michigan residents add 4% American Express - add 4.5%. We reserve the right to substitute brands for similar products of equal or greater value only.*

# Personal Finance Software Goes to Work

**For help in running a home business, try one of these so-called personal finance packages.**

**The best let you concentrate on your business, not on your books.**



*Ralph Soucie*

If you run a business out of your home, you'd probably prefer to spend your time making money rather than accounting for it. Yet even shoe box entrepreneurs must master financial record keeping, if only to deliver useful data to their accountants at tax time. Enter a group of programs most of us associate with personal money management: *Andrew Tobias' Managing Your Money*, *Quicken*, and two newcomers, *MoneyCounts* and *Money Matters*. To the vendors' surprise, many users have simply ignored the "personal" label and put these packages to work in one- or two-person businesses.

There are good reasons for this. Half the programs here are basically checkbook managers, and many small businesses are run out of a checkbook: Money in, money out, no messing with double-entry bookkeeping. So for the harried owner with three phones ringing, a fast check-writing package like *Quicken* is a godsend. At the other extreme, financial planners like *Managing Your Money* are ponderous and expensive, combining sophisticated tax planning and record keeping with such skills as stock portfolio management. Neither type of program will replace a full-blown accounting package, but both are perfectly adequate for home businesses.

To best serve a home business, the ideal personal finance program should make it easy to create expense categories, enter transactions, print checks, and reconcile bank statements. Next in importance, it should generate general ledger reports and financial statements that summarize tax information. Naturally, it should produce graphs for highlighting trends.

It's also a plus when a program helps you plan your taxes, not just report them; it should offer a solid set of present-value utilities to help you weigh problems involving annuities, retirement savings, mortgage refinancing, and the like.

We've viewed the products in this roundup primarily as a means to handle day-to-day business and tax reporting, while noting also their useful financial management features. For simple tax reporting (as opposed to tax planning), *Quicken* and *Money Matters* top the list, the former because it's so easy to use, the latter because it can be customized to fit your business. For tax or retirement planning or stock portfolio management, *Managing Your Money* is still the classic.

Naturally, using these packages involves some trade-offs. If your business is too big for the den or has more than a few employees or profit centers, you may prefer a low-cost accounting program like Great American Software's *One-Write Plus*. But if you simply need speed and flexibility in keeping your books, one of these programs will fill the bill.

## Andrew Tobias' Managing Your Money 5.0

The best-known of all the financial planning programs, MECA's $220 *Andrew Tobias' Managing Your Money* is a versatile tool for people who have extensive investments and financial planning needs. It requires a great

**EXECUTIVE SUMMARY**

**Andrew Tobias' Managing Your Money 5.0**

*Home finance package*

*Managing Your Money* requires extensive data entry and may not be the best program for business owners in a hurry. But investors will like the program's power, documentation, and impressive range of reports and financial planning features. The electronic check-sending option in version 6.0 is particularly convenient.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Data entry | | | ● | |
| Checkbook management | | | ● | |
| Financial management | | | | ● |
| Accounting and reporting | | | ● | |
| Overall value | | | ● | |

**Reader service no. 601**

MICHAEL KLEIN

FEATURES EVALUATION

# Checks and Balances in the Home Office

*Home-business owners find that personal finance software can be remarkably useful. Quicken is a fast check writer, Managing Your Money a solid investment adviser, and Money Matters a bit of both.*

● Yes
○ No
◒ Deficient
△ Limited only by available RAM
▼ Limited only by available disk space

| | Andrew Tobias' Managing Your Money 5.0 | MoneyCounts 6.0 | One-Write Plus Money Matters 1.0 | Quicken 3.0 |
|---|---|---|---|---|
| **Data Entry** | | | | |
| Optional decimal entry | ○ | ○ | ● | ○ |
| Partial-name search | ● | ● | ● | ● |
| Recurring-transaction groups | ● | ● | ● | ● |
| Interaccount transfers | ● | ● | ◒[1] | ● |
| Can require budget categories when recording checks | ○ | ● | ● | ● |
| **Checkbook management** | | | | |
| Expense categories | ▼ | 200 | 500 | ▼ |
| Prints checks | ● | ● | ● | ● |
| Inserts asterisks to protect against alteration | ○ | ● | ● | ● |
| Bank statement reconciliation | ● | ● | ● | ● |
| Accepts multiple dates within a single check run | ● | ○ | ● | ● |
| **Accounting and reporting** | | | | |
| Accounts | ▼ | 999 | 500 | 255 |
| Transactions in data base | ▼ | 100,000 | 20,000 | 65,000 |
| Transactions in memory | △ | △ | △ | 1000 |
| Multiple business entities in one checking account | ○ | ◒[2] | ● | ● |
| Tax accounting capability | ● | ◒[3] | ● | ◒[3] |
| Owner equity accounts | ○ | ● | ● | ○ |
| Automatically selects invoices for payment by due date | ◒[4] | ● | ● | ○ |
| General ledger menu option | ○ | ● | ● | ● |
| Prints invoices | ● | ○ | ● | ○ |
| Lists categories | ○ | ● | ● | ● |
| Tracks 1099 information | ○ | ○ | ● | ○ |

| | Andrew Tobias' Managing Your Money 5.0 | MoneyCounts 6.0 | One-Write Plus Money Matters 1.0 | Quicken 3.0 |
|---|---|---|---|---|
| **Accounting and reporting (continued)** | | | | |
| Saves report formats | ● | ◒[5] | ◒[6] | ● |
| Graphs | ● | ● | ○ | ○ |
| Exports to | | | | |
| ASCII | ● | ● | ● | ● |
| WKS or WK1 | ○ | ● | ○ | ◒[7] |
| Tax preparation programs(s) | ●[8] | ●[9,10] | ○ | ●[10] |
| **Financial management** | | | | |
| Computes payment/rate/balance/term | ● | ● | ○ | ○ |
| Prints amortization schedule | ● | ● | ○ | ○ |
| Displays current balance or interest/principal split | ● | ● | ○ | ○ |
| Performs annuity computations | ● | ● | ○ | ○ |
| Computes savings for retirement | ● | ● | ○ | ○ |
| Tax planning module | ● | ● | ○ | ○ |
| Life insurance module | ● | ◒[11] | ◒[7] | ○ |
| Portfolio manager | ● | ○ | ◒[12] | ○ |

[1] Requires two steps.
[2] Requires account name prefixes when you create accounts; feature is available in MoneyCounts Extra.
[3] Computation of self-employment tax isn't fully automated.
[4] Offers payables processing, but you must manually select invoices for payment.
[5] Custom report design option available at extra cost.
[6] Requires keyboard macro facility.
[7] Available at extra cost.
[8] Andrew Tobias' TaxCut; Fast-Tax service bureau.
[9] Parsons' Personal Tax Preparer.
[10] TurboTax, J. K. Lasser's Your Income Tax, and Andrew Tobias' TaxCut.
[11] Available with MoneyPlans financial planning program.
[12] Requires included SuperTrack card format.

deal of data entry and has more investment features than a home business may need. At press time, MECA was set to release version 6.0, whose most attractive new feature is a bundled program called *CheckFree* that lets you send checks electronically (see the sidebar "The Check Isn't in the Mail").

*Managing Your Money* does a nice job of tax record keeping, especially for users with more than one kind of business activity. You can export tax data to MECA's *Andrew Tobias' TaxCut* program or to Fast-Tax, a leading professional tax service bureau. *Managing Your Money* also offers a full range of present-value utilities. These can

help you solve complex annuity and savings problems, for example, and factor income tax rates and inflation estimates into retirement savings projections.

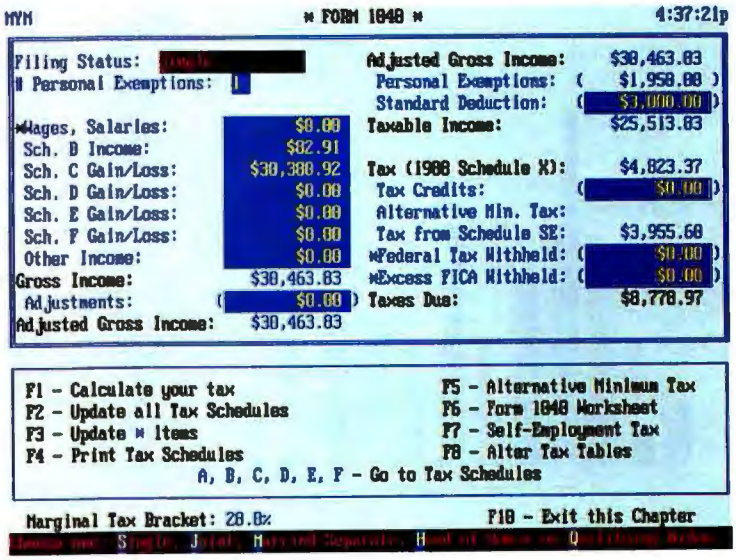
The downside to all of these wonderful features is that *Managing Your Money* demands more data entry than any other program reviewed here. While this permits sophisticated analysis later on, it takes time away from a busy business. Moreover, you need a while to get comfortable with the program. Its function key assignments are decidedly idiosyncratic. And when you record checks, *Managing Your Money* doesn't require (or remind) you to allocate them to expense categories. The program can process a good deal of information, so reporting can be impressive, particularly in the net worth category. But the process of generating a general ledger report will be confusing to many users.

*Managing Your Money* is a tremendous record-keeping and decision-making aid for investors, but to effectively use it requires too much data entry time for most home-business owners.

## MoneyCounts 6.0

Parsons Technology's *MoneyCounts* falls midway between the speedy check writers and the slower financial planners. A steal at $35, the basic program provides for owner equity accounts and offers a reasonably complete accounts payable module, complete with vendor files and aging capability. But printing checks is a nuisance: *MoneyCounts* is the only program here that won't let you print checks with varying dates in one print run. And the program won't help you manage your stock portfolio.

*MoneyCounts* is only moderately easy to use. Its screens and menus aren't as helpful as *Quicken*'s, and you may feel restricted by the program's account numbering scheme: Checking account numbers must run between 050 and 099, for instance, and expense account numbers between 801 and 999. In some areas, though, the program is very efficient. *MoneyCounts* can automatically split loan payments into interest and principal portions and can easily project your income




**Managing Your Money's tax planning screen shows Form 1040 line-item detail. The function keys at the bottom of the screen do different things, depending on where you are in the program.**

tax liability (though it won't compute self-employment tax). Moreover, the program provides a host of present-value utilities and sports the best-looking graphs in the group.

By combining a super-low price with a reasonable range of present-value and tax planning features, *MoneyCounts* is the most cost-effective choice for a home office. But if you want to print checks without the hassle of entering invoices into an accounts payable module, try *Quicken* instead.

### EXECUTIVE SUMMARY

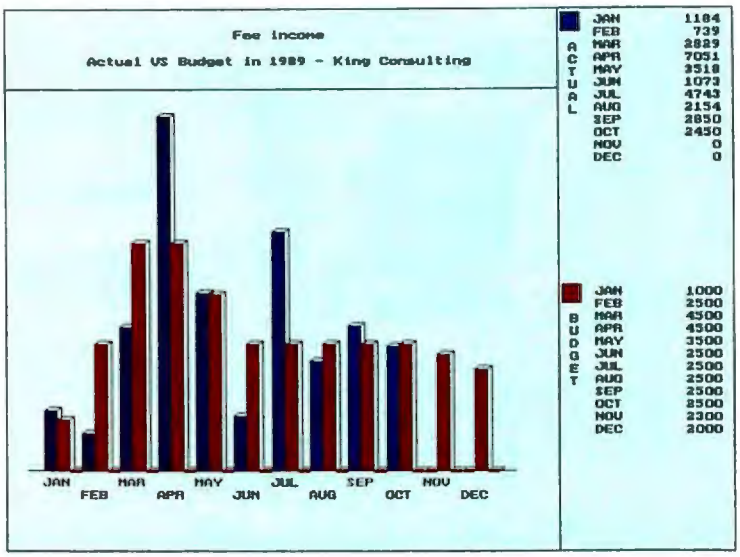
**MoneyCounts 6.0**

*Home finance package*

At a bargain $35, MoneyCounts offers solid present-value utilities and good graphics. But some inconvenient quirks make the program awkward to use. You can't print checks with varying dates, for example, and MoneyCounts' account numbering scheme is restrictive.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Data entry | | | ● | |
| Checkbook management | | | ● | |
| Financial management | | | ● | |
| Accounting and reporting | | | ● | |
| Overall value | | | ● | |

**Reader service no. 602**




**MoneyCounts has the best graphics in the group, as demonstrated by this graph comparing budgeted and actual expenses over a 10-month period.**

## One-Write Plus Money Matters 1.0

The most business-oriented product here, Great American Software's $90 *One-Write Plus Money Matters*, a *PC World* Best Buy, is an easy-to-use relative of the company's popular low-cost accounting package, *One-Write Plus*. Offering simplified menus and tremendous customization potential, *Money Matters* falls nicely between a checkbook manager and a more full-featured accounting package. It lacks such *One-Write* features as general journal entries and a separate accounts receivable notebook but offers a pegboard-like interface.

*Money Matters* is exceptionally easy to set up; you can write checks within minutes of installing the program, and data entry is silky smooth. And *Money Matters* offers accounting power in certain key areas. It comes complete with sample charts of accounts for 13 types of businesses or organizations, as well as a generalized business chart of accounts. It maintains up to 2000 customer data cards, each with a customer code, an account number, a type code, and year-to-date sales figures. And *Money Matters*' invoicing capability easily tops the field: It handles payment terms and sales taxes and provides three different invoice formats (inventory, service, and professional). Finally, it's the only program here that tracks the all-important Form 1099 (self-employment) data automatically.

Best of all, *Money Matters* can be extensively tailored to fit your business. The program includes a powerful feature called SuperTrack, which uses "cards" as a way to distribute transactions to subaccounts. By customizing the cards, you can use them to track sales commissions by employee, job costs, and inventory. But be warned: While the cards' design is fairly straightforward, a lot of planning and ingenuity is required to make the most of the feature.

*Money Matters* is a valuable product, businesslike yet intuitive. Its customizability will tempt users who need more accounting features than *Quicken* has but want a program that fits their special circumstances.

### EXECUTIVE SUMMARY

**One-Write Plus Money Matters 1.0**

*Home finance package*

BEST BUY

Though it lacks personal finance skills, *Money Matters* offers an excellent blend of simplicity and business-oriented accounting features. An intuitive program, *Money Matters* has well-designed menus and screens and exceptionally smooth data entry. The program can be extensively customized.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Data entry | | | | ● |
| Checkbook management | | | | ● |
| Financial management n/a | | | | |
| Accounting and reporting | | | | ● |
| Overall value | | | | ● |

**Reader service no. 603**

## Quicken 3.0

For efficient check writing, *Quicken* is the package to beat. Intuit's $60 best-selling program, another Best Buy, is fast and versatile, and version 3.0 handles multiple cash and checking accounts as well as asset and liability accounts. *Quicken* isn't the most powerful program in this review, but it's certainly the most accessible.

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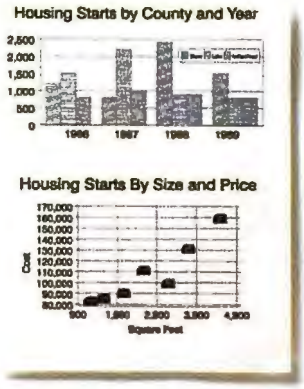
# Wow.

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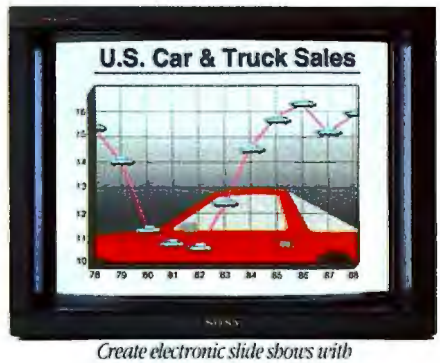


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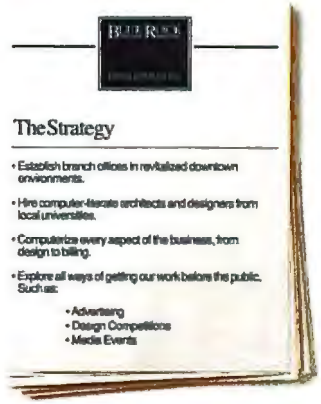


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Almost everything about *Quicken* suggests speed. The most keystroke-efficient program in the group, *Quicken*'s hot keys, pop-up menus, and lookup windows make transaction entry a pleasure. Setting up bank accounts and expense categories is straightforward, and nonaccountants will find the documentation and on-line help especially useful.

## THE CHECK ISN'T IN THE MAIL

*William Rodarmor*

**Even with a saphisticated personal finance program, printing checks can be a hassle. Loading preprinted forms in a dot matrix printer is a nuisance, and you can waste checks getting everything lined up. Many users who diligently enter all their data end up writing the checks by hand. With *Managing Your Money* version 6.0, there's no excuse for that kind of double-entry effort. The program comes with *CheckFree*, a specialized communications package that lets you send checks electronically directly from *Managing Your Money*. (*CheckFree* also comes as a $50 stand-alone program, and it accepts check data from *Quicken* 3.0.)**

***CheckFree* auto-dials a payment processing center, which settles bills electronically through the Federal Reserve System. CheckFree Corporation will print and mail paper checks to payees who can't handle electronic payments. The company charges $9 a month for up to 20 transactions, and about 30 cents for each additional check—less than the cost of postage and stationery.**

***William Rodarmor is managing editor for* California Monthly.**

### WHERE TO BUY

**CheckFree 1.17**
CheckFree Corp.
P.O. Box 897
Columbus, OH 43216
614/898-6000, 614/898-6030 (fax)
LIST PRICE: $49.95, Xpress version (software and reference guide) $29.95
REQUIREMENTS: 256K, two disk drives, DOS 2.1 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–8
OTHER SUPPORT: 30-day money-back guarantee
**Reader service no. 605**

**Money Matters' quick-setup option puts you in the saddle fast. Revising a chart of accounts such as this one is visual and intuitive.**

The program's check register screen is home base for most activities. You can add new expense categories or recurring transactions on the fly, and check printing and bank statement reconciliation are super convenient. (If you own *CheckFree*, you can transfer your data to it and then transmit your checks electronically.) Ticking off cleared items is done in a flash, and *Quicken*

## EXECUTIVE SUMMARY

### Quicken 3.0

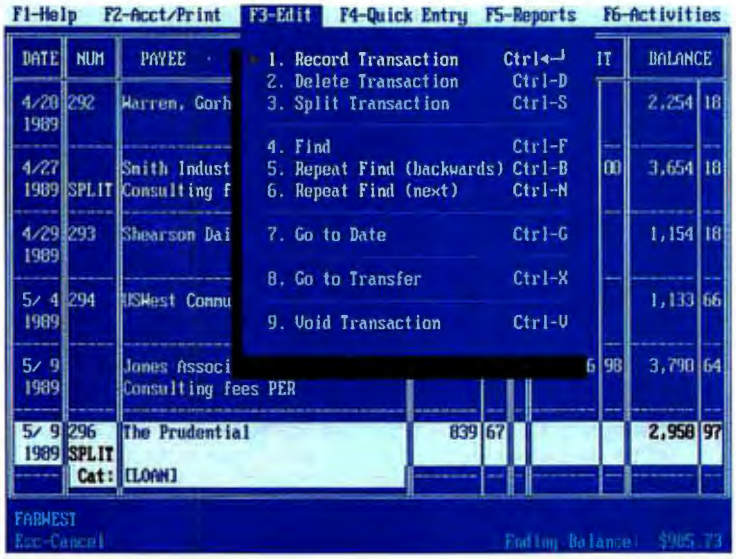
*Home finance package*

BEST BUY

*Quicken* is exactly what a good check-writing program should be: fast, efficient, and inexpensive. It also offers just the right amount of reporting flexibility for fledgling businesses. It lacks personal financial planning features, however.

| | POOR | FAIR | GOOD | EXCELLENT |
|---|---|---|---|---|
| Data entry | | | | ● |
| Checkbook management | | | | ● |
| Financial management n/a | | | | |
| Accounting and reporting | | | ● | |
| Overall value | | | | ● |

**Reader service no. 604**




**Virtually all of Quicken's functions are available through <Ctrl>-key combinations from the check register screen.**

prints a handy reconciliation report when you're finished.

Reporting requires very little design effort, yet is surprisingly flexible. Basic accounting-style reports—general ledger and a summary of transactions by payee or payer—are well covered, and numerous variations are possible. Need to know how much your office spent on utilities last year? *Quicken* can generate the amount—with check numbers, dates, and payees—in a hurry. For fast checkbook management and tax-related accounting, *Quicken*'s intuitive, keystroke-saving approach is a home business's salvation.

### Accounting for Taste

For personal financial management, *Managing Your Money*—particularly the new version 6.0—can help you do anything from analyzing your insurance to planning for your kids' college expenses. But for strictly home-business use, the much less expensive *Quicken* and *Money Matters* are outstanding. *Quicken* is the more streamlined program, yet it's adequate for most small shops, especially service businesses. Closer to being an accounting package, *Money Matters* is not only very easy to use but has enough stretch that even a fast-growing business can go years before having to upgrade to something more powerful. And even though their makers may not have intended it, these personal packages are working in very businesslike ways. ●

*Ralph Soucie is a contributing editor for* PC World.

**For more information about all products in this article, circle reader service no. 901.**

### WHERE TO BUY

**Andrew Tobias' Managing Your Money 5.0**
MECA Ventures, Inc.
327 Riverside Ave.
Westport, CT 06880
203/222-9150, 203/222-9087 (technical support), 203/226-2480 (fax)
LIST PRICE: $219.98, update $49.95
REQUIREMENTS: 256K, one floppy drive, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5; extended support (includes quarterly newsletter and annual updates) $49.95 per yeor
OTHER SUPPORT: none
**Reader service no. 601**

**MoneyCounts 6.0**
Parsons Technology, Dept. W
375 Collins Rd. NE
Cedar Rapids, IA 52402
800/223-6925, 319/395-9626, 319/395-7314 (technical support), 319/395-0217 (fax)
LIST PRICE: $35, update $20 ($6 if bought after June 1, 1989)
REQUIREMENTS: 386K, two disk drives, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8:30–4:30; 24-hour automated technical support
OTHER SUPPORT: 30-day money-back guarantee
**Reader service no. 602**

**One-Write Plus Money Matters 1.0**
Great American Software
615 Amherst St.
Nashua, NH 03063
800/528-5015, 603/889-5400, 603/881-9337 (fax)
LIST PRICE: $89.95
REQUIREMENTS: 512K, hard disk, DOS 2.1 or later version
TECHNICAL SUPPORT: first call free, subsequent calls $1.50 per minute, toll number, M–F 9–6; extended support (toll-free number, 60 free minutes of support) $60 per year
OTHER SUPPORT: 30-day money-back guarantee on products purchased from Great American Software
**Reader service no. 603**

**Quicken 3.0**
Intuit Inc.
540 University Ave.
Palo Alto, CA 94301
800/624-8742, 415/322-0573, 415/322-2800 (technical support), 415/322-1597 (fax)
LIST PRICE: $59.95, upgrade $29.95 ($8 if version 2.0 bought after May 7, 1989)
REQUIREMENTS: 320K, one disk drive (hard disk recommended)
TECHNICAL SUPPORT: unlimited, toll call, M–F 8–4:30
OTHER SUPPORT: 30-day money-back guarantee on products purchased from Intuit
**Reader service no. 604**

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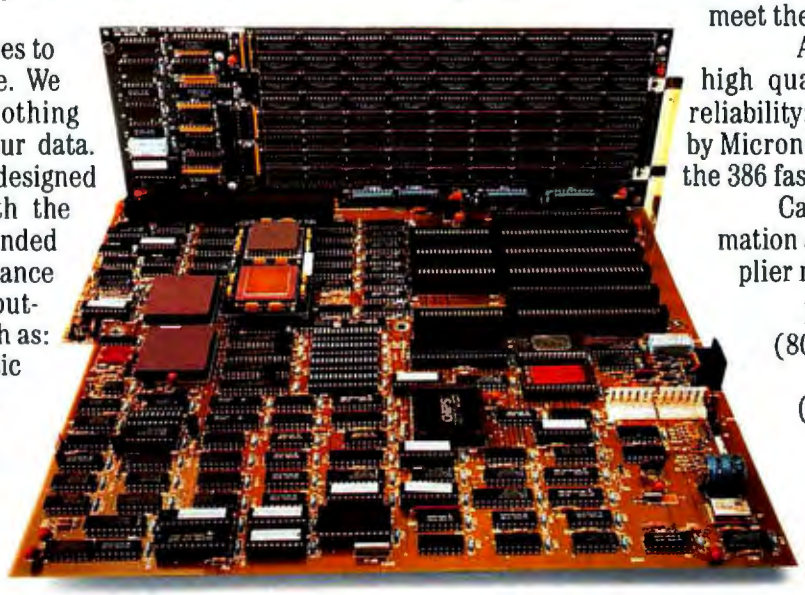

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# Cache Values

**Does the disk caching utility that came with your system do a creditable job?**

**One of these off-the-shelf alternatives may be a better match.**

*Robert Lauriston*

Disk caching software offers the most painless way to improve system throughput. Designed to speed I/O by moving oft-used data from disk to RAM, disk caching utilities come free with most computers, and off-the-shelf programs generally cost only about $70. But performance varies enough among these simple programs—and prices are low enough—for you to pick and choose.

In our search for the best available, *PC World* rounded up six disk caching programs. Only half are stand-alone commercial products: *SpeedCache*, *Super PC-Kwik*, and *Vcache*. We also tested a freeware utility, EMC 1.10, along with the caching utilities included in *Mace Gold* and *PC Tools Deluxe*. As benchmarks, we tested caches bundled with Compaq and IBM systems, plus the Smartdrive utility that comes with Microsoft's 4.*x* DOS and *Windows* releases.

Each of these products does more than copy data from frequently read sectors of your hard disk into much faster system RAM. All offer *track buffering*—reading ahead on disk so that the next block of data your application needs may already be loaded. The smartest caches add *redundancy checking*—skipping over unchanged sectors when saving data.

Some caches buffer writes as well as reads, which can add significant speed. But since buffered writes will be lost if your computer crashes before they're saved (corrupted data base files, anyone?), this feature is useful only with bulletproof software and an absolutely reliable power supply.

### Speed for the Disk-Bound

Vendors make extravagant claims for disk caching, but the performance benefits vary greatly depending on the applications used. If your data generally dwells in RAM (as with spreadsheets, for example), disk caching won't help performance; because it reduces the amount of expanded memory available, it will probably hurt.

Our tests focus exclusively on disk-intensive data-management and compiling operations. Every cache utility ran *dBASE III Plus* about three times faster in a three-file join, read, and sort, while wide variations emerged in *R:base*, *Foxbase+*, and *dBASE IV* benchmarks. *Super PC-Kwik* was the overall winner, placing at or near the top in every test.

JOSE CRUZ

All the utilities let you adjust cache size (the conventional wisdom being that bigger is better), and most let you use either expanded or extended memory. Our tests used large (1MB) extended memory caches for top speed, but in practice you'll probably want to use 256K—you'll lose only 5 to 10 percent in performance. And although extended memory caches proved slightly faster than expanded memory ones, expanded memory users who own a 286 and must hassle with DIP-switch configuration may want to skip setting up a separate extended memory cache.

Testing also uncovered numerous compatibility problems. Due to conflicts with DOS extenders or extended memory managers, only *Super PC-Kwik* will work with *1-2-3* release 3, *Foxbase+/386*, *Paradox 386*, or *Oracle 5.1a*, and only *Super PC-Kwik* and Smartdrive are compatible with *Windows/386*. Not all caches work with backup utilities like *FastBack* that take direct control of the disk controller. Nonstandard controller boards (RLL, ARLL, ESDI, and SCSI), removable media, special partitioning software like *SpeedStor* and *Disk Manager*, and network drivers can also cause problems.

All the programs are simple to install, but the best performance requires fine-tuning, which is not necessarily easy for amateurs. You need a clear manual to explain the cryptic command-line switches that tell the cache how much RAM to use, how many sectors to read ahead, which disks to cache, whether to buffer writes, and so on. A performance report to tell you the percentage of disk reads coming from the cache is crucial—without it, you won't know if your fine-tuning does any good. Since applications vary, a smart approach is to start them with batch files that load the cache, optimize it for each program, and remove or reset it on exit.

### Cash for Cache?

If a caching utility came with your system, should you stick with it? The commercial products generally deliver higher speed with a wider variety of applications. But the bundled caches still boost throughput, and some have unique advantages.

Compaq's caching utility is the best of the freebies. It performed well on most tests, includes high-end features like a performance

FEATURES EVALUATION

# PC-Kwik Tops the List of Cache Deals

*The commercial caches offer many more options than do the bundled and freeware utilities. Super PC-Kwik wins the features race hands down, with Vcache a close second.*

● Yes
○ No

| | Compaq | EMC 1.10 | IBM | Micro Gold 1.0 | PC Tools Deluxe 5.5 | Smartdrive | SpeedCache 1.A.1 | Super PC-Kwik 3.35 | Vcache 4.2 |
|---|---|---|---|---|---|---|---|---|---|
| **Installation** | | | | | | | | | |
| Maximum cache size | 2MB | 8MB | 15MB | 3MB | 16MB | 8MB | 2MB | 16MB | 8MB |
| Base RAM required | 16K | 4K | 8K | 11K | 8K | 4K | 8K | 6K | 9K |
| Menu-driven installation | ● | ○ | ● | ○ | ● | ● | ○ | ● | ○ |
| Uses extended memory | ● | ○ | ● | ● | ● | ● | ● | ● | ● |
| Uses expanded memory | ● | ● | ○ | ● | ● | ● | ● | ● | ● |
| **Compatibility** | | | | | | | | | |
| MFM drives | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| RLL and ARLL drives | ○ | ● | ○ | ● | ● | ● | ● | ● | ● |
| ESDI and SCSI drives | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● |
| MS-Net–compatible file servers | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● |
| Disk Manager/SpeedStor partitions | ○ | ○ | ○ | ● | ● | ○ | ● | ● | ● |
| DOS 3.3 and earlier | ● | ● | ○ | ● | ● | ○ | ● | ● | ● |
| Compaq DOS 3.31, DOS 4.0 and later | ● | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| Desqview/386, Windows/386 | ○ | ○ | ○ | ○ | ○ | ● | ○ | ● | ○ |
| NetWare drivers | ○ | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| **Cache features** | | | | | | | | | |
| Retains most-used data in cache | ○ | ○ | ○ | ● | ● | ○ | ● | ● | ● |
| Track buffer (read-ahead) | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Redundancy check | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● | ● |
| Write buffer | ● | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● |
| **Configuration** | | | | | | | | | |
| Caches user-specified drives | ○ | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| Can disable cache | ● | ● | ○ | ● | ○ | ○ | ● | ● | ● |
| Can remove cache from memory | ○ | ● | ○ | ○ | ● | ○ | ● | ● | ● |
| Track buffer size adjustable | ● | ●[1] | ●[1] | ● | ● | ● | ○ | ● | ● |
| Can disable write buffer | ● | n/a | ○ | n/a | n/a | ○ | n/a | ● | ● |
| Can locate cache at specific memory location | ○ | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| Provides performance report | ● | ○ | ○ | ○ | ● | ○ | ● | ● | ● |

[1] Entire cache used as track buffer.

report and buffered writes, and is fully documented. But those who must squeeze every ounce of performance out of their hard disk will want to swap this utility for a faster one.

Microsoft's Smartdrive, shipped with MS-DOS 4.*x* and *Microsoft Windows*, and IBM's IBMCACHE.SYS aren't quite as slick. Their performance is above average, but they can't be removed from memory without rebooting, and they have few advanced features, scant tuning options, and minimal documentation. Smartdrive does have one unique advantage: It automatically frees memory when *Windows* needs more RAM. You'll have to evaluate the features and trade-offs in light of your own needs.

## EMC 1.10

**PROS:** Free

**CONS:** Below-average performance, limited compatibility

EMC 1.10, a freeware utility, available from user groups, BBS's, and on-line services like CompuServe, works only in expanded memory and only with MFM and RLL drives. It's easy to use, mostly because it's very limited. And it placed in the bottom half of the pack in every test.

Installation and configuration are easy. You type EMC110 at the DOS prompt, followed (if you wish) by the maximum and minimum number of expanded memory pages, although the READ.ME file neglects to tell you how many kilobytes are in each page. Once EMC is loaded, other command-line options let you enlarge, reduce, or disable the cache or remove it from memory entirely.

It's easy to beat EMC 1.10's speed and flexibility. But if your system didn't come with a caching utility, you can't knock the price/performance ratio.

## Mace Gold 1.0

**PROS:** Good performance

**CONS:** 3MB maximum cache, must cache all partitions on drive, no tuning options, can't be removed from memory

Disk caching is only a small part of *Mace Gold*, a popular $149 utility kit that also includes backup, defragmentation, file recovery, unformatting, and many other features. But the caching utility, Mcache, isn't *Mace Gold*'s strongest point: Mcache performs respectably but falls short on features.

Once you install Mcache by adding its device driver to your CONFIG.SYS file, your drive is cached automatically on start-up. Parameters in CONFIG.SYS specify whether to use conventional, extended, or expanded RAM and how large the cache should be. As with the IBM and Microsoft caches, you can't alter Mcache while it's running or unload it from memory without rebooting, and there's no performance report.

If you've already got *Mace Gold*, Mcache is worth using—unless disk-intensive operations are your bread and butter. If so, look for a program with more options and better performance.

## PC Tools Deluxe 5.5

**PROS:** Excellent performance, menu-driven installation

**CONS:** Limited documentation

Disk caching is an even smaller part of *PC Tools Deluxe*, which takes many of the features of *Mace Gold* and adds a DOS shell, a text editor, an outliner, a telecom package, a datebook, a data base, calculators, keyboard macros, and more, all for only $129. But Central Point didn't skimp on the details: Its disk cache places second overall, not too surprising considering PC-Cache is a "house brand" version of Best Buy *Super PC-Kwik*.

Installing and using PC-Cache is a snap. A menu-driven utility copies *PC-Tools* to your hard disk and adds PC-Cache to your AUTOEXEC.BAT. The cache automatically adjusts to whatever kind of memory you have installed. Command-line switches let you set the amount and kind of RAM to use, adjust the number of sectors read to the track buffer, exclude drives from the cache, and remove PC-Cache from memory. Several advanced tuning parameters, unfortunately, are not explained in the manual.

*Super PC-Kwik* is a bit faster, but if you own (or plan to buy) *PC Tools Deluxe*, PC-Cache will do nicely. And as last year's Best Buy award indicates, those in the market for for an all-around hard disk utility package can hardly do better than *PC Tools Deluxe*.

PC-Cache is PC Tools Deluxe's "house brand" version of Best Buy Super PC-Kwik.

## SpeedCache 1.4.1

**PROS:** Wide compatibility

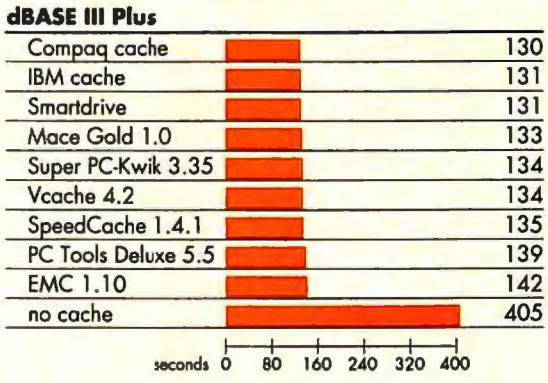
**CONS:** 2MB maximum cache, few tuning options, poor installation instructions

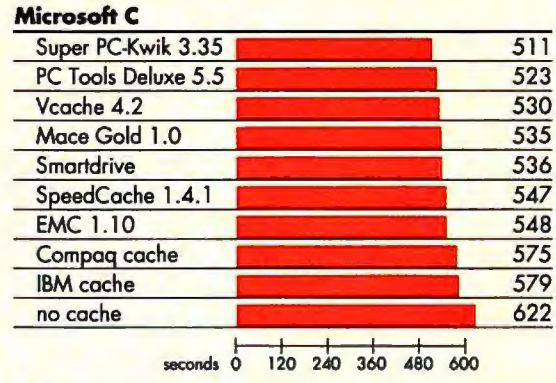
*SpeedCache* is a modest product that's bundled with Storage Dimensions' hard drives and the *SpeedStor* formatting/partitioning

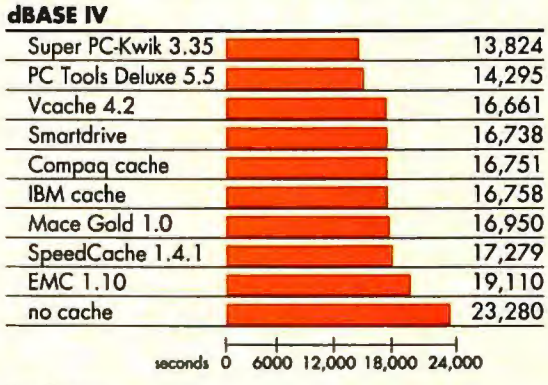
## NSTL TEST REPORT

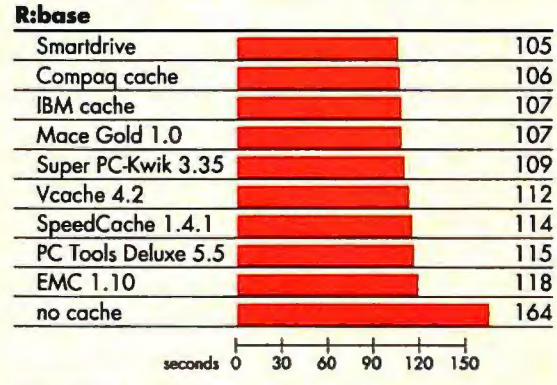
# Super PC-Kwik Caches In

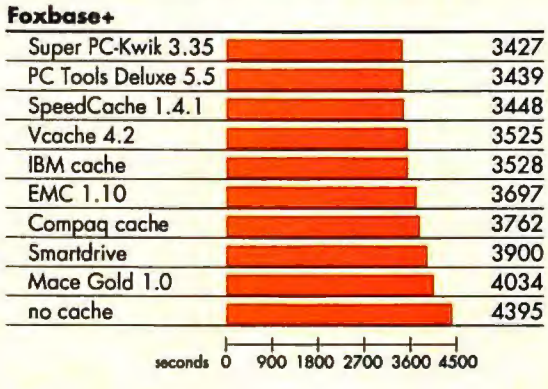
Though in dBASE III Plus and R:base tests it trails the simplest cache utilities by a nose, Super PC-Kwik's state-of-the-art design makes it the fastest overall.




**Methodology**
All tests were conducted using a 12-MHz Compaq Deskpro 286 with a 20MB hard disk. Each cache was allocated 1MB of extended memory (except EMC 1.10, which instead used 1MB of expanded memory), and any queued write features were disabled.

**dBASE III Plus**
This test measured the time required to join three files of 500, 1000, and 2000 records; select records; sort the result; and produce a report including calculated fields and subtotals.

**dBASE IV**
This test measured the total time required to perform a series of transaction processing operations among 50,000 accounts, 1000 tellers, and 100 branches. The 16 subtests write, copy, select, subtotal, and delete various records; append, index, reindex, and join several files; process three batches of transactions; and pack the data base.

**Foxbase+**
This was the same test used in the *dBASE IV* benchmarks.

**Microsoft C**
This test measured the time required to compile and link *XLISP*'s 25 C source code files.

**R:base**
This was the same test used in the *dBASE III Plus* benchmarks.

**Data based on tests designed and conducted by National Software Testing Laboratories (NSTL). All rights reserved.**

utility. You can buy it separately for $70, but it's not a great deal.

Installation is crude. The manual tells you to copy the cache program to your C: drive's root directory. Then a utility will add *SpeedCache* to your AUTOEXEC.BAT file if you wish, but every time you use it to modify your cache parameters, another blank line is left in the file.

Operation and performance are better. Command-line switches let you turn caching on or off for each drive, set how much and what kind of RAM to use, and unload the cache from memory. There are few tuning options. Though no speed demon, *SpeedCache* proved faster than average in most tests.

*SpeedCache* is a good value if you get it free with a hard drive. Purchased separately, it's not such a bargain.

## Super PC-Kwik 3.35

**PROS:** Fast, full-featured, most compatible of utilities reviewed

**CONS:** None

Concentrating on one thing—disk caching—and doing it well has paid off for Multisoft. Not only is *Super PC-Kwik* the fastest utility we tested, but its compatibility, installation, tuning options, and documentation are also tops, making this Best Buy well worth the $80 price tag.

*Super PC-Kwik* is the easiest cache to install and use. As with the *PC Tools* version, configuration is virtually one-button, but you'll also find a dozen additional advanced tuning settings. The detailed, well-written manual tells you everything you need to know to optimize performance.

A unique option quickly returns the DOS prompt, eliminating the usual wait during disk operations. For instance, when you enter COPY *.* A:, the prompt comes back immediately, while the cache continues writing to disk in the background (just don't remove your disk before the light goes out!).

If you prefer, for $129.95 you can get *PC-Kwik Power Pak*, which adds a RAM disk, print spooler, keyboard accelerator, and screen accelerator. All the utilities in this package borrow memory from the cache and return it when finished.

*Super PC-Kwik*'s performance, compatibility, and flexibility are superb. If you're looking for the best, this is it.

## Vcache 4.2

**PROS:** Good performonce, full-featured, wide compatibility

**CONS:** No menu-driven installation

Golden Bow Systems' *Vcache* ($59.95) runs a close second to *PC-Kwik* in features and compatibility, but it can't match it (or *PC Tools*' cache) in performance or ease of use.

No automatic installation here; the *Vcache* documentation merely refers you to your DOS manual for help in editing AUTOEXEC.BAT. Nonetheless, the tuning options are the most comprehensive of any program tested: Command-line switches let you choose drives and memory type; adjust cache size, read-ahead buffer size, and delay time for buffered writes; and remove the cache from memory. Several additional advanced features are clearly explained in the manual, and a readout display helps you adjust *Vcache* for best results.

*Vcache*'s compatibility, flexibility, and feature set are quite attractive. Although those wary of manual installation should probably stay clear, *Vcache* is the second-best standalone caching utility overall.

### Time To Cache In

Except for *Windows* users, who would have to give up Smartdrive's special features, the choice is easy. *Super PC-Kwik*'s top compati-

Super PC-Kwik's speed and features make this Best Buy well worth its $80 price tag.

bility, full feature set, thorough manual, and superior overall performance make it by far the best value. Even if you're getting good performance from a cache you already have, *PC-Kwik* is cheap enough to be worth a try. ●

*Robert Lauriston is an assistant editor for* PC World.

**For more information about all products in this article, circle reader service no. 910.**

**WHERE TO BUY**

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Fifth Generation Systems, Inc.
10049 N. Reiger Rd.
Baton Rouge, LA 70809
800/873-4384,
504/291-7221,
504/295-3268 (fax)
LIST PRICE: $149
REQUIREMENTS: 11K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 7–7
OTHER SUPPORT: BBS, CompuServe
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**PC Tools Deluxe 5.5**
Central Point Software, Inc.
15220 N.W. Greenbrier Pkwy. #200
Beaverton, OR 97006
503/690-8090,
503/690-8083 (fax)
LIST PRICE: $129
REQUIREMENTS: 512K, DOS 3.0 or later version
TECHNICAL SUPPORT: toll number, M–F 8–5
OTHER SUPPORT: BBS
**Reader service no. 666**

**SpeedCache 1.4.1**
Storage Dimensions
2145 Hamilton Ave.
San Jose, CA 95125
408/879-0300,
408/377-4988 (fax)
LIST PRICE: $70
REQUIREMENTS: 192K (640K recommended), DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 6:30–4:30
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**Super PC-Kwik 3.35**
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Beaverton, OR 97006
800/888-5945,
503/644-5644,
503/646-8267 (fax)
LIST PRICE: $79.95 (upgrade from OEM version $39.95), PC-Kwik Power Pak $129.95 (upgrade from OEM version $69.95)
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619/483-0901,
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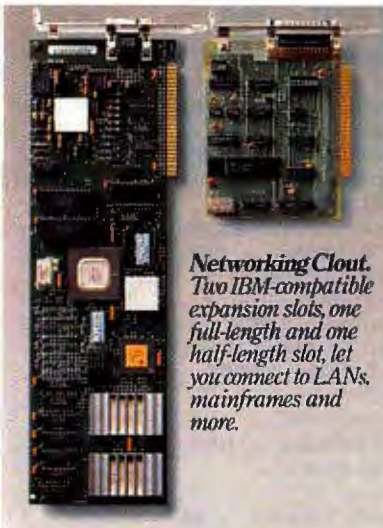

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**Softlogic Solutions ... NCP**
3546 □Disk Optimizer 4.05 ..... 45.
3542 □Software Carousel 3.01 ..... 55.
**Softview ... NCP**
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3481 ▣PFS:First Publisher Art Gallery 1.0. 84.
4342 □PFS:First Graphics 1.0 ..... 89.
3478 □PFS:First Choice 3.02 ..... 105.
3496 ▣Professional Write 2.11 ..... 149.
3493 ▣Professional File 2.01 ..... 199.
3482 □Harvard Graphics 2.13 ..... 339.
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5992 □Office in a Box *(includes First Choice, First Publisher, & Intuit Quicken 3.0)* 159.
**Spinnaker ... NCP**
4441 □Resume Kit 1.29 ..... 25.
4446 □8-in-1 2.0 ..... 39.
**Symantec ... NCP**
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3427 ▣Q & A Write 1.01 ..... 139.
3412 ▣Grandview 1.0 ..... 189.
3425 □Q & A 3.0 ..... 229.
3431 □Timeline 3.0 ..... 399.
**TOPS ... NCP**
3724 ▣NetPrint 2.0 *(share printers)* .... 119.
3726 ▣TOPS 2.1 ..... 115.
3725 TOPS Repeater ..... 125.
3720 *Flashcard 2.1 (AppleTalk network card; 1 year warranty)* ..... 159.
**Traveling Software ... NCP**
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3729 ▣LapLink Mac 2.0 ..... 79.
5179 ▣LapLink III 3.0 ..... 85.
3727 ▣DeskLink 2.2 ..... 99.
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3561 ▣True BASIC 3.0 ..... 52.
**Vericomp ... NCP**
3765 ▣SoftBytes 2.0 ..... 35.

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5000 □*Upgrade to Release 5.5* . . . . . 89.
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4539 ◙Professional Extensions 1.0 . . . . 389.
3812 □Ventura Publisher 2.0 . . . . . call
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6030 □Test Drive 2: The Duel . . . . . 29.
**Broderbund ... CP**
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5701 □Where/Time Carmen Sandiego? . . . 32.
5851 ◙Sim City . . . . . 33.
**Electronic Arts ... CP**
5798 □Ferrari Formula I . . . . . 29.
5806 □F-16 . . . . . 35.
4659 ◙Chessmaster 2100 . . . . . 35.
5804 ◙Deluxe Paint II *(Enhanced)* . . . . . 89.
**Konami/Ultra Software ... CP**
6194 □Teenage Mutant Ninja Turtles . . . . 29.
**Microprose ... CP**
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5823 □Red Storm Rising . . . . . 39.
**Microsoft ... NCP**
2858 □Flight Simulator 4.0 *All New* . . . . . 39.
**Parlor Software ... CP**
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4456 ◙Police Quest II . . . . . 39.
5106 ◙Space Quest III . . . . . 36.
6022 ◙Colonel's Bequest . . . . . 36.
**Spectrum Holobyte ... NCP**
5993 ◙Welltris *(Tetris sequel)* . . . . . 22.
4283 ◙Falcon/AT *(F-16 simulation)* . . . . . 32.
5187 ◙Vette . . . . . 32.
**Spinnaker ... CP**
5580 □Sargon IV . . . . . 32.
**Stone & Assoc. ... NCP**
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3439 □2nd Math *(ages 7 to 16)* . . . . . 27.
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1299 SixPakPlus 384k C/S/P . . . . . 189.
4107 RAMpage Plus 286 512k . . . . . 419.
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5788 HL-8Ps PostScript Laser Printer . . . call
5786 Toner/Drum Kit . . . . . 99.
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**Compucable ... 2 years**
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1605 3-Position switch box . . . . . 35.

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6183 ReadyNet Add-On Kit . . . . . 165.
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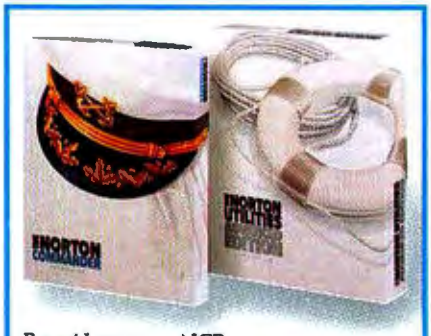

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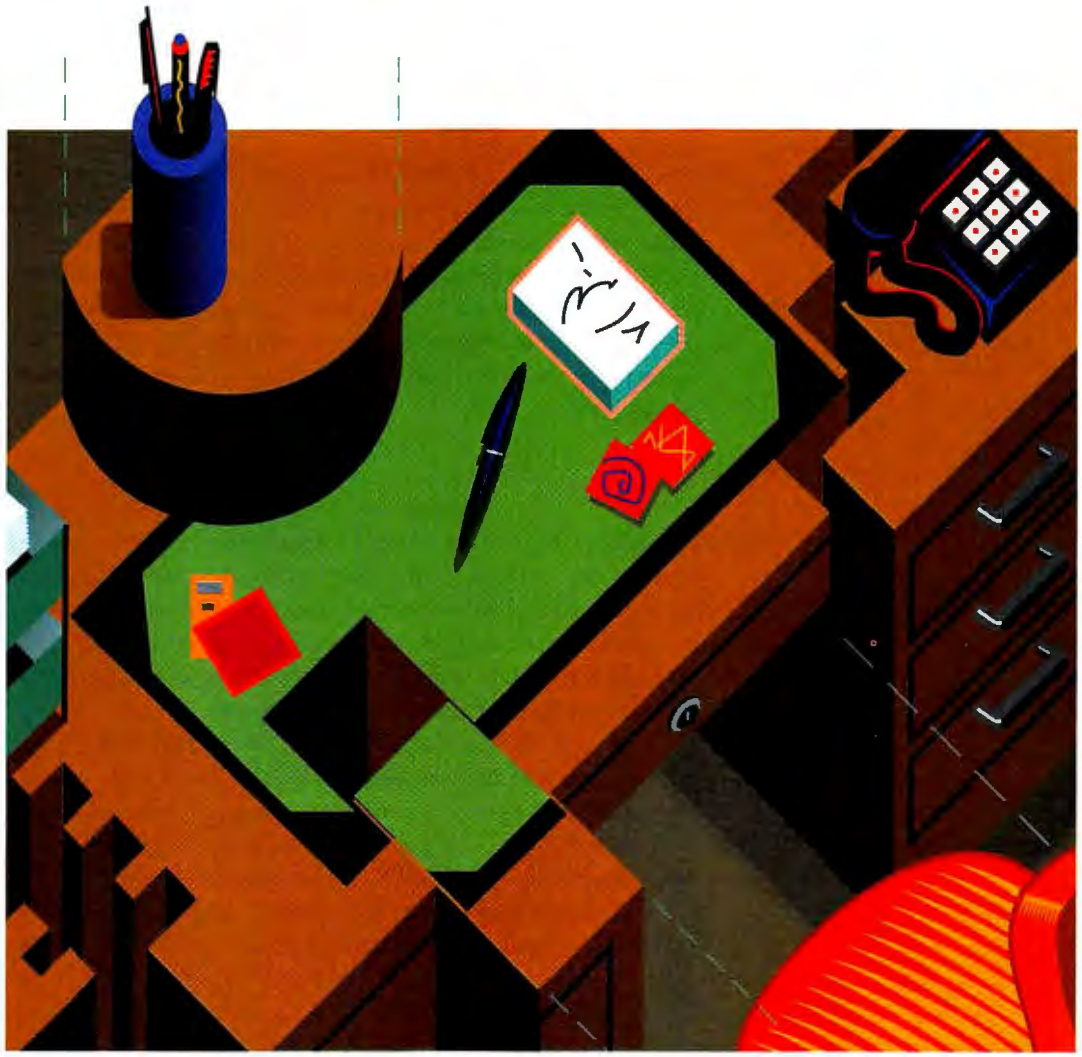


# BUILDING THE DREAM DESKTOP

*A few key pieces are still missing from the OS/2 puzzle—but the current crop of Presentation Manager applications is winning support from corporate developers.*

***Eric Bender***

WINDOWS

Forget all the talk about a "killer application" that will put OS/2 on the map. "You won't see the fabled killer application," explains DeScribe president Allan Katzen. "What you'll see is a killer suite of applications."

More than a year after Microsoft and IBM delivered OS/2 with the Presentation Manager graphic interface, next-generation system software is notable largely for its absence. Only a few dozen PM packages have hit the shelves, almost all of them offering the same feature sets as their *Windows* predecessors.

OS/2 apps such as Lotus's *1-2-3/G* glimmer on the horizon, promising rich innovations on top of OS/2's more hospitable interface and almost boundless memory ranges. But the current crop makes good only on OS/2's other major pledge—that you can meld applications together to work more productively.

In PC parlance, "well-behaved" applications are those that live faithfully by all the rules of DOS. But few commercial DOS packages behave themselves—partly because programmers have found that they can boost performance by writing directly to the hardware, and partly because DOS rules cover an ever-decreasing fraction of today's rich computing environments. Hence the familiar incompatibilities that plague those who switch around among applications.

OS/2 aims to put the whole territory (everything from user interface to memory management to multitasking to built-in data bridges to printer drivers) on a rational footing.

The results are just coming in, claims Peter Neupert, Microsoft's senior general manager for OS/2: "On the desktop, for the first time, you get integration with off-the-shelf applications."

In one demonstration, Microsoft links *AutoCAD* with *Excel for OS/2* through OS/2's Dynamic Data Exchange (DDE) facility. With both programs loaded, when a user makes a design change in *AutoCAD*, it's reflected automatically in an *Excel* worksheet that analyzes costs. You can achieve the same result with the DOS packages, but it takes many steps, and minutes rather than seconds. This isn't a white-knuckler, but it's going to pay off in a big way.

## A MULTITASKMASTER

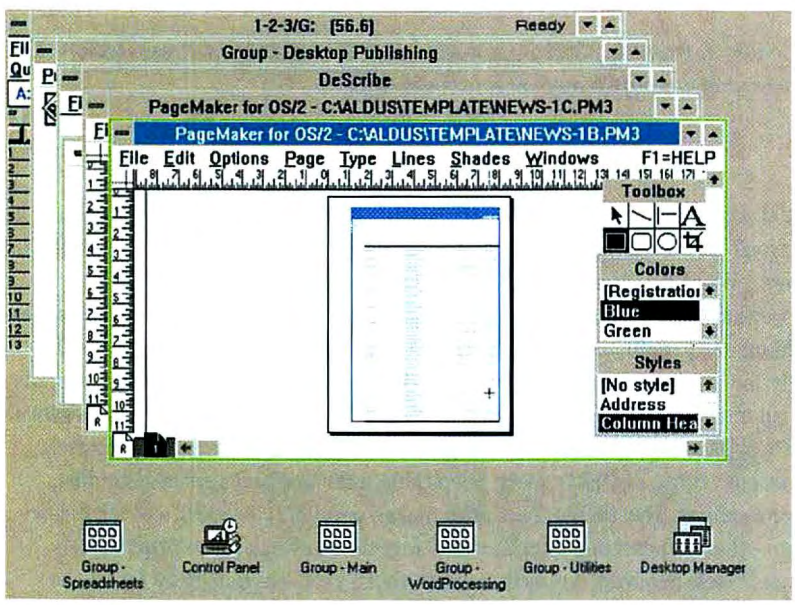
Among the early crop of applications, the first desktop publisher—Aldus's *PageMaker for OS/2 Presentation Manager*—has probably been reworked the most extensively and offers the most noticeable user benefits. Aldus mined OS/2's multitasking, multithreading capabilities to speed multiple jobs—the mouse remains responsive while you lay out one page, flow text through another section, and print in the background. Beta users reported a 30 to 50 percent improvement in productivity, according to product manager Michael Sherwood.

*Excel for OS/2*, the first PM spreadsheet, is a straightforward port whose only major new boast is a handy data-consolidation feature. While some operations like running macros are faster, performance is almost indistinguishable from its forerunner's, Microsoft says. Memory-hungry CAD/CAM packages are a likely fit with OS/2, and DOS market leader Autodesk has brought *AutoCAD* to the new system software.

The first PM word processor, DeScribe's *DeScribe*, has been shipping since early fall. The package is an attractive combination of word processing and low-end desktop publishing features—an approach many of its rivals also will adopt.

Unsurprisingly, suppliers of *Windows* graphics packages are among the first PM volunteers. Entrants include Computer Support's *Arts & Letters Graphics Composer* and *Graphics Editor*, Corel's *Corel Draw for Presentation Manager*, and Micrografx's *Designer*.

Several communications applications have debuted, including Future Soft Engineering's *DynaComm* and Cawthon's *ChipChat*. NCR takes a bolder step—toward Integrated Services Digital Network (ISDN), the all-digital voice/data lines that will eventually replace standard phone lines—by offering *Voice/Data Manager*, a package that works with an NCR ISDN board.




PageMaker for OS/2 Presentation Manager exploits OS/2's multitasking and multithreading to speed desktop publishing tasks. Aldus reports that beta users found productivity rising by as much as 50 percent.

While all PM software is designed to live comfortably on networks, some packages target net usage exclusively. One such is *Lotus Notes*, a novel work-group communications package that concluded a rather lengthy beta period in December (see the review "Notes for a Better Work Group" in the Windows Special Section, January 1989). Other offerings range from 3Com's narrowly focused *3+Open LAN Vision*, which analyzes statistics for net administrators, to XcelleNet's *Wide Area Network Management System*, and IBM's *OfficeVision/2 LAN*, the entry point for Big Blue's new office automation universe.

Other application categories also are being filled in. The original PM application, Borland's *SideKick*, is on its second major release. In time management, TimeStar has released *Active Life*. Polaris's *PackRat* is the first PM personal information manager. And utilities, like Sytron's *Sytos Plus* backup package, also are beginning to appear.

## A WILLING CORPORATE TOOL

While most PC users have little incentive to jump at the new offerings, you can find hotbeds of PM support in large corporations that are building massive, mission-critical applications. Companies such as American Airlines, for instance, are employing *Excel for OS/2* as a mainstay for creating customized workstations.

Numerous development alternatives also are arriving. One group targets the crafting of graphic user interfaces, a challenge that often leaves programmers wandering in a dazed condition for weeks. Caseworks' *CASE: PM*, Interactive Images' *Easel/2*, and GUIdance Technologies' *Choreographer* tackle this problem.

Additionally, full-fledged third-party development environments are materializing, including Intelligent Environments' *Applications Manager* (an object-oriented environment that the company claims requires no knowledge of object-oriented programming) and mdbs's *Object/1*. And Neuron Data is offering a PM version of its *Nexpert Object*, a knowledge-based system generator.

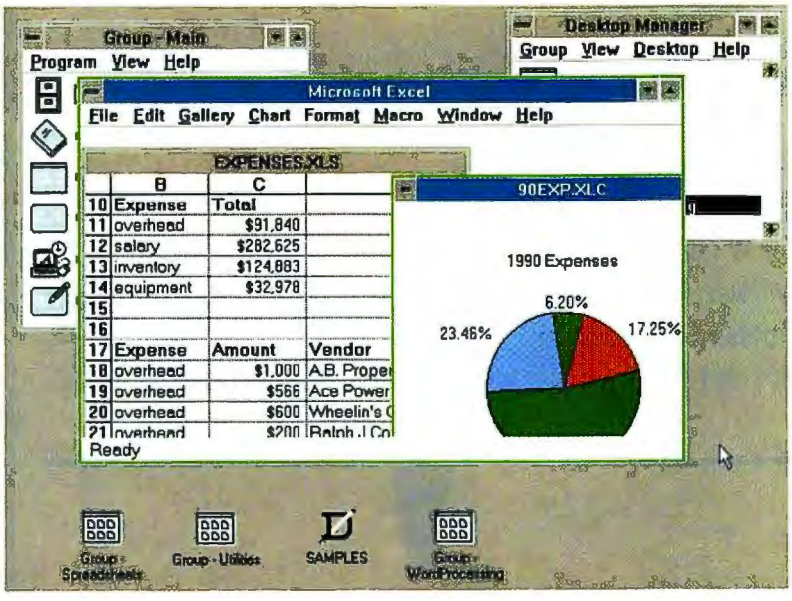
## WINDOWS ON PRESENTATION MANAGER

This flurry of activity began in earnest last October after Microsoft and IBM delivered OS/2 1.2. The upgrade finally talks to Epson and PostScript printers, although LaserJet support was expected to lag until January 1989. And it fixes various bugs that provoked complaints that its precursor shipped too soon—"1.1 was broken in too many places," commented one leading developer.

In addition, OS/2 1.2 overhauls DOS's tottering FAT system, replacing it with a much speedier architecture that also allows you to assign file names of up to 255 characters. But OS/2 1.2's most striking change is an interface-lift. You can work in a more direct, visual fashion, and the view is more appealing (for instance, buttons now show a three-dimensional effect).

The next major go-around, variously dubbed OS/2 386 or OS/2 2.0, is expected later this year. This version will be fashioned for the 80386 chip, offering both full 32-bit processing and the capability to run multiple DOS applications. "OS/2 386 will be a better DOS than DOS," declares Steve Ballmer, Microsoft's senior vice president for system software. Microsoft also would like to incorporate Apple's Royal scalable fonts, although time may be too short.

Microsoft insists that the cost to customers of moving to PM isn't as staggering as many of them feared. In general, as applications have moved to PM, says Ballmer, "we haven't seen any change in prices." As far as hardware requirements go, he says, "memory prices are about one-third what they were a year-and-a-half ago." And what he calls a reasonable PM machine—a 20-MHz 386 PC with 4MB of memory and a 60MB hard disk—can be found for $4000. Moreover, last fall Microsoft and IBM bowed to customer concern and disclosed plans for a trimmer entry-level version of PM that needs as little as 2MB of memory.




Excel is among an early crop of Windows packages moved to OS/2 with little change in functionality. OS/2 1.2's shell makes file manipulation more direct; note the icons in the main group window.

Ironically, a recent Microsoft success—heightened interest in *Windows* among developers and customers—is hobbling the PM march. Titles for this incompatible DOS counterpart to PM are finally arriving, although even prominent, well-reviewed packages like Samna's *Ami* are hardly leaping off the shelves.

The trend may intensify with *Windows 3*, expected to ship early this year, which

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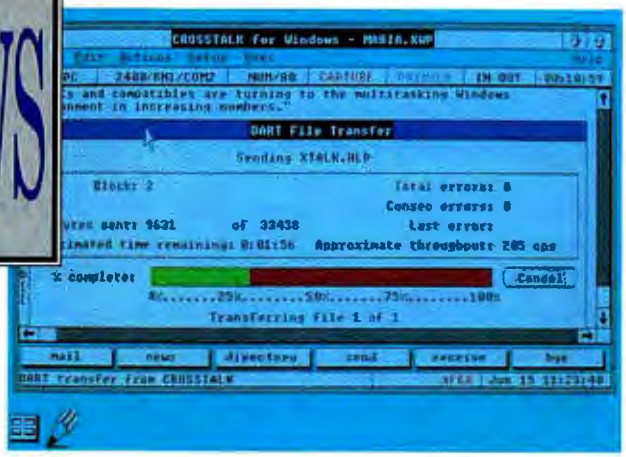


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WINDOWS

taps the protected mode on 286 and 386 machines to overcome the memory limitations that have hamstrung earlier versions. For many uses, it promises major PM advantages without major PM costs.

That leaves many software houses—and their customers—unsure about which way to jump. Microsoft and IBM suggest that *Windows* should be seen as a DOS extension that's an appropriate choice for existing 286 and 386 machines with up to 2MB of memory, but that PM is a natural for those charging along on the leading edge with higher-powered hardware. This advice won't end the discussion, because the two environments remain incompatible (although Microsoft hopes to insert a layer into PM that will let *Windows* applications run full bore).

In any case, Microsoft claims that it will sell more copies of PM in 1990 than Apple sells Macintoshes, thus establishing PM as the leading graphic desktop environment. Though the company's OS/2 predictions have been relentlessly over-optimistic, that goal probably will be met—but not necessarily this year. ●

*Eric Bender is* PC World's *East Coast editor.*

**For more information about all products in this article, circle reader service no. 911.**

**WHERE TO BUY**

**Active Life**
TimeStar Systems
1800 Mission St. #8
Santa Cruz, CA 95060
800/326-4391
LIST PRICE: $199, shareware version $89
**Reader service no. 610**

**Applications Manager Personal, Applications Manager Professional**
Intelligent Environments Inc.
P.O. Box 388
Chelmsford, MA 01824
800/669-2797, 508/256-6412, 508/256-7107 (fax)
LIST PRICE: Personal $695; Professional $5000, run-time version for Professional $250
**Reader service no. 676**

**Arts & Letters Graphics Composer, Graphics Editor**
Computer Support Corp.
15926 Midway Rd.
Dallas, TX 75244
214/661-8960, 214/661-5429
LIST PRICE: Composer $395, Editor $695
**Reader service no. 677**

**AutoCAD**
Autodesk
2320 Marinship Way
Sausalito, CA 94965
800/445-5415, 415/332-2344, 415/331-8093 (fax)
LIST PRICE: $3000
**Reader service no. 678**

**CASE: PM**
Caseworks, Inc.
1 Dunwoody Park #130
Atlanta, GA 30338
800/635-1577, 404/399-6236, 404/399-9516 (fax)
LIST PRICE: $995
**Reader service no. 679**

**ChipChat**
Cawthon Software Corp.
24224 Michigan Ave.
Dearborn, MI 48124
313/565-4000, 313/565-4653 (fax)
LIST PRICE: $299
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**Choreographer**
GUIdance Technologies, Inc.
800 Vinial St.
Pittsburgh, PA 15212
412/231-1300, 412/231-2076 (fax)
LIST PRICE: $7500, various run-time options available
**Reader service no. 681**

**Corel Draw for PresentationManager**
Corel Systems Corp.
1600 Carling Ave.
Ottawa, Ontario
K1Z 8R7 Canada
613/728-8200, 613/728-9790 (fax)
LIST PRICE: not available
**Reader service no. 682**

**DeScribe**
DeScribe, Inc.
4047 N. Freeway Blvd.
Sacramento, CA 95834
916/646-1111
LIST PRICE: $595
**Reader service no. 730**

**Designer**
Micrografx
1303 E. Arapaho Rd.
Richardson, TX 75081
800/272-3729, 214/234-1769, 214/234-2410 (fax)
LIST PRICE: $695
**Reader service no. 684**

**DynaComm for OS/2**
Future Soft Engineering
1001 S. Dairy Ashford #203
Houston, TX 77077
713/496-9400, 713/496-1090 (fax)
LIST PRICE: $295
**Reader service no. 685**

**Easel/2**
Interactive Images, Inc.
600 W. Cummings Park
Woburn, MA 01801
617/938-8440, 617/932-0349 (fax)
LIST PRICE: $7500; run-time options available
**Reader service no. 686**

**Excel for OS/2**
Microsoft Corp.
1 Microsoft Way
Box 97017
Redmond, WA 98052-6399
800/426-9400, 206/882-8080, 206/883-8101 (fax)
LIST PRICE $495
**Reader service no. 687**

**NexpertObject**
Neuron Data
444 High St.
Palo Alto, CA 94301
415/321-4488, 415/321-9648 (fax)
LIST PRICE: $6500
**Reader service no. 688**

**Lotus Notes**
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500, 617/225-1195 (fax)
LIST PRICE: $295 per PC
**Reader service no. 689**

**Object/1**
mdbs, Inc.
2 Executive Dr.
P.O. Box 248
Lafayette, IN 47902
800/344-5832, 317/463-2581, 317/448-6428 (fax)
LIST PRICE: $995, various run-time options available
**Reader service no. 723**

**OfficeVision/2 LAN 1.1**
IBM
900 King St.
Rye Brook, NY 10573
LIST PRICE: $750, DOS requester $210
**Reader service no. 691**

**PackRat**
Polaris Software
613 W. Valley Pkwy. #323
Escondido, CA 92025
800/338-5943, 619/743-7800
LIST PRICE: $395
**Reader service no. 692**

**PageMaker for OS/2 PresentationManager**
Aldus Corp.
411 First Ave. S
Seattle, WA 98104-2871
800/333-2538, 206/628-2320, 206/386-8822 (fax)
LIST PRICE: $795
**Reader service no. 693**

**SideKick for PresentationManager**
Borland Int'l
1700 Green Hills Rd.
P.O. Box 660001
Scotts Valley, CA 95066-0001
408/438-8400, 800/331-0877 (orders only), 408/438-0389 (fax)
LIST PRICE: $199.95
**Reader service no. 710**

**Sytos Plus**
Sytron Corp.
117 Flanders Rd.
Westborough, MA 01581
800/338-7522, 508/898-0100, 508/898-2677 (fax)
LIST PRICE: $189.95
**Reader service no. 695**

**3+Open LAN Vision**
3Com Corp.
3165 Kifer Rd.
Santa Clara, CA 95052-8145
800/638-3266
LIST PRICE: one server $495, up to five servers $1995
**Reader service no. 696**

**Voice/DataManager**
NCR Corp.
Workstation Products Division
Dayton, OH 45479
800/544-3333, 513/445-5000
LIST PRICE: not available
**Reader service no. 697**

**Wide Area Network Management System**
XcelleNet
1800 Century Blvd. #700
Atlanta, GA 30345
404/892-9900, 404/320-7465 (fax)
LIST PRICE: not available
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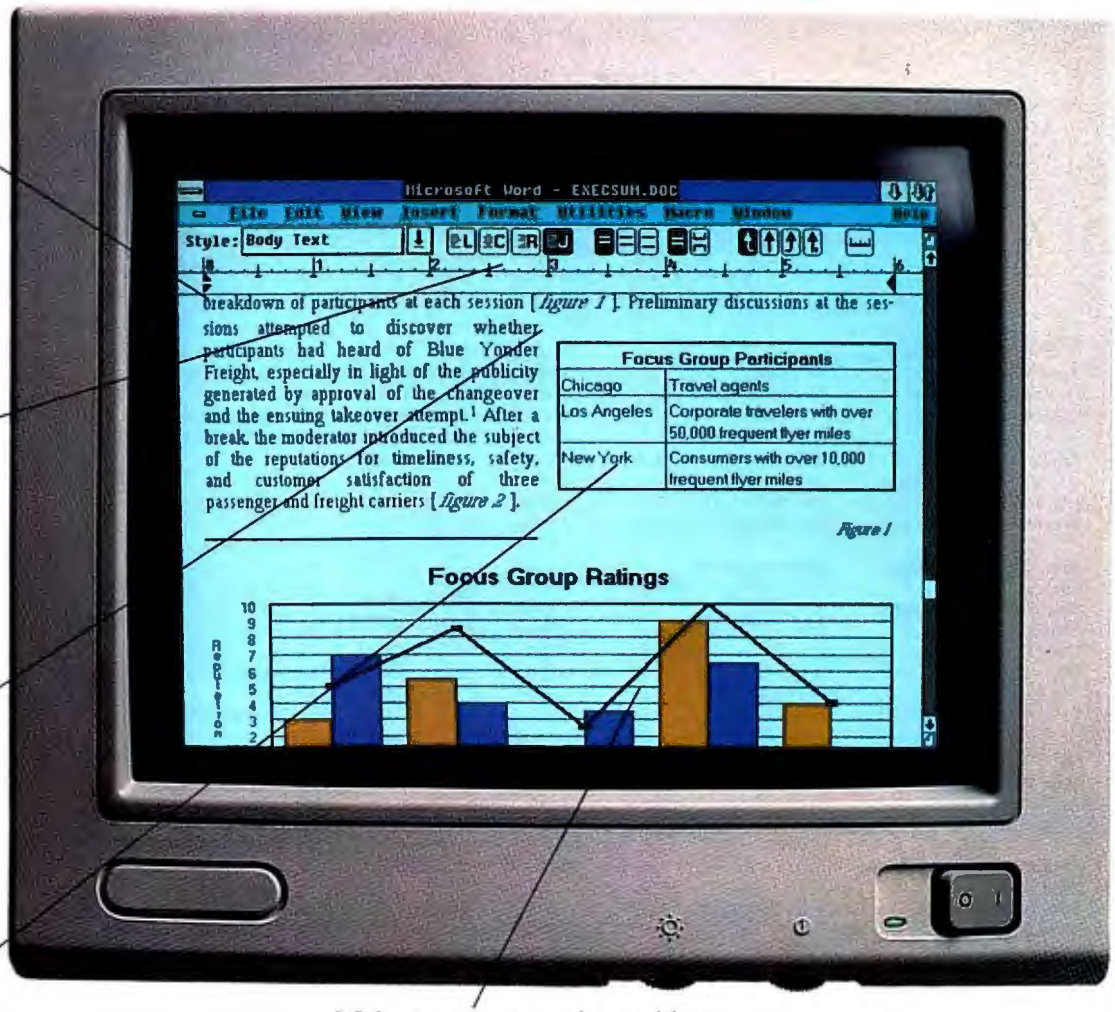


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*Buyers' Guide*

# SHAREWARE FOR WINDOWS

*You don't have to spend a bundle to get top-notch Windows software. The booming Windows shareware market offers something for everyone—and you can try before you buy.*

***Matt Lake***

WINDOWS

The swelling ranks of *Windows* shareware programs are a sure sign that Microsoft's environment is finally catching on. Of course, *Windows shareware* seems like an oxymoron. Conventional wisdom has held that developing *Windows* applications was a job for fat-cat software companies with a bottomless R&D budget. To the pioneering shareware community, that was fighting talk. As early as 1986, *Windows* shareware began to pop up on CompuServe and various electronic bulletin boards.

Like DOS and dBASE shareware programs before them, early *Windows* shareware programs filled gaps in the environment. You could get printer and video drivers, basic utilities, developers' tools, and little else. Nowadays, a quick stroll through the Microsoft forum on any BBS reveals that *Windows* shareware developers are gearing their prolific output toward fully featured applications. You won't find the equivalent of *PC-Write* for *Windows*—yet. But you will find communications programs, personal schedulers, MS-DOS Executive front ends, desktop managers, a range of graphics programs, sophisticated conversion and image-capture utilities, plus hundreds of single-purpose and integrated utilities for the Compleat Multitasker. The biggest plus: You can test-drive these programs before you buy them—in fact, some you won't have to pay for at all.

SHAREWARE DEVELOPERS ARE QUICKEST TO HEAR ABOUT AND CORRECT BUGS.

Just remember that shareware doesn't mean public domain. Most programmers retain the copyright on their code, but they may not charge for regular use of the program. Typically, though, developers let users try before they buy, and then charge a modest licensing fee, usually well under $100. There's also *bannerware*—free applications that commercial companies distribute to promote their products. For example, Microsoft promotes its brainchild with *Winapps*, a slew of very useful *Windows* utilities found on CompuServe and other on-line services, while the Whitewater Group gives away a handy project-management program that promotes the company's *Actor* language. Examples of all varieties of shareware can be found in this guide.

Keep in mind that while shareware is a great bargain, shareware developers can't promise the same level of support that a Microsoft can. They also lack the resources to test compatibility exhaustively, so a program may sit uneasily with some versions of *Windows* or certain applications. On the other hand, shareware developers are the quickest to hear about and correct bugs—and to add requested features. Still, before you lay down any cash, find out what kind of technical support, software upgrades, and printed manuals your dollars buy.

### Avoiding Viruses, Saving Time

Getting *Windows* shareware is a snap. You can download any of the programs listed here from on-line services or bulletin boards or get them from your local user group (see the accompanying sidebar, "Opening Up Windows,"

and *Consumer Watch*, April 1989, for user groups nationwide). You can also buy shareware directly from the companies listed in this Buyers' Guide.

Don't let the threat of computer viruses scare you away from BBS's. Bulletin board SYSOPs typically keep any new program out of public areas until it passes stringent tests. If you have any doubts about a BBS's practices, leave a message asking the SYSOP about his or her antiviral policy—and don't download anything until you get a satisfactory answer.

A bigger issue is simply saving time and money on line. Many BBS's don't charge an access fee, but Ma Bell always wants her cut. Here are a few hints for those in search of the ultimate *Windows* shareware program:

• *Avoid Peak On-Line Hours* BBS's are typically busiest in the morning and early evening. So avoid the gridlock by making your calls during off-hours.

• *Faster Is Better* Always download files at the fastest bps (bits per second) rate your modem and the BBS allow. Pick the fastest protocol, too. Note that of XMODEM, YMODEM, and ZMODEM, XMODEM is the slowest and ZMODEM the fastest.

• *Find the SYSOP's Shortcuts* Most BBS operators like to keep traffic flowing and often list quick navigation tips. Check these instructions before you go wandering.

• *Save Program Listings* Don't read the BBS's product descriptions on line. Most communications programs can capture in a file anything that scrolls by, so on your first visit to the BBS, save everything it has, hang up, and examine the catalog at your leisure.

• *Optimize Your Searches* A BBS may not have a separate *Windows* library, and even if it does, you may not want to plow through hundreds of demos and drivers to find your graphics utility. Use keywords in the library's file-search function to narrow the search. If the BBS allows, combine keywords such as *Windows*, *graphics*, and *shareware*.

• *Don't Download a Dog* Make sure that the shareware program you're considering is the latest version on the BBS—and that it works with your version of *Windows*. More important, see how many times the program has been downloaded by the on-line public. Any application that racks up over 100 downloads is worth a look. Also check forums for any bad press, and leave a public message asking for opinions.

*Matt Lake is an editorial assistant for* PC World.

YOU CAN DOWNLOAD THESE PROGRAMS FROM ON-LINE SERVICES OR BBS'S.

**COMMUNICATIONS PROGRAMS**

*Phones 3.22* is an auto-dialer and telephone directory. Each directory entry can accommodate up to three phone numbers, plus an address and five lines of notes. Metz Software, P.O. Box 6042, Bellevue, WA 98008-0042; 206/646-5600. $15 license fee.
**Reader service no. 615**

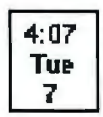
*UniCom 1.3* is a full-blown communications program built around a *Pro-*

*comm*-like dialing directory. The program runs background transfers at 300 to 19,200 bps, includes a script language, and supports ASCII, Quick B, CompuServe-B, Kermit, XMODEM, YMODEM, and ZMODEM. Data Graphics, 7735 46th Ave. SW, Seattle, WA 98136; 206/932-8871. $35 fee, $5 for disk, $10 for manual.
**Reader service no. 616**

*WinQVT 3.4* is a DEC VT220/102/52 terminal emulator and communications program offering Kermit, XMODEM, YMODEM, and ZMODEM protocols—along with auto-dialing and automatic log-in scripts. VT emulation features include double-wide and double-high characters, the full Special Graphics character set, smooth scrolling, 132 columns, and user-defined keys. QPC Software, P.O. Box 226, Penfield, NY 14526. $50 license fee for upgrades and user manual.
**Reader service no. 617**

**For more information about all products in this section, circle reader service no. 902.**

**DESKTOP AND PERSONAL MANAGEMENT TOOLS**




*Active Life 1.0* is a weekly scheduler that's also available on many BBS's under its old name, *TimeStar*. It accepts fixed and floating appointments, schedules recurring events, and features a notebook that can import ASCII, Cardfile, and binary files. (See the review of *Active Life* in the *Windows* Special Report in this issue.)
TimeStar Systems, 1800 Mission St. #8, Santa Cruz, CA 95060; 800/326-4391, 408/983-4930. $89 license fee.
**Reader service no. 610**

*Almanac* is an almanac-cum-scheduler that displays sunrise and sunset times, azimuth, and phases of the moon. Recurring events such as birthdays, anniversaries, and holidays can be added. Other extras include customizable menus, up to ten open windows, and Gregorian and Jewish calendar displays. $25 registration fee.

# OPENING UP WINDOWS: A RESOURCE GUIDE

**No printed guide can hope to keep up with the growing glut of *Windows* shareware. Upgrades and new products appear daily on bulletin boards around the country. The best way to keep track is to log on to a BBS, join a user group, or subscribe to an on-line service that devotes space to *Windows* applications.**

**The resources listed here will get you started. Bulletin boards—even those with membership fees—usually permit newcomers to sample their wares gratis for a limited time. (Maximum bps rates and other communications parameters listed here apply only for such trial runs.) When figuring total on-line costs, remember that services with high annual or monthly fees may not charge hourly rates and may offer toll-free lines. Free bulletin boards may be busy or too expensive to call long-distance. Another solution: Join a local user group or *Windows* special interest group (SIG). Don't overlook groups like WUGNET (National Windows Users Group Network) that attract professional developers—they can offer a lot to everyday *Windows* users. —*M. L.***

## ON-LINE SERVICES

### CompuServe
CompuServe Inc.
5000 Arlington Centre Blvd.
P.O. Box 20212
Columbus, OH 43220
800/848-8199,
614/457-0802
Membership fees: $39.95 lifetime membership includes $25 credit toward on-line charges, free magazine, manual; $1.50 monthly maintenance
On-line charges: $6 per hour (300 bps), $12.50 per hour (1200–2400 bps)
What's available: shareware, demos, conferences, Microsoft Systems Journal listings
On-line tips: type GO MSAPP
**Reader service no. 634**

### GEnie
General Electric Information Services Co.
401 N. Washington St.
Rockville, MD 20850
800/638-9636
Membership fees: one-time $29.95 fee includes $10 on-line credit, manual, monthly magazine
On-line charges: $18 per hour M–F 8–6; all other hours $5 per hour (300 bps), $6 per hour (1200 bps), $10 per hour (2400 bps)
What's available: shareware, Microsoft Roundtable, IBM Roundtable
On-line tips: select COMPUTING, PRODUCT SUPPORT, then MICROSOFT; or COMPUTING, then IBM RT
**Reader service no. 635**

## ELECTRONIC BULLETIN BOARDS (BBS's)

### Business BBS
2531 Sawtelle Blvd. #109
Los Angeles, CA 90064
213/477-2707,
213/477-0408 (BBS)
On-line charges: $30 per 10 hours
What's available: shareware, games, demos, utilities, conferences, WPMA (Windows & Presentation Manager Association) forum, on-line product registration
On-line tips: GO WINDOWS
Parameters: 2400 bps, N-8-1-F
**Reader service no. 636**

### ComOne
415/284-9151 (BBS)
What's available: shareware, games, demos, Microsoft Systems Journal listings
On-line tips: select FILES, then MSJ FILES; also check utilities, communications programs, and other categories
Parameters: 2400 or 1200 bps, N-8-1-F

### Computer Connection
101 S. First Colonial Rd. #102
Virginia Beach, VA 23454
804/491-2874 (BBS)
Membership fees: $25 per year
What's available: shareware, demos, conference
On-line tips: type J (for join a conference), and then M (for Microsoft Windows)
Parameters: 1200 or

*Check Book 4.00* is a capable checkbook program that can record, balance, and report on checking and ATM transactions, handle limited budgeting, and so on. Math functions require Microsoft's *Win87em* software emulator of 80287 and 80387 coprocessors, available on most BBS's. No fee.

*PC-Project* began life as an object lesson for Whitewater's *Actor* language, but it's a functional project-management tool with Gantt charting. The program can't, however, flag conflicts or print graphics. The Whitewater Group, 906 University Pl., Evanston, IL, 60201; 312/491-2370, 312/328-9442 (BBS). $5 for postage and handling.
**Reader service no. 619**

*Timelord* is an alarm clock that can buzz you any number of times during the day. Kwan Technology. No fee.

**For more information about all products in this section, circle reader service no. 903.**

**FRONT ENDS**

*Aporia 1.1* is an icon-oriented system that allows users to create and load custom groups of applications. The program displays an *Xtree*-style directory listing, and directory windows that let you perform file operations by pointing and clicking on icons. NewTools Software, P.O. Box 3269, Church St. Station, New York, NY 10008-3269; 718/789-5980. $30 registration fee, $50 for disk and user manual.
**Reader service no. 620**

*Command Post 6.2K* allows you to create custom menus and submenus that can execute applications automatically. Other key features include a directory tree with enhanced file-management features, automatic window stacking and placement, and a screen blanker. Wilson WindowWare, 3377 59th Ave. SW, Seattle, WA 98116; 206/937-9335. $20 single-user license fee, $5 for disk, $10 for documentation, $50 for purchase orders that require billing.
**Reader service no. 621**

2400 bps, N-8-1-F
**Reader service no. 637**

**Exec-PC Multi-User BBS**
P.O. Box 57
Elm Grove, WI 53122
414/789-4200,
414/789-4210 (BBS)
Membership fees: $20 for 3 months, $60 per year
What's available: shareware, demos, drivers; limited downloading for nonsubscribers
On-line tips: from Top menu, select FILES, MAHONEY COLLECTION, press S (Scan) twice, type WINDOW
**Reader service no. 638**

**Linchpin BBS**
617/742-9194 (BBS)
No fee
What's available: limited Windows shareware
On-line tips: select LOCATE A FILE, or GO TO MISCELLANEOUS FILES
Parameters: 300 to 9600 bps, N-8-1-F

**Midwest FOG User Group—Iowa BBS**
515/964-7937 (BBS)
Membership fees: see FOG user group listing
What's available: limited Windows shareware
On-line tips: check under utilities, communications, and other categories
Parameters: 1200 bps, N-8-1-F

**PDS SIG**
Public Domain Software Special Interest Group
3315 San Felipe Rd. #120
San Jose, CA 95135
617/742-9194 (BBS)
Membership fees: $25 for full access
What's available: shareware, conferences
On-line tips: select categories from main menu, such as utilities, communications, and so on
Parameters: 1200 bps, N-8-1-F

**RamNet**
Software Concepts Design
594 Third Ave.
New York, NY 10016
212/889-6431,
212/889-6438 (BBS)
No fee
What's available: Microsoft Systems Journal listings
On-line tips: choose MICROSOFT SYSTEMS JOURNAL from menu
Parameters: 2400 or 1200 bps, N-8-1-F
**Reader service no. 639**

**Shareware Connection BBS**
415/686-6489 (BBS)
No fee
What's available: limited Windows shareware
On-line tips: check utilities, communications, and other categories
Parameters: 2400 bps, N-8-1-F

**For more information about all resources in this section, circle reader service no. 907.**

## USER GROUPS AND OTHER RESOURCES

**The Boston Computer Society**
One Center Plaza
Boston, MA 02108
617/367-8080,
617/227-7986 (BBS)
$35 per year; BBS, an-line catalog of commercial Windows software, Windows/Presentation Manager SIG
**Reader service no. 640**

**Capital PC Users Group**
51 Manroe St. Plaza East Two
Rockville, MD 20850
301/762-6775,
301/738-9060 (information exchange BBS),
301/949-8848 (applications BBS)
$25 per year; shareware, data library, Windows SIG, conferences
**Reader service no. 641**

**FOG International Nonprofit Users Group**
P.O. Box 3474
Daly City, CA 94015
415/755-2000
$40 per year; BBS's, shoreware, access to FOG BBS libraries nationwide
**Reader service no. 642**

**Houston Area League of PC Users (HAL-PC)**
P.O. Box 722900
Houston, TX 77272-2900
713/623-4425,
713/339-1933,
713/498-3200 (BBS),
713/442-6704 (BBS)
$25 per year; BBS, extensive shareware, demos, Windows and OS/2 SIGs, conferences; Windows newsletter in the works
**Reader service no. 643**

**National Windows Users Group Network (WUGNET)**
P.O. Box 1967
Media, PA 19063
215/565-1861
$49.95 per year; shareware, data librories, monthly newsletter, data base of Windows user groups; BBS in the works
**Reader service no. 644**

**Windows Technology Group**
144 Talmadge Rd.
Mendham, NJ 07945
201/543-6033
$195 per year, $220 in Canada, $265 international; publishes AC-Knowledge: The Window Letter bimonthly; BBS in the works
**Reader service no. 645**

**WPMA (Windows & Presentation Manager Association)**
1521 N. Glenville
P.O. Box 851385
Richardson, TX
75085-1385
214/234-8857,
214/234-2410 (fax)
$50 per year; WPMA newsletter and access to Business BBS
**Reader service no. 646**

**For more information about all resources in this section, circle reader service no. 908.**

*Desktop 2.8* offers a split-screen file manager—directory tree on the left, files on the right—plus an integrated file finder and automatic menu generation. Other pluses include a memory gauge and a screen blanker. Metz Software. $30 fee.
**Reader service no. 622**

*DeskNav 1.4* has some of *Desktop*'s functions and focuses on navigating directories and manipulating files. The program features a tree directory system, a file finder, and a memory gauge. Metz Software. $20 fee.
**Reader service no. 623**

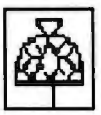
*Windows Application Manager 2.0* replaces the MS-DOS Executive with buttons bearing the names of executable files and data files. Buttons aren't assigned automatically—you must link them to specific files. Standard *Windows* programs like the Calculator and the Control Panel can be run from a special menu. Bobby Williams, Software Systems of Texas, 919 Heights Blvd., Houston, TX 77008; 713/871-1801. $25 registration fee.
**Reader service no. 624**

**For more information about all products in this section, circle reader service no. 904.**

GRAPHICS TOOLS

*Blowup, Snap,* and *Slap* are screen-capture utilities from Microsoft. *Blowup* dumps all or part of the screen into the Clipboard, where it can be sized and pasted into *PageMaker* and other graphics programs. *Snap* is similar but lacks sizing tools. *Slap* captures screens to a file or dumps them to a printer. No fee.

*GCP 4.20 SW,* formerly called *Easel,* converts graphics files between *Windows Paint, MacPaint,* GIF, and PCX formats. Synergistic Enterprises, 8033 Sunset Blvd. #975, Los Angeles, CA 90056; 213/852-1688. $40 license fee, $50 for disk.
**Reader service no. 625**



*Tiffany 1.01* captures all or part of the screen as a TIFF file—just highlight the area and name the image file. Forthcoming versions will include PCX and MSP support. Anderson Consulting and Software, P.O. Box 40, North Bonneville, WA 98639; 800/733-9633, 509/427-5335. $10 registration fee, $20 for disk and documentation.
**Reader service no. 626**

*XVT Draw* is bannerware for API's *XVT* development environment. It's a functional draw program that features line and shape tools and a palette of background shadings and line widths. Advanced Programming Institute, P.O. Box 1766, Boulder, CO 80308; 303/443-4223. No fee.
**Reader service no. 627**

**For more information about all products in this section, circle reader service no. 905.**

UTILITIES

*Applets 1.1* is a collection of 15 file- and window-manipulation tools. They work best in conjunction with Wilson WindowWare's *Command Post.* Wilson WindowWare. $20 single-user license fee, $5 for disk, $10 for documentation, $50 for purchase orders that require billing.
**Reader service no. 628**

*Browser 3.2* finds files and then lets you peek into them, move data to the Clipboard, and print selected portions. Wilson WindowWare. $20 single-user license fee, $5 for disk, $10 for documentation.
**Reader service no. 629**

*File Finder* locates files on any disk drive, including network drives. Eikon Systems. No fee.

*File Informer* lets you view file and directory attributes. Bobby Williams, Software Systems of Texas, $5 per user.
**Reader service no. 630**

*File Saver 3.1* is a disk-based print queue utility that supports dynamic data exchange (DDE). Verity Software House, P.O. Box 247, Topsham, ME 04086; 207/729-6767, 207/727-6420 (BBS). No fee.
**Reader service no. 631**

*Fireworks* is a configurable screen blanker that displays multicolored explosions on a black background. Synergistic Enterprises. $5 license fee, $15 for disk.
**Reader service no. 632**

*Freemem, Freedisk,* and *Freeemm* are a trinity of utilities that provide constant statistics concerning your PC's resources. *Freemem* shows how much—or little—free conventional and extended RAM you have. *Freedisk* tracks hard disk space, and *Freeemm* expanded memory. No fee.

*Hunter 1.4* is a powerful text-search utility and file finder, with a UNIX-like *grep* function (gross regular expression parser) that uses variables and conditional statements to find text strings. Peter Eddy. $5 contribution.

*SmartWin 1.0,* a limited version of a $79 commercial product, offers an *Xtree*-like file display. Romberg & Romberg. No fee.

*Winarcl* and *Winzipl* look into SEA's *ARC* and PKWare's *ZIP* archived files and supply the names of the archived files inside, their creation date, and their size when expanded. Roy Green, Vista Systems. No fee.

*Windows File Manager* encrypts and decrypts *Windows* files. Burrell Business Systems. No fee.

*Zipper* allows you to "zip" and "unzip" *PKZIP*'d files under *Windows;* it is available from most BBS's for no fee. *Zipper* is not a PKWare product, but PKWare should have a *Windows* version of *PKUNZIP* by the time you read this. For information on *PKUNZIP* for *Windows,* contact PKWare, 7032 Ardara Ave., Glendale, WI 53209; 414/352-3670.
**Reader service no. 633**

**For more information about all products in this section, circle reader service no. 906.** ●

**Windows menu system** means you'll learn fast. If you can use Windows you can quickly use Windows CAD.

**Multiple viewports** allow you to work on up to four views of your drawing at the same time.

**Sophisticated drawing features** include associative dimensioning/cross-hatching and much more.

**Color-coded prompts** guide you through the design process.

**Status line** gives you instant access to colors, linetypes, layers, snaps and "quick zooms".

**Mouse prompts** tell you exactly what each mouse button does.

# FINALLY, CAD FOR WINDOWS. DRAFIX™ WINDOWS CAD.™

At last the power of true, high performance CAD is available for Windows. Drafix Windows CAD. With features that take you far beyond any Windows drawing package you currently use.

**Powerful CAD.** Windows CAD is the first and only Windows software to provide all of the designing and editing functions demanded by engineers, drafters, architects and other serious CAD users. It offers multiple interactive viewports, allowing you to work in four views simultaneously. Associative dimensioning, associative crosshatching and a powerful macro programming language are just a few of its features—and that's just the beginning.

**Quick to learn, easy to use.** Windows CAD lets you take full advantage of your Windows experience. If you already use Excel, Pagemaker, Micrografx Designer, or any Windows package, Windows CAD will have you doing precise, accurate CAD design in no time. And of course you can use all of the plotters, printers and video devices that work with Windows.

**From a proven line of CAD products.** Windows CAD is the latest in a full line of highly rated CAD software that includes Drafix CAD Ultra, Drafix CAD QwkStart and Drafix 3-D Modeler.

**Order your copy of Drafix Windows CAD today!** Now if you have Windows you can have the full power of true CAD. Drafix Windows CAD. Only $695. For more information call us today at **1-800-231-8574.**

**Drafix Windows CAD has features you usually find in packages costing 5 times as much!**

**Item Attributes** ☐ 256 layers ☐ 8 colors ☐ 9 linetypes ☐ Up to 60 database attributes to any entity ☐ Multiple line widths

**Drawing Features** ☐ Lines: single, double, tangent, parallel, perpendicular, multiple width ☐ Arcs/Circles ☐ Curves/Splines ☐ Polygons and Polylines ☐ Ellipses ☐ Pointmarkers ☐ Freehand sketching

**Input Methods** ☐ Windows menu system ☐ Keyboard equivalents ☐ Ortho lock ☐ 10 item and grid snaps, including easpt, midpt, tangent and more ☐ Keyboard entry of coordinates ☐ OOPS (Undo) feature ☐ Dynamic Drag ☐ Quick zoom/pan ☐ Multiple viewports, all active

**Powerful Editing Features** ☐ Trim entities to each other ☐ Stretch ☐ Fillet (round) ☐ Chamfer (bevel) ☐ Erase ☐ Copy ☐ Move ☐ Mirror ☐ Rotate ☐ Arrays ☐ Select items by region, entity, attribute or combinations

**Associative Dimensioning** ☐ Linear, Radius, Diameter ☐ Single, Continuous, Baseline ☐ Ordinate, Elevation or Bearing format ☐ 23 terminator types ☐ Any alignment ☐ Toleranciag ☐ English and metric ☐ Fraction or Decimal

**Associative Crosshatching and Solid Fill** ☐ 15 crosshatch patterns, ANSI spec ☐ 64 solid fills

**Text Editing** ☐ Word processing window ☐ Multiple font styles

**On-Line "Help" system**

**Macro Programming Language**

**System Requirements** ☐ '286 or '386 processor ☐ Microsoft Windows 2.1 or later ☐ 1 Mb internal memory or greater ☐ Windows-supported mouse

**File Compatibility** ☐ Autocad DXF ☐ Drafix CAD ☐ HPGL ☐ CDF, SDF for database information

Foresight Resources Corp.
**1-800-231-8574**

Excel, Pagemaker and Micrografx Designer are trademarks of their respective companies.

Circle 85 on reader service card

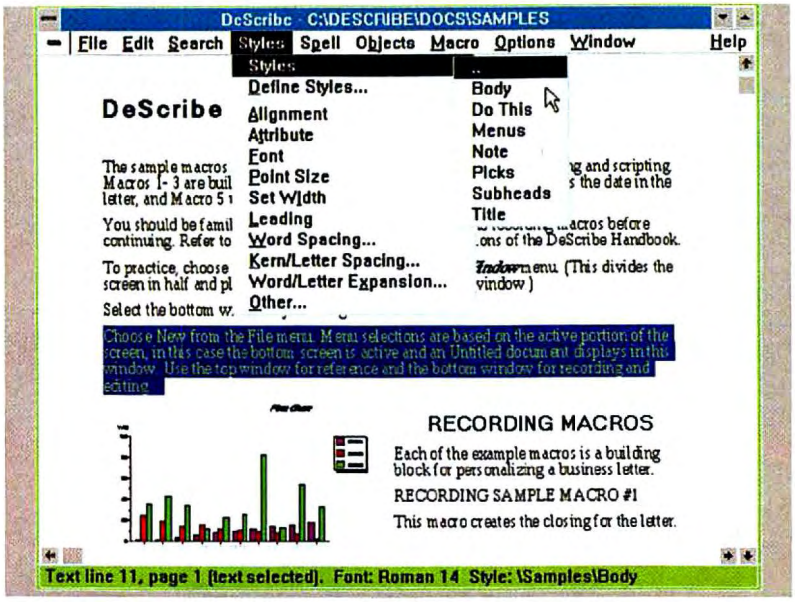
# DESCRIBE WORD PUBLISHER 1.0

*Review*

*Word processor*

**PROS:** Easy to use, advanced style sheets and framing controls, macro language, menu customization

**CONS:** Slow, some bugs, can't import graphics or formatted text directly, locks advanced word processing tools




You easily choose and modify DeScribe style sheets or format text on the fly with the main Style menus. In the lower left corner is a graphic imported from 1-2-3/G via the clipboard. DeScribe's lack of graphics-import routines and Presentation Manager's quirky clipboard make it difficult to import graphics.

*Eric Brown*

WINDOWS

More and more software applications are appearing under Presentation Manager's aegis, but the lack of a PM-specific word processor has put off prospective users. If you can't wait for PM versions of *Word* and *WordPerfect*, check out DeScribe's $595 *DeScribe Word Publisher*. *DeScribe* has its gaps and flaws, but its superb formatting tools and affable interface more than compensate.

Like Samna's *Windows*-based *Ami Professional*, *DeScribe* tries to straddle word processing and desktop publishing. All told, *Ami Professional* offers the better balance—while *DeScribe* excels at style sheets and pagination, it lacks word processing extras such as footnoting, indexing, outlining, bookmarks, and table editing, and its mail merge is fairly primitive. The program is network ready, yet there's no redlining feature. Still, *DeScribe* provides enough basics, including a spelling checker, a superb thesaurus, and a macro language, to satisfy most users.

Thanks to the "multithreaded" nature of OS/2, *DeScribe* can also pull off feats that no DOS or *Windows* program can—such as performing several tasks at once. For example, you can edit a document while it repaginates in the background, or quickly search and replace two strings at once. Performance, however, needs a boost. On an 80386 machine, the 286 version of *DeScribe* was consistently sluggish; the 386 version was speedy at simultaneously juggling tasks such as justification and pagination, or changing the body text style in a large document. But basic operations—text entry and cut and paste—dragged.

*DeScribe*'s easy-to-grasp, pulldown menu interface is like *Ami Professional*'s but without the icons. There are plenty of keyboard shortcuts, and you can divvy up the screen into tiled or overlapping windows. It's also modeless—you can cut and paste, assign tags, size graphics, and so on at any time. Installation is surprisingly easy, the manual is lucid, there's a handy multilevel undo, and the context-sensitive help is thorough. But print options are rather limited—you can't print a range of pages, for example. The only drivers are for Epson and PostScript printers, plus whatever's available in PM (currently, only the IBM Proprinter). No LaserJet driver is obtainable at present.

As with *Windows* programs, you highlight text and then cut, copy, delete, or format it. One plus: You can append multiple cuts to the clipboard and paste them in. Unfortunately, unlike with *Ami Professional* and *Word for Windows*, you can't switch to a faster "draft" text entry mode. Nor can you zoom in or out on a page, which makes it tough to edit small text or visualize a document layout. *DeScribe* also has a major bug: The speedy search-and-replace feature often fails to recognize words. Fortunately, the spelling checker

and thesaurus are superb. You can choose from numerous technical, professional, and foreign-language dictionaries, and the thesaurus provides definitions, acronyms, and more.

Formatting is where *DeScribe* really shines. You design documents using supplied layouts—essentially master pages or templates. These contain global page formatting data in the form of frames that hold text columns, headers, and footers. When you open a new document, you can choose from a bounty of canned layouts or create your own. After modifying and saving a layout, you can create document-specific frames for graphics, footnotes, and so on. Framing controls are extensive—you can anchor a frame and let text flow around it or place one frame atop another, letting the background show through. However, you do have to specify whether a frame will hold graphics, text, or a repeating element such as a header.

In addition to frames, each layout contains an impressive collection of *Ventura*-like canned style sheets. Tagging text is easy—highlight it, select a menu option, and pick a style from a list. Globally modifying tags is just as simple. And when you modify a style, you won't have to wend your way through a maze of dialog boxes. There's no example box illustrating the chosen font and style, but unless the dialog box obscures the highlighted text, you can quickly see the changes underneath.

However, creating new style sheets from scratch is a pain, because all *DeScribe* style sheets automatically inherit defaults from a master style. You can't easily copy a style from a previously defined style as you can in *Ventura Publisher*. You either painstakingly change every default setting or set up a hierarchy of styles, a process that's complicated and poorly documented.

Typographic tools are exhaustive. You can kern text, choose a variety of leading options, and call on a number of downloadable fonts. The sophisticated dictionary-based hyphenation module references over 80,000 words. Pagination controls let you force text into new columns, all pages, or selected pages. You can also override the current style sheet on the fly and format

OPEN A NEW DOCUMENT AND DESCRIBE OFFERS A BOUNTY OF CANNED LAYOUTS.

text from a separate menu. Unfortunately, only a few of the subsequent dialog boxes supply default values—you must dig through help screens to find them.

As you'd expect, moving and scaling images is a click-and-yank process. But importing them is a trial. *DeScribe* can't directly grab TIFF, PCX, or other graphics files, so you're stuck with smuggling in images via the clipboard. Because PM's clipboard is so limited, DeScribe and other vendors have had to create their own—and that leads to incompatibilities. For example, you can paste *DeScribe* text into *PageMaker for PM*, but you can't paste *PageMaker for PM* text and graphics into *DeScribe*. *DeScribe*'s text import/export is also limited to ASCII, and if you manage to snag text with the clipboard, formatting and specified fonts often vanish.

Some of *DeScribe*'s shortcomings can be cured using the DeScribe Macro Language (DML). Want a line numbering feature or a zippier mail merge? With its conditionals and windowing controls, DML has the power to handle it. Of special note: You can customize the program by designing your own menus from a menu and then linking options and entry fields in them to macros. While sample macros are abundant, and recording and playing macros is easy, DML is tough to learn, and instructions are relegated to a confusing README file.

*DeScribe*'s publishing skills are tops, but the lack of import/export routines and heavy-duty word processing tools gives pause. If you need extras such as indexes and footnotes, wait for PM versions of *Word* or *WordPerfect*. If not, *DeScribe* may be just the excuse you need to switch to PM.

*Eric Brown is senior associate editor for* PC World.

**WHERE TO BUY**

**DeScribe Word Publisher 1.0**
DeScribe, Inc.
4047 N. Freeway Blvd.
Sacramento, CA 95834
916/646-1111,
916/923-3447 (fax)
LIST PRICE: $595
REQUIREMENTS: 3MB of RAM (4MB recommended), OS/2 Presentation Manager 1.1 or later version
TECHNICAL SUPPORT: unlimited for first 90 days; toll number, M–F 8–5
OTHER SUPPORT: company BBS, newsletter; extended support $95 per year; corporate support and training programs available
**Reader service no. 730**

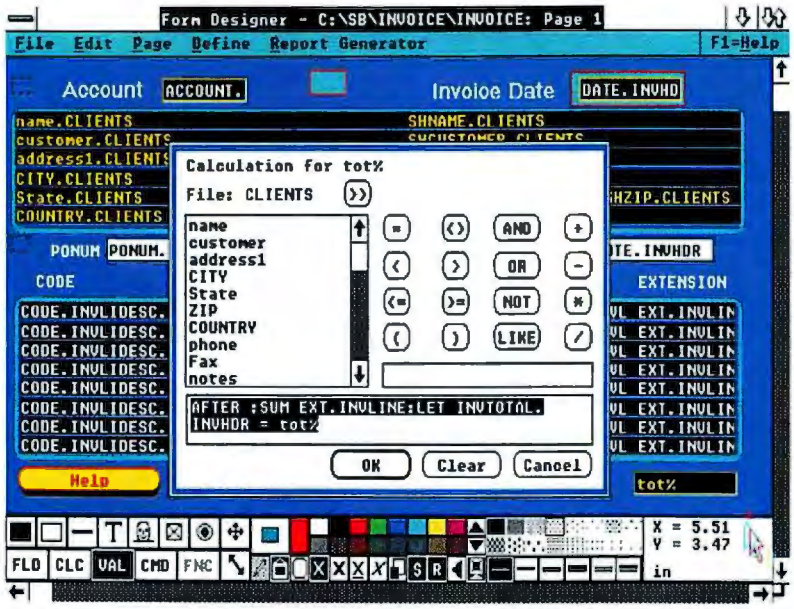
# SUPERBASE 4

*Review*

*Data manager*

**PROS:** Exceptional forms designer and mail merge, two-way DDE links, strong relational features, image and text-field support

**CONS:** Awkward query editing, confusing interface, sluggish




Superbase 4's forms designer is overflowing with features. You can easily define a calculated field by clicking on options from a dialog box, but the long command string that's produced is difficult to modify later.

*Alan Schwartz*

As one of the first programmable data managers for *Windows*, Precision's *Superbase 4* is attracting widespread attention. The spotlight reveals the program's promise as well as its blemishes. There's scant competition in the *Windows* realm—Xerox's *FormBase* lacks a procedural language, and Blyth Software's procedural *Omnis Quartz* appears to be on the way out, superseded by Blyth's new character-based *Omnis 5*. Yet *Superbase 4* must also compete against character-based heavyweights such as *dBASE IV*, *FoxPro*, *Paradox*, and *R:base*. All provide easier querying and more complete programming tools. And you can't ignore the speed issue, either—*Superbase 4*'s screen refresh is slow, and *FoxPro* and *Paradox* are roughly six to ten times faster at data processing tasks.

DESPITE ITS FLAWS, SUPERBASE 4 OFFERS ALLURING POSSIBILITIES FOR PATIENT WINDOWS USERS.

Despite its flaws, *Superbase 4* offers alluring possibilities for patient *Windows* users. Based on Precision's less powerful *Superbase 2*, *Superbase 4* adds an advanced forms designer, a band-oriented report writer, a procedural language, multiuser capability, and two-way DDE hooks. (See the *Superbase 2* review in the Windows Special Section, November 1989.)

Bringing data management into the *Windows* environment offers clear advantages, especially in interactive data analysis. For example, you can type a letter in a text-editing window while viewing a table in another. As with *Superbase 2*, you can perform many data manipulation tasks without writing programs. You can build applications from pulldown menus and dialog boxes and page through data with handy VCR-like buttons such as fast forward. Other *Superbase* extras include a communications module and an able text editor that provides sophisticated mail merge. The program imports and exports plenty of formats including *1-2-3*'s WKS and WK1, *dBASE*'s DBF and DIF, and *Excel* and *Enable* files. *Superbase 4* also works as a network data manager and offers superior record- and file-locking options as well as password security.

Unfortunately, idiosyncratic organization gets in the way. The program ignores many *Windows* conventions: For example, print options are strewn across several pulldown menus. It also violates the object-first rhythm of a graphic user interface. You can't enter changes in the table view or pick a record by pointing to it, for instance.

Another drawback is the lack of query

by example. Instead you click buttons and enter values within dialog boxes to build command statements that define layout and filter selections. Editing these command statements is awkard; it's usually easier to start over.

On the other hand, *Superbase 4*'s forms designer makes the package worthwhile. You can easily design complex data entry forms using dialog boxes, push buttons, calculated and validated fields, and proportional- and multiple-font text. Color and fill patterns are extensive, and the program handles multiple-page and 240-column-wide forms. You can paint the screen free-form or snap elements onto a grid.

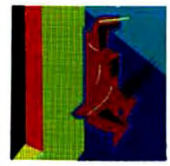
The forms designer's only major flaw: When you add repeating groups of detail records (such as invoice items), you must define a fixed number of items per page in a nonscrollable window. Any additional items must go on additional pages. Thus you can't scroll through items on a scroll list, as you can with *FoxPro* and *Paradox*. This limitation makes it tough to design multiline forms.

The forms designer also includes a respectable band-oriented report writer with the same set of graphics tools. The catch? When you alter a report, it takes its time to recompile. Reports that you could design in seconds with *Paradox*, for example, will consume minutes as *Superbase* regenerates code.

*Superbase 4*'s relational skills match the heavyweights'. You can do outer joins and, as with *Paradox*, create and edit data entry forms and reports that are tied to multiple tables. Creating lookup tables from related files is a snap, and linking a form to a table is a matter of opening a dialog box and clicking on a data file. A file-link diagram maps relations for each form.

*Superbase 4* is a natural for image management. Unlike most data managers and forms packages, it lets you integrate IMG, PCX, TIFF, and WMF images into forms, and move and resize them. Text-field support is also extensive—you can attach lengthy text files to records and perform full-text searches by keyword or pattern.

*Superbase 4*'s Data Manipulation Language (DML) lets you automate almost everything you can do from menus. A superset of BASIC, it supports arrays, windowing, and communications. Better yet, you can use DML to design two-way DDE links with other *Windows* applications. For example, you could open *Superbase 4* from *Excel*, link some *Superbase* data files to each other, execute a command file that calculates a summary table, and return the results to *Excel* for graphing and printing.



YOU CAN EASILY DESIGN COMPLEX DATA ENTRY FORMS USING DIALOG BOXES, PUSH BUTTONS, AND CALCULATED FIELDS.

DML is robust enough to construct the kinds of complex applications you'd typically build with *R:base* and *dBASE*. But the learning curve is steep, and development tools are lacking. DML is less structured than dBASE, it's sprinkled with exceptions, and it lacks user-defined functions. Unlike with *dBASE IV* and *FoxPro*, there's no debugger, and the editor lacks syntax checking, indentation control, and other programming tools.

*Windows* devotees will love *Superbase 4*'s top-notch forms designer, mail merge, DDE links, and image and text support. But *dBASE*, *FoxPro*, and *Paradox* users who crave top performance are unlikely to switch, and even *Windows* regulars may balk at the tedious report regenerations. If speed isn't an issue, however, *Superbase 4* is worth a look.

*Alan Schwartz is a data base application specialist living in San Francisco.*

**WHERE TO BUY**

**Superbase 4**
Precision Inc.
8404 Sterling St. Ste. A
Irving, TX 75063
214/929-4888, 800/562-9909 (sales only), 214/929-1655 (fax)
LIST PRICE: $695, $200 for each additional LAN user
REQUIREMENTS: 640K, DOS 3.0 or later version, Windows 2.03 or later version (Windows run-time included); LAN version requires DOS 3.2 or later
TECHNICAL SUPPORT: unlimited support first 90 days, toll number, M–F 8:30–5:30
OTHER SUPPORT: $75 per year includes phone support, technical newsletter, free minor upgrades, 25 percent discount on first major upgrade; CompuServe and American People/Link forums
**Reader service no. 670**

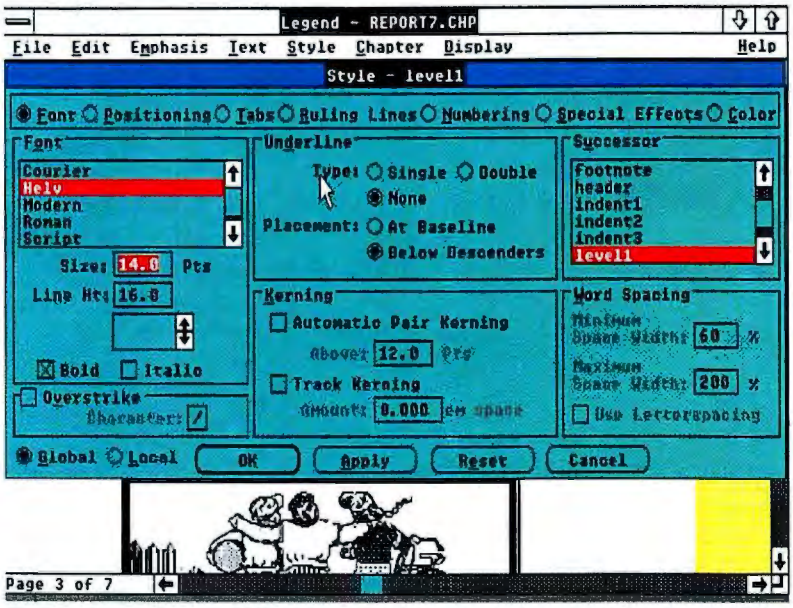
# LEGEND 2.0

*Review*

*Document processor*

**PROS:** Superior publishing tools, tracking and kerning, easy graphics integration, large document features

**CONS:** Lacks macros, thesaurus, prefab style sheets, and math functions; slow




Legend offers up a handy style dialog box that lets you set complete character attributes, from fonts to word spacing.

*George Campbell*

Trailblazers often end up with arrows in their back. NBI's *Legend*, the first word-processor-cum-desktop publisher for *Windows*, was one such pioneer. Although the product melded *Ventura*-like talents with *Word*-like text processing, it was justly panned for its snail-like speed, $695 price tag, and lack of printer fonts, prefab style sheets, and on-screen rulers. In short, it failed to satisfy users in either camp.

To its credit, NBI addresses some of those concerns in *Legend 2.0*. About 25 percent faster than its predecessor in graphics mode and $200 cheaper, it adds movable rulers and a speedy draft mode. And features from version 1.0, such as numerous keyboard shortcuts, a modest table generator, index and table of contents generation, easy footnoting, mail merge, and a spelling checker, make it a fairly complete workhorse.

*Legend 2.0* is also pretty easy to use. To set type on the fly, you highlight text and pick fonts and sizes from two menu boxes; to apply a style sheet, click and pick the style from a list. To import a graphic, you just stretch out a frame and pick the format and file from a dialog box. Aligning text or graphics is finally made easy, thanks to *PageMaker*-like snap-to guides. And adding a footnote or creating multiple columns is a point-and-click process.

However, everyday tasks like changing a font force you to slog through multiple menus and sometimes use the right mouse button in unexpected ways. Worse, features found even in midrange word processors, such as macros, sample style sheets, printer fonts, and a thesaurus, are conspicuously absent. DDE support and group editing tools, such as revision tracking and annotations, are also missing. *Ami Professional* includes all these features, plus built-in charting.

*Legend* was the first *Windows* text processor to use style sheets, but not the best. *Ami*'s style sheets are document independent. *Legend* awkwardly ties styles to each document, so you can't use one style sheet for many documents. You can create a template and load it for any new document, but it's a clumsy process, and you can easily overwrite the template by accident.

Other limits: You can't import *Word 5.0* or *WordPerfect 5.0* files, and exports are limited to ASCII and DCA/RFT. *Legend*'s paint program has basic line and text functions, but it lacks *Ami Professional*'s polygon- and curve-generation tools and the capability to use all available fonts in a graphic.

*Legend*'s incomplete feature set and admittedly still sluggish performance limit its appeal as a daily word processor. And as a desktop wanna-be, it can't compete with *Ami Professional*. *Legend* is a pioneer that time—and competitors—have passed by.

*George Campbell operates a busy BBS and specializes in telecommunications and word processing.*

**WHERE TO BUY**

**Legend 2.0**
NBI, Inc.
3450 Mitchell Ln.
P.O. Box 9001
Boulder, CO 80301
303/444-5710,
303/938-2586 (fax)
LIST PRICE: $495
REQUIREMENTS: 80286 or 80386 system, 640K, hard disk, DOS 3.0 or later version, EGA graphics or better, mouse, Microsoft Windows 2.03 or later version (run-time version supplied)
TECHNICAL SUPPORT: unlimited, toll-free number, M–F 7–6
**Reader service no. 740**

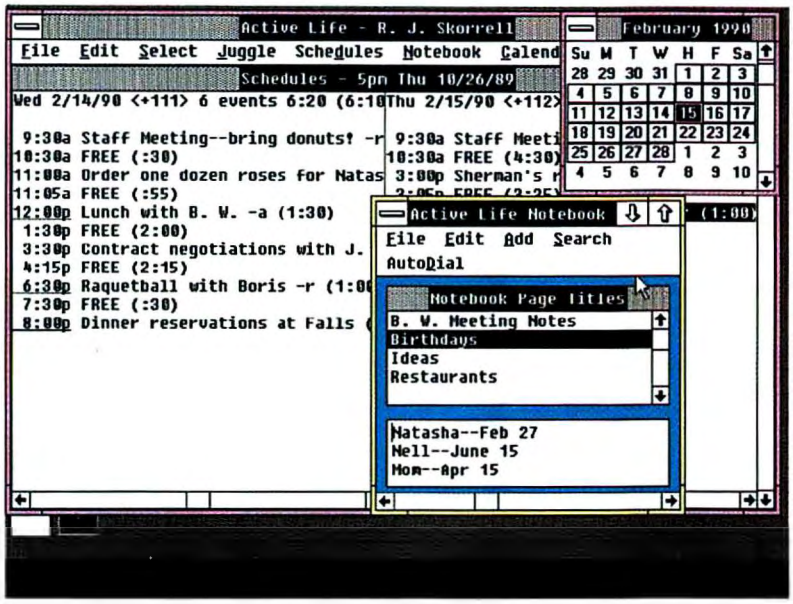
# ACTIVE LIFE 1.0

*Review*

*Personal scheduler*

**PROS:** Easy to use, excellent control over recurring items

**CONS:** Hard to view multiple schedules, limited reporting options




Active Life lets you plan your schedule through the year 2068. A pop-up calendar makes it easy to juggle events between days, while the Notebook works as a miniature data base, storing free-form text and graphics.

***Patrick Marshall***

**WHERE TO BUY**

**Active Life 1.0**
TimeStar Systems
1803 Mission St. #8
Santa Cruz, CA 95060
800/326-4391, 408/983-4930,
408/423-9119 (fax)
LIST PRICE: $199, shareware version $89
REQUIREMENTS: 99K; Windows/286, Windows/386, OS/2 1.1, or later version
TECHNICAL SUPPORT: unlimited, toll-free number, M–F 6 a.m.–10 p.m., Sat 7:30 a.m.–9:30 p.m., Sun 8–8
OTHER SUPPORT: BBS
**Reader service no. 610**

Despite its name, *Active Life* isn't a program for planning your golden years, though it may spare you a few gray hairs. As an information manager it can't match Lotus's *Agenda*, but this no-frills personal scheduler should prove handy for busy *Windows* users.

*Active Life* centers around an electronic desktop calendar that can display from one to seven days of activities at a time. To schedule new items, you merely enter the activity's description, duration (from 1 minute to 11 hours), date, and time in an on-screen form. You can then set an alarm that pops up over any *Windows* application or over DOS programs running under *Windows/386*.

*Active Life* automatically calculates the amount of free time left between activities and fits "floating" activities into available chunks. And the program's pop-up calendar lets you easily shuffle appointments from one day to the next—just highlight the item and click on your target date.

But *Active Life*'s real strength is scheduling recurring activities. You can schedule items to occur every few days or a specific number of times per week, month, or year—say, the third Thursday of each month. Making global changes is a snap; you can also change individual items without affecting other entries.

*Active Life* comes with a dressed-up version of *Windows*' Cardfile, called Notebook. Notebook accepts ASCII data, text and binary files, and existing Cardfile records, and it even lets you paste graphics into records. However, like Cardfile, Notebook's bare-bones auto-dialer lacks such essentials as an auto-redial function.

Though logically designed, *Active Life* has its share of flaws. You can't print more than one schedule or notebook page at a time, or create links between schedule items and notebook pages. Formatting options are minimal. And when you display multiple schedules, *Active Life* splits the screen vertically, revealing only the leftmost portion of each schedule. Dividing windows horizontally would be far more useful.

Caveats aside, *Active Life* is an amiable desktop companion for *Windows* users. While not as feature-packed as Polaris Software's *PackRat*, it's much easier to learn and use—and hundreds of dollars cheaper. *Active Life* also comes in shareware and commercial versions. Equally keen: When you buy the program, you get DOS and Presentation Manager versions on disk as well. If you're looking for a simple appointment manager that's fully *Windows* compatible, *Active Life* should fit neatly into your schedule.

*Patrick Marshall writes for* Congressional Quarterly's Editorial Research Reports *in Washington, D.C.*

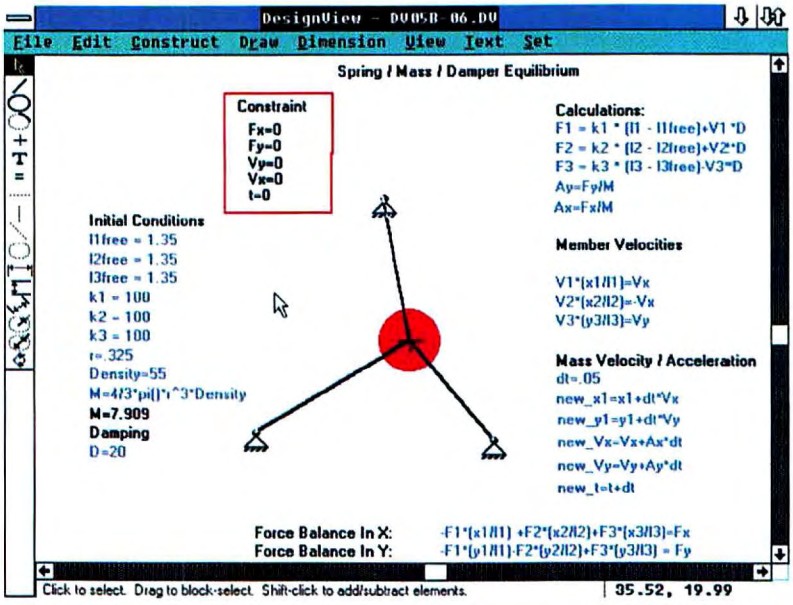
# DESIGNVIEW 1.0

*Review*

*Engineering design tool*

**PROS:** Easy to learn and use, follows traditional engineering techniques, exports to most CAD formats, superb manual and on-line help

**CONS:** Only basic drafting features, limited math functions, can't import CAD files, no 3-D, expensive




Finding the "at rest" position for a mass supported by three springs is one of the more creative uses for DesignView. DesignView can also solve for velocity and acceleration of the mass of this model and determine the forces acting upon it.

*Christopher James DeLucchi*

**A** great deal of a mechanical engineer's work ends up in the wastebasket—provided he or she has a decent hook shot. Although CAD programs are great for drafting designs of known dimensions, a pencil, a sketch pad, and a calculator still dominate concept development, where much of the engineering involves deriving dimensions from factors like mass, stress, and velocity. Premise's *DesignView* automates this drudgery, liberating mechanical engineers in much the way *1-2-3* liberated financial planners. If you regularly grapple with design problems that don't require complex curved surfaces, *DesignView* is worth investigating.

*DesignView* is essentially an automated engineering notebook that the company aptly dubs a "visual spreadsheet for geometry." The program uses dimension-driven variational geometry to define models—for example, you can sketch out a gear assembly and supply the desired dimensions, and the program will automatically redraw the image to fit your constraints. You can then interactively manipulate your design by changing equations, dimensions, constraints, and references to other dimensions—it's a great way to quickly explore different designs and reuse existing ones.

Since *DesignView* supports DDE, you can hot link a model to *Excel* and modify the design by changing numbers in the worksheet—or change the design and have *Excel* calculate new values. Once you've finished a design, it can be exported to *AutoCAD* or any program that accepts DXF and IGES files.

As a "spreadsheet for geometry," *DesignView* is pretty flexible. Dimensions in a model can be defined by fixed values, formulas, or relationships to other elements. Formulas can include algebraic and trig functions. Constraints can force entities to end at or pass through a fixed point, a tangent point, or a geometric feature.

Just remember that *DesignView* is a 2-D program—it doesn't support solid or surface modeling, finite element analysis, or most mass property queries. A more critical failing is that *DesignView* does not support splines, Bezier curves, or ellipses. Mirror, fillet, and equal-sided chamfer functions are provided, but circular and rectangular arrays aren't.

In short, *DesignView* doesn't merit a Best Buy—yet. But if your work fits within *DesignView*'s scope, it will quickly reduce the number of foul shots to the wastebasket. ●

*Christopher James DeLucchi is the author of* The AutoCAD Cookbook *series (John Wiley, New York, 1989) and the chairperson of the AutoCAD Users Group of San Diego.*

**WHERE TO BUY**

**DesignView 1.0**
Premise, Inc.
3 Cambridge Center
Cambridge, MA 02142
800/888-7736, 617/225-0422, 617/225-0413 (fax)
LIST PRICE: $1895 (includes run-time Windows/286)
REQUIREMENTS: 640K, DOS 3.0 or later version, Windows/286 or Windows/386 2.03 or later version; Hercules, EGA, or VGA graphics; mouse; expanded memory and numeric coprocessor recommended
TECHNICAL SUPPORT: unlimited during first 90 days after purchase, toll-free number, M–F 8:30–6
OTHER SUPPORT: extended service policy $295 per year
**Reader service no. 660**

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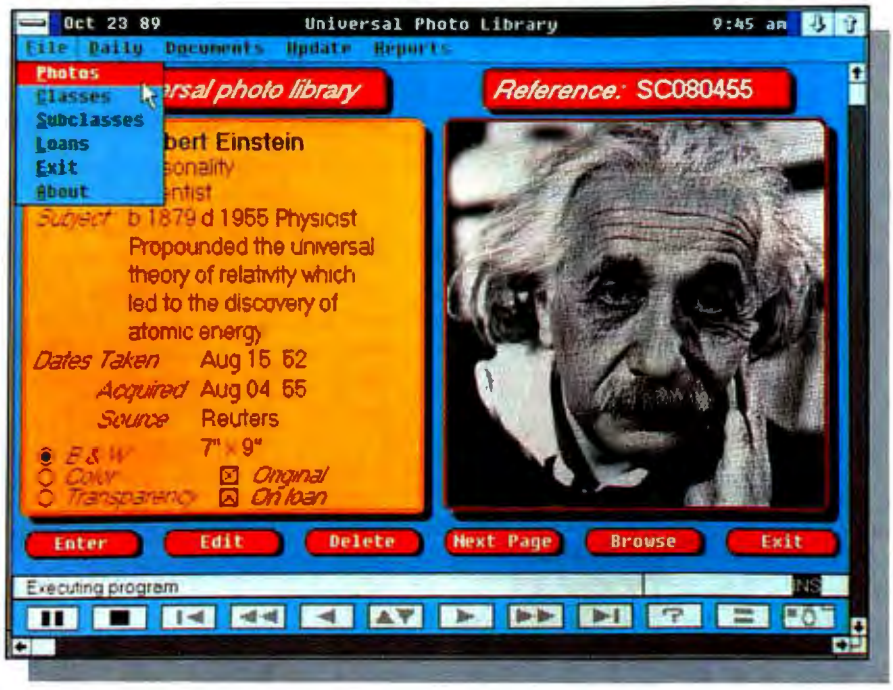


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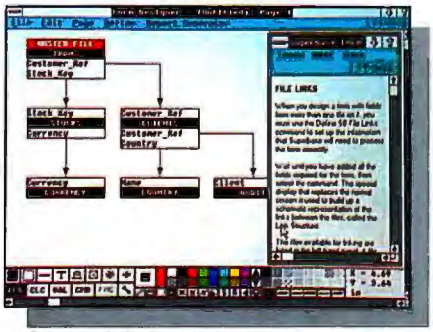

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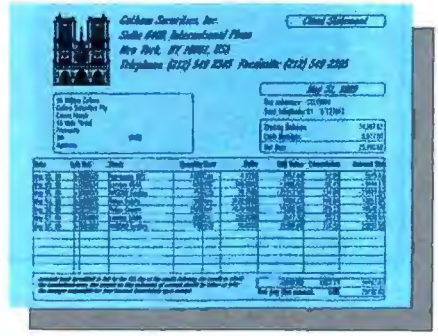

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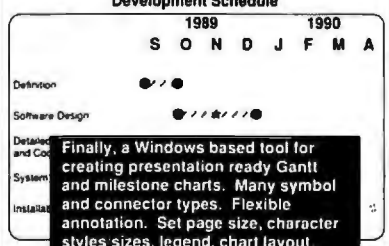


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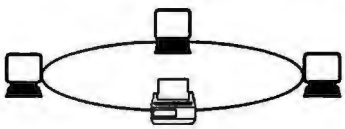

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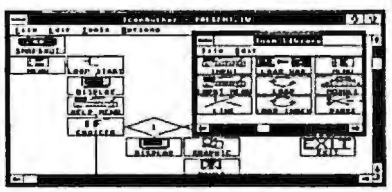

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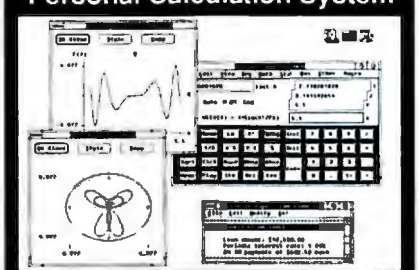

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# 1-2-3 and dBASE: The Ties That Bind

Data Management

**Pull dBASE files into your release 3 worksheets—without the tedium of translation.**

*Evelyn Morrison*

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Lotus's *1-2-3* gives managers sophisticated, powerful tools for analyzing data. But how do you get at your data when it's inconveniently stored in a *dBASE* file?

Prior to *1-2-3* release 3, you would likely fire up *dBASE*, define your record-selection criteria, and then write the selected records to a file. But before settling down for some serious number crunching, you would need to convert the *dBASE* file to a *1-2-3* worksheet file. If you later changed your mind about which records to analyze or wanted to use an updated *dBASE* file, you'd have to go through the tedious selection and translation cycle all over again.

Release 3's Data External Use feature changes all that by providing full access to your *dBASE* file from within the spreadsheet. You can pull in only the records you need or work directly with the whole file on disk. If the need arises, you can add new records to the *dBASE* file or even create new *dBASE* files from within your spreadsheet.

The release 3 manual makes hooking up with *dBASE* look more difficult than it actually is. This article walks you through a sample *1-2-3* session that accesses an external *dBASE* file. The discussion assumes a working familiarity with *1-2-3*'s Data Query commands.

### Attaching an External dBASE File

To access a *dBASE* file, you begin by attaching the file to your *1-2-3* worksheet. We'll use the sample *dBASE* file EMPFILE.DBF, which comes with release 3 and is copied to the program directory during installation. It

contains personnel information about ten individuals.

Start with an empty worksheet. The default directory must be the program directory. Select */Data External Use*, and *1-2-3* will prompt you for a table name. This name should have three parts: data base type, path, and file name. To set *dBASE III Plus* as the type, select Sample. (Despite its misleading name, the Sample *dBASE* translator is fully functional.) Next select the prompted path (usually C:\123R3). To complete the table name, select EMPFILE; unless you've added additional *dBASE* files to your *1-2-3* directory, only that choice will be prompted. Select the default range name, EMPFILE, for the table. This is the name by which you will refer to the external table in later commands. Finally, select *Quit*.

To see the field names in the *dBASE* file, select */Data External List Fields* and press **<Enter> <Enter>Q**. Field names, data types, and formats will be displayed in the first three columns of the worksheet (see **SCREEN 1**). (Columns D through F are currently unused, but they may be used by external data base translation modules currently under development by other major data base companies.)

A:F11: (G) +DEPTNUM>1900#AND#+DEPTNUM<3000 READY

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | EMPID | Numeric | 5,0 | NA | NA | NA | |
| 2 | LASTNAME | Character | 12 | NA | NA | NA | |
| 3 | FIRSTNAME | Character | 12 | NA | NA | NA | |
| 4 | DOH | Date | 8 | NA | NA | NA | |
| 5 | SALARIED | Logical | 1 | NA | NA | NA | |
| 6 | DEPTNUM | Numeric | 5,0 | NA | NA | NA | |
| 7 | | | | | | | |
| 8 | 4 | | | | | | |
| 9 | | | | | | | |
| 10 | EMPID | LASTNAME | FIRSTNAME | DOH | SALARIED | DEPTNUM | |
| 11 | | | | | | ERR | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | EMPID | LASTNAME | FIRSTNAME | DOH | SALARIED | DEPTNUM | |
| 15 | 67543 | Mordocs | William | 06/03/87 | 1 | 2323 | |
| 16 | 87548 | Peters | Donald | 04/23/87 | 1 | 2323 | |
| 17 | 43357 | Wiseman | Marcus | 09/29/83 | 0 | 2323 | |
| 18 | 78950 | Kilbean | Harrison | 11/23/83 | 1 | 2223 | |
| 19 | | | | | | | |
| 20 | | | | | | | |

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**SCREEN 1: The Data External List Fields command displays the names, data types, and formats of fields in the EMPFILE.DBF external data base. Below, the Data Query Extract command brings up the records in EMPFILE.DBF that match the criteria in cell F11 (displayed in the first line of the 1-2-3 control panel).**

## Defining Data Query Ranges

With these preliminaries out of the way, you can return to more familiar territory and work with the *dBASE* file as if it were a standard *1-2-3* data base. As with any *1-2-3* data base, you must specify an input range, a criteria range, and an output range before you can access data.

The input range is the *dBASE* file, which you refer to by the range name you specified when attaching the data base. To assign the input range to EMPFILE, select */Data Query Input*, enter **empfile**, and select *Quit*.

The first row of the criteria range must consist of field names. To copy the field names from A1..A6 to a horizontal row, select */Range Transpose* and enter **a1.a6** as the FROM range and **A10** as the TO range. Adjust the column widths to make the field names readable. To name this range CRIT, select */Range Name Create*, enter **crit** as the name, and enter **a10.f11** as the range. To define this row and the row directly under it as the criteria range, select */Data Query Criteria*, press **<F3>**, and select *CRIT* as the criteria range. You can append additional rows to the criteria range to allow more complex queries, but a single row will be sufficient for this example. Select *Quit* to return to the worksheet.

The first row of the output range must also consist of field names. To copy the field name labels, select */Copy*, press **<F3>**, select *CRIT* as the FROM range and enter **a14** as the TO range, and select *Quit*. To name the range RESULTS, select */Range Name Create*, enter **results**, and enter **a14.f14**. Select */Data Query Output*, enter **results** as the out-

put range, and select *Quit*. As with a regular *1-2-3* data base, you need specify only the label row. The program will use as many subsequent rows as necessary for output, overwriting any existing data.

### Accessing the External Data

Now you're ready to get down to work. Notice that the record layout does not display the number of records in the *dBASE* file. You can count them with a *1-2-3* data base @ function. In cell A8 enter the formula **@dcount(empfile, "empid",crit)**. *1-2-3* will return the number of data base records—in this case, 10. Since the second row of the criteria range was empty, *1-2-3* counts all records. Note that you could use any field name in place of the "empid" parameter.

All of the other data base @ functions work just as usual. For example, you can determine when the most recently hired employee came on board by using the @DMAX function on the DOH (Date of Hire) field. In any empty cell, enter the formula **@dmax(empfile,"doh",crit)**. Use the Range Format Date command to format the result as a date.

Release 3 also lets you include field names in search criteria. For example, to extract the employees in any department that begins with a 2, in cell A11 enter *+deptnum>1999#and#+deptnum<3000*. Ignore the ERR that *1-2-3* will return for this formula—it's interpreting the criteria as a formula. If you dislike seeing ERRs displayed, simply format the cell as text. Next, issue the */Data Query Extract* command, and the four records that meet this criterion will be placed in the output range. If you've followed along, your screen should resemble **SCREEN 1**.

You can also add new records to the attached file—again using the Data Query Extract command. First, enter the new records into your spreadsheet. Next, specify the input range as the range in your spreadsheet that contains the records to be added, including the field name header. The output range will be the range name you assigned to the external table. If you have a blank criteria range, all of the records will be added when you issue the Data Query Extract command. Alternatively, you can export only the records that match your criteria.

As a safeguard against errors, external data base range names are not saved with your file, so you'll have to repeat the initial Data External Use command when you reload this worksheet. If you ever need to sever the link with an external data base, issue the Data External Reset command.

The external data base feature also provides sophisticated LAN support. If you're working on a network and other users are accessing the same *dBASE* file, you can instruct *1-2-3* to "refresh" your data base @ functions and the most recent Data Query commands at a specified time interval. This ensures that your spreadsheet data is always up to date.

### Cautions and Caveats

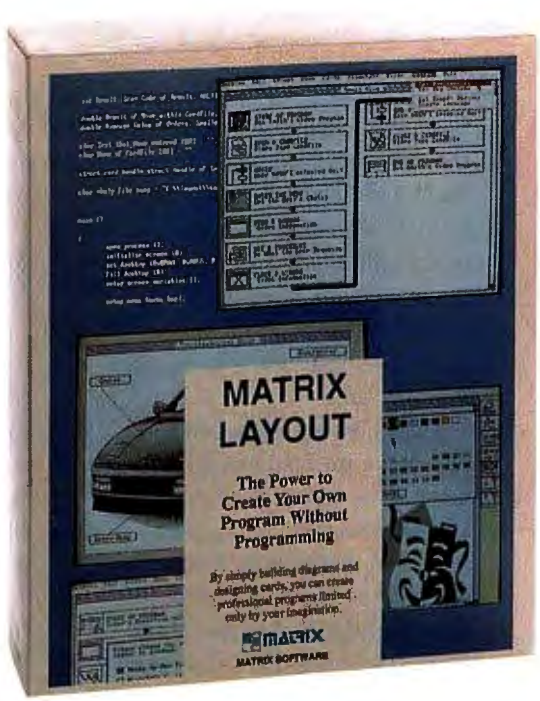
Use the data base @ functions sparingly, since *1-2-3* scans the entire external data base for each function in your spreadsheet; if it takes 10 seconds to evaluate 1 function, it'll take 5 minutes to evaluate 30 of them. You'll be wise to switch to manual recalculation, since *1-2-3*'s background recalculation is disabled during these disk accesses.

Although *1-2-3*'s external data base feature is extremely valuable, it's certainly no substitute for a good data base management program. For example, it cannot create or update indexes, and the data entry and reporting capabilities are limited. And because Data Query Find doesn't work with external data bases, you can't easily search for a particular record.

Experimenting with the EMPFILE.DBF file can be a bit misleading, since the file has only 10 records. In most cases, you'll be working with larger files and should be prepared for serious delays. For example, extracting 100 records from a 440-record file took a little more than a minute on a 6-MHz AT with a 28ms hard disk. Extracting the entire file took over two minutes.

Also, be aware that future external data base drivers may have additional capabilities. For example, you can't currently replace modified records in the *dBASE* file. Future modules may well use the Data Query Modify Replace command to let you update selected records in external data base files.

If you like the idea of working with external data bases but your hardware isn't quite up to the standards required by release 3, you might want to check out Borland's new *Quattro Pro*. This product can work with external data bases in *dBASE II, III,* or *IV; Paradox;* or *Reflex* format.

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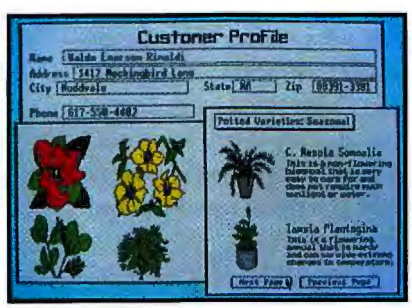


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TIPS & TECHNIQUES

Data Management

# dBASE IV Cures the Common Code

**Design a menu-driven dBASE application, and let dBASE IV's Applications Generator worry about the syntax.**

What you need: dBASE IV

The *dBASE IV* programming language offers a great many commands for creating menus, but mastering the syntax and entering the code can be time-consuming. Fortunately, the *dBASE IV* Applications Generator (AppsGen) can all but eliminate the need to write these routines by hand.

AppsGen is one of four code generators that come with *dBASE IV.* The other three—the form, report, and label generators—are tools for developing various application objects. (In *dBASE IV,* an object can be a data base or query file, a report, a form, a menu, a list, or a batch process—any of the building blocks that make up an application.) With AppsGen, you create the menus and overall structure that tie these objects together, and you determine the parameters within which they will operate. And because AppsGen generates dBASE code, the applications you create in it can be modified later.

Unfortunately, AppsGen is poorly documented and full of traps. This article steps you through the creation of a light-bar menu that calls data base objects, specifically a generic browse screen and a report, and brings them together in a simple, menu-driven, ready-to-run application. You'll also learn how to avoid the obstacles that lurk along the way.

### A Newborn Application

Before running AppsGen, create all needed data bases, indexes, queries, screen forms, reports, and labels. In this example, you'll need a data base and a report, plus an index that can be used by both of them. Although the documentation claims you can create forms, reports, and labels from within AppsGen, you'll almost surely run out of memory if you try. You should develop these objects beforehand with their own respective code generators.

Organization is crucial—plot out the application's structure first, naming all the objects. Then you can create the objects and, last of all, the application.

### Inside AppsGen

Once you've created the data base, report, and index objects, it's time to develop the application. First, enter AppsGen:

1. Run AppsGen from the Control Center by selecting *<create>* from the Applications column.

2. Select *Applications Generator* from the dialog box. The Application Definition screen appears, from which you choose seven global parameters that define the application.

3. For the application name, type in a file name, minus the extension, and press **<Enter>**. If you wish, type in a description and press <Enter>. Descriptions don't affect the application when it's run but help document it for updates and maintenance.

4. Next, choose from AppsGen's three basic menu styles: bar, pop-up, and batch. Pressing the <Space> bar will cycle you through the choices. For this example, press **<Enter>** to select 'BAR'.

5. To name the main menu, enter another file name, such as MAINMENU, and press **<Enter>**.

6. Enter the name of the data base file or, if you're using more than one data base, the name of the appropriate query-by-example (QBE) view. If you need to see a list of data bases and views, press <Shift>-<F1>. If you choose a QBE view, you must enter the file extension, QBE, as well as the name.

7. Now identify the index. If you're using a *dBASE III Plus*–style NDX index, simply enter the file name and extension; with *dBASE IV*'s multiple-index MDX files, enter the order tag on the line below. Press **<Ctrl>**-**<End>** to save the screen.

### Making a Splash

When you load a commercial application, the message you see containing the program's name and copyright is called a splash screen, and AppsGen gives you one by default. You should be looking at it now: a large box with text that begins 'This is an

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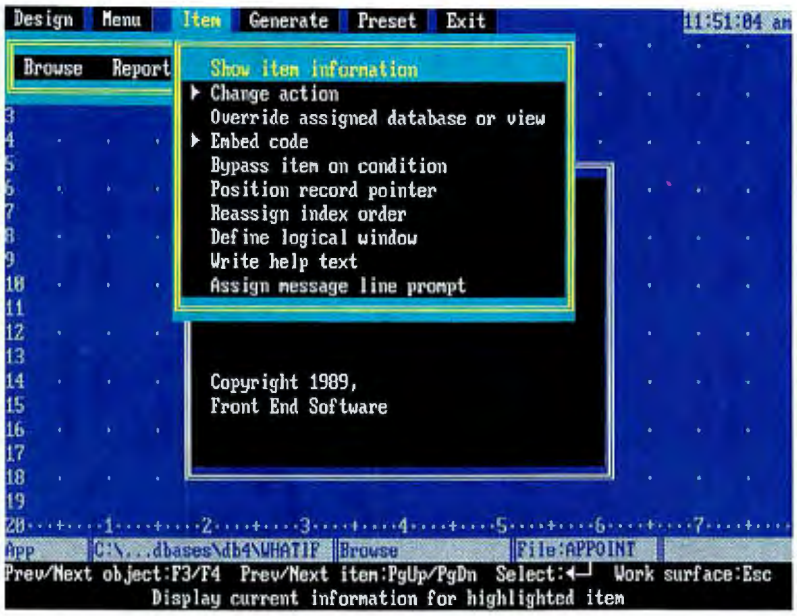


**With dBASE IV's Applications Generator, you can create dBASE applications without writing a line of code. After you create the light-bar menu (on the left), you use the Item menu to link the menu pads with the objects that make up the application. An opening splash screen appears in the background.**

APPLICATION OBJECT'. To replace this text, press **<Ctrl>**-Y seven times to erase it, then type in something of your own.

If you want to resize the splash screen, press <Shift>-<F7>, use the cursor keys to make adjustments, then press <Enter>. To move the box, press <F7>, use the cursor keys to position it, and press <Enter> to freeze it in place. If you don't want a splash screen, press <Alt>-A to bring up the Application menu and select 'Display sign-on banner No'.

When the application is run, the splash screen will disappear the first time the user presses <Enter>. No such luck, however, for you, the developer. The splash screen remains on screen throughout your AppsGen session, even if you just selected not to display it.

### Designing MAINMENU

Now you're ready to create the light-bar menu. In this example, it will contain three options, or pads, as they are called: Browse, Report, and Quit. Here's how you design the menu:

1. Press **<Alt>-D** to display the Design menu, and select *Horizontal bar menu <create>*.

2. A menu definition screen will appear. Type **MAINMENU** again for the name. You can enter description and message line prompts as well. When an application runs, the prompt will appear at the bottom of the screen, giving the user additional information. However, when you assign message line prompts to the individual pads, as you will later in this exercise, they will override the prompt you create here.

3. Press **<Ctrl>-<End>** to exit the definition screen. The outline of your menu will appear at the top of the screen.

4. To define the first pad, press **<Space> <F5>**. Type **Browse**, and press **<F5>** again. The <F5> key marks the beginning and end of each pad. Pad names can have multiple words and may contain spaces.

5. Type three spaces, and press **<F5>**.

6. Type **Report**, and press **<F5>**.

7. Enter three more spaces, and press **<F5>**.

8. Type **Quit**, and press **<F5>**. Because Quit is the last pad, you need not type any spaces.

9. Press **<Shift>-<F7>**, then use the **<Cursor Left>** key to shrink the box around the three pads, leaving two blank spaces after the word 'Quit'. Press **<Enter>**. The light-bar menu is now complete.

### Linking Pads and Objects

Once the pads are in place, you use AppsGen's Item menu to assign objects, prompts, help screens, and other items to them:

1. Move the cursor to 'Browse' on the menu bar by pressing **<Ctrl>-<Cursor Left>** three times, then **<Cursor Right>** once.

2. Press **<Alt>-I** to bring up the Item menu.

3. Select *Change action Browse* to display the Browse setup screen, where you define how the browse will look on screen. Most of the fields are self-explanatory, and the default values are usually sufficient. If you have defined a screen format file for this data base with the screen form generator, you can use that format's data validations instead of *dBASE IV*'s default browse screen. Simply enter the name of the FMT file in the 'FORMAT file' option, or press <Shift>-<F1> while the cursor is at 'FORMAT file' to display a pick list. Whether you change any parameters or not, press **<Ctrl>-<End>** to return to the Item menu.

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4. Next, select *Assign message line prompt*, and type in a message that will appear at the bottom of the screen when 'Browse' is highlighted on the menu. Press <Enter> or <Ctrl>-<End> when you're done.

5. Once you see how the Item menu works, it's no trick to assign an action to the Report pad. Press <Esc>, highlight the Report pad by pressing <Ctrl>-<Cursor Right>, bring up the Item menu, and choose *Change action Display or print Report.*

6. When the 'Print a Report' window pops up, enter the name of your report form file; if you can't remember it, press <Shift>-<F1> to bring up a pick list. Press <Enter>. If you wish, enter a heading to prefix the report, and press <Enter> again.

7. You can press the <Space> bar to cycle through the options for the next four items. Usually, you'll want to set the 'Report format' to FULL DETAIL, the 'Heading format' to INCLUDE DATE AND PAGE, and 'Before printing' to SKIP TO NEW PAGE. If you set the 'Send output to' option to ASK AT RUN TIME, the user can select whether the report should go to the screen, the printer, or a disk file. The optional FILTER, SCOPE, FOR, and WHILE parameters let you further define the data that will appear in the report.

8. Press <Ctrl>-<End> to return to the Item menu. You can then assign a message line prompt to the Report pad as you did with the Browse pad.

9. Defining the Quit pad is easy. Select the Quit pad, bring up the Item menu, and select *Change action Quit.*

10. Select either *Return to calling program* or *Quit to DOS.*

11. Supply a message line prompt if you wish, then press <Esc> to leave the Item menu.

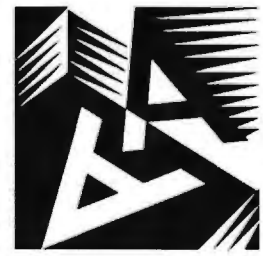
12. To save the application and free the memory it's using, press <Alt>-M for the Menu menu (yes, that's its real name), and select *Put away current menu* and *Save changes.* If you're working with numerous menus, do this frequently to avoid running out of memory.

### Talkin' About Code Generation

Now you're ready to generate the code for your application. Press <Alt>-G to view the Generate menu and select *Begin generating* to create your code. *dBASE IV* automatically displays the code as it generates it; this may be interesting at first, but it slows down the process considerably. To turn off the display, select *Display during generation No* from the Generate menu before generating your code.

When the code generation is done, press any key. Press <Alt>-E for the Exit menu, and select *Save changes and exit.* To run your application, either select it from the Control Center's Applications column or type 'do *filename*' from the dot prompt.

Of course, a three-item menu isn't much of an application, but you can attach submenus to the pads as well. By hanging forms, reports, queries, and other elements onto a tree of menus, you can create complex applications with little or no writing of code. With AppsGen, your success as a programmer no longer depends on your knowledge of syntax or your speed and accuracy as a typist. *—Tony Lima*



Word Processing

## Easy Fill-In Forms With Word

**Creating good-looking custom forms is a snap with Microsoft Word 5.0.**

What you need: Microsoft Word 5.0, a printer

Most of us are up to our eyeballs in forms. Packages such as *Per:form* can help, letting you design graphically complex business forms that you can fill in automatically with data from ASCII and dBASE files. But if all you need are simple forms that you can quickly design and use, *Microsoft Word 5.0* does the job quite nicely.

The secret is *Word 5.0*'s field markers—on-screen placeholders that funnel variable information into an unchanging template. Unlike *Word 4.0*, which uses field markers mainly for mail merge, *5.0* lets you add variable fields to forms and jump easily between them—which makes filling them in a snap.

This article shows you how to use *5.0*'s field markers and enhanced box-drawing tools to create the customer invoice shown in SCREEN 1. Once you master the process, you can use *Word* to design almost any type of form.

### Creating a Custom Form

To create the form, you'll type in permanent text, insert variable

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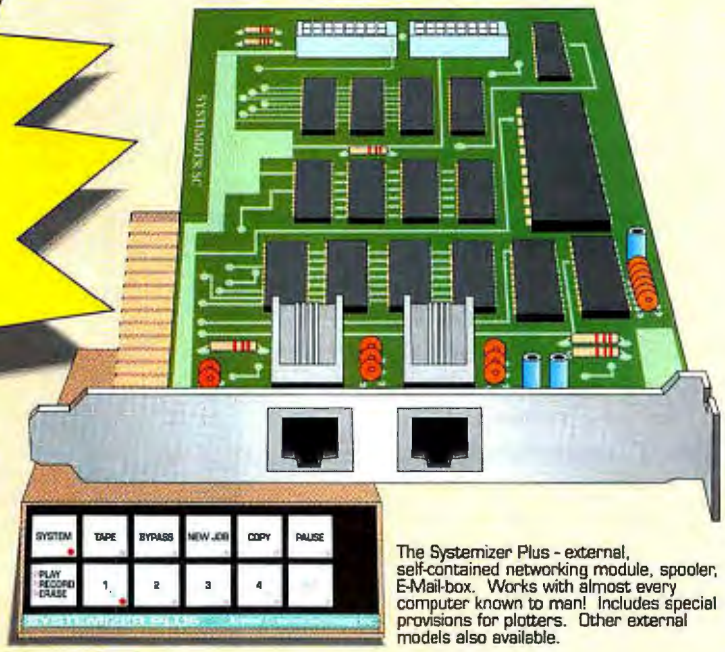




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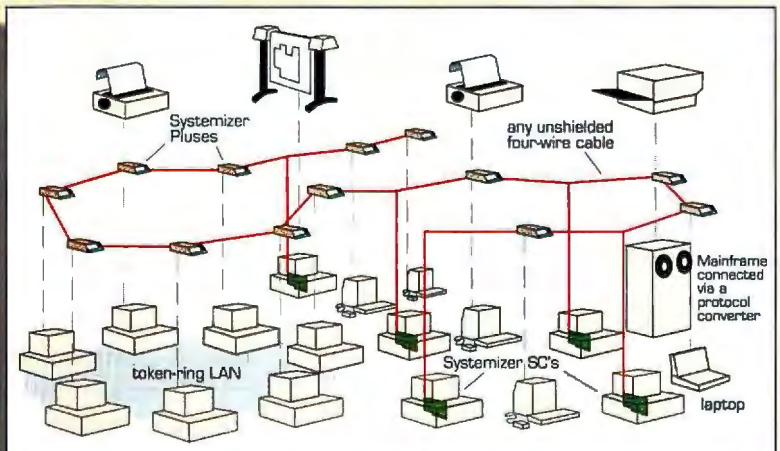


Example: 17 micros, of various brands, *plus* a mainframe, all sharing printers, data and E-Mail via Systemizing. Note how some PC's on a token-ring LAN are also part of the Systemizer LAN.

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**Circle 77 on reader service card**

fields, wrap a box around them, and copy the form to the glossary. But first you need to format text and insert headings.

1. Load *Word*, press **<Enter>** six times to create a work space, and return the cursor to the top of the screen.

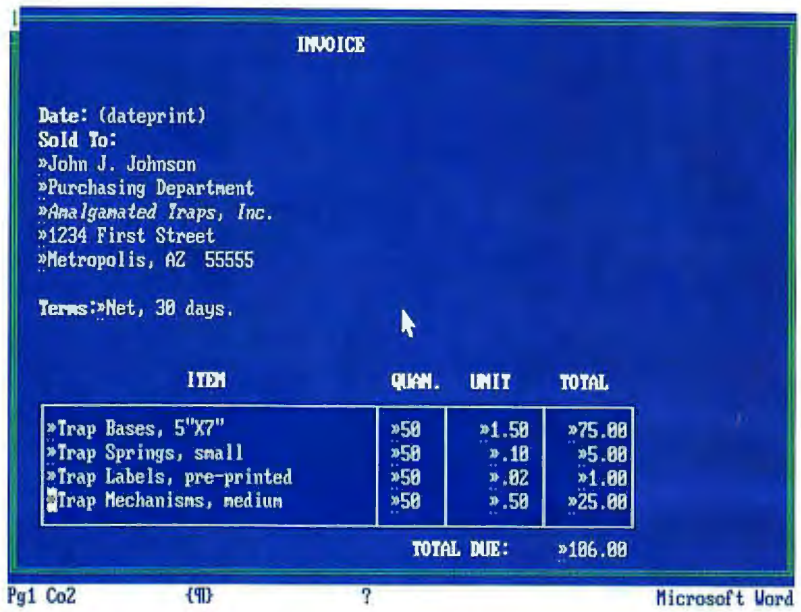
2. Since field markers are normally hidden, you'll want to unhide them. Press **<Esc>O** to select the Options menu, tab over to the Show Hidden Text option, and press **Y<Enter>**.

3. Give the form a title. Type **INVOICE**, then press **<Alt>-C** to center it. Cursor down a line, and press **<Enter>** four times.

4. Now create a line that automatically prints the day's date. Type **Date: dateprint**, and press **<F3><Enter>**.

5. On the next line, type **Sold To:** and press **<Enter>**. Then create a five-line address block by pressing **<Ctrl>-]<Enter>** five times. The field marker (») on each line indicates a variable field ready to accept information.

6. Press **<Enter>** and type **Terms:** followed by a space and **<Ctrl>-]** to create another marker. Press **<Enter>** three times.




**SCREEN 1: Word lets you create easy-to-use forms and enhance them with fonts, boldface, and italics. Field markers (») indicate areas where the user must enter information; when formatted as hidden text, the markers will display on screen but won't appear on the printed invoice.**

## ▶ Inserting Variable Fields

Now you're ready to create the data entry portion of the invoice.

1. First enter the column headings. Type **<Tab>ITEM<Tab>QUAN.<Tab>UNIT<Tab>TOTAL.**

2. Now create left-aligned tabs for the ITEM, QUAN., UNIT, and TOTAL headings. (If you don't use tabs, text entered below won't line up properly.) To align the ITEM heading, display the Format Tab Set menu with **<Alt>-<F1>**. Move the cursor to the 1.5-inch mark on the ruler, and type **L** to set a left-aligned tab. Create tabs at 3.6, 4.4, and 5.3 inches. Press **<Enter>** to save these settings.

3. Next, insert field markers below each heading. Cursor down a line, and press **<Ctrl>-]<Tab>** three times and **<Ctrl>-]** once. Press **<F10>** to select this row of markers, then press **<Delete>** once and **<Insert>** four times to create four identical rows.

4. To position the field markers under each heading, highlight all four rows, and press **<Alt>-<F1>**. Move the cursor to the 3.4-inch mark on the ruler, and press **V**, which tells *Word* to draw a vertical line between the columns.

5. Move to 3.9 and press **R** to set a right-aligned tab. Set vertical tabs at 4.1 and 5.1, and press **D** for decimal tabs at 4.7 and 5.7. (Decimal tabs ensure that columns of numbers line up correctly.) Press **<Enter>**.

## ▶ Drawing the Box

*Word 5.0*'s expanded Format Border menu makes it easy to corral your data entry section inside a single box. Here's how:

1. Select the first row of markers, then open the Format Border menu by pressing **<Esc>FB**.

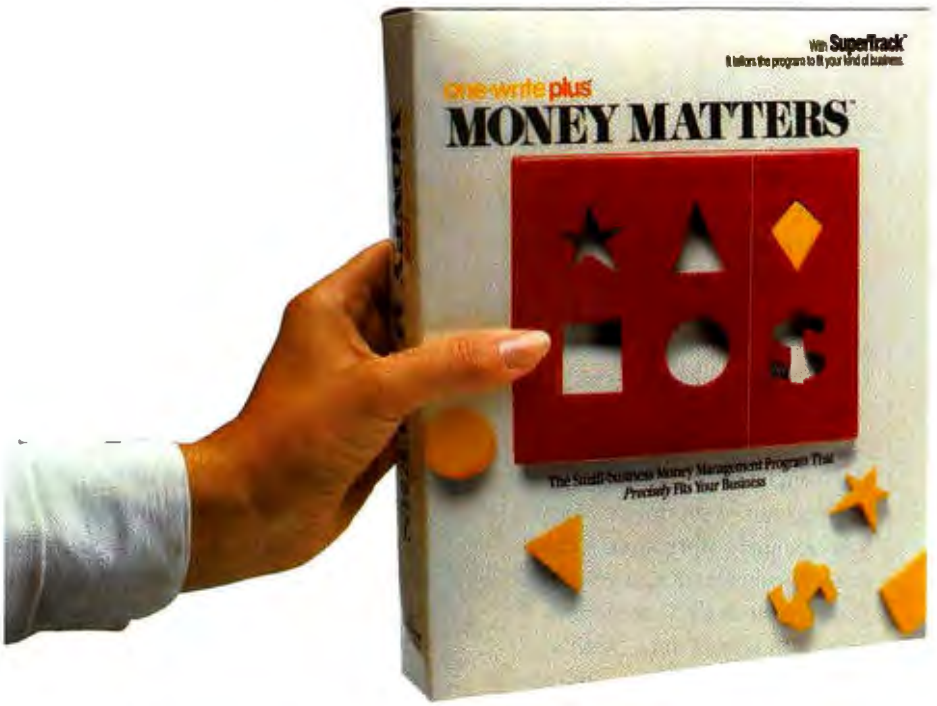
2. To add lines to both sides and along the top of the row, press **L** to select Lines; type **Y** at the Left, Right, and Above options; then press **<Enter>**.

3. Select the next two rows, and add lines to each side. Finally, select the last row, and add lines to the sides and bottom (type **Y** at the Below option).

4. To complete the invoice, cursor down two rows and type **<Tab>TOTAL DUE:<Tab><Ctrl>-]**. Press **<Alt>-<F1>**, set a left-aligned tab at 3.8 inches and a decimal tab at 5.7, and press **<Enter>**.

## ▶ Finishing Touches

After inserting the permanent text, you can enhance it with fonts and character attributes and center the form on the page. But first you need to format each

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field marker as hidden text so it won't print.

1. Return to the top of the form (<Ctrl>-<Page Up>). Find the first marker by pressing <Esc>S<Ctrl>-]<Enter>.

2. Press <Alt>-E twice to format the marker as hidden text.

3. Press <Shift>-<F4> to find the next marker, format it as hidden text, and repeat this step until you have formatted all of the markers.

It's easy to embellish titles, labels, and other permanent text using *Word*'s Format Character menu. But you can also automatically format text entered in the form's fields simply by highlighting the tab or paragraph marker following the field marker and selecting the attributes and fonts you want.

To center the invoice on the page, select the entire document with <Shift>-<F10>, and call up *5.0*'s new Format pOsition menu with <Esc>FO. At the Horizontal Frame option, press <F1> and select *Centered*. Press <Tab> twice to move to the Vertical Frame menu, press <F1>, and select *Centered*. Finally, press <Enter> to return to the document. To preview your handiwork, press <Ctrl>-<F9>.

You can save the form as a *Word* document, but if you save it as a glossary item, you can instantly retrieve it or insert it into other documents. Simply select the entire form, press <Esc>C, type INVOICE, and press <Enter>. Save the glossary by pressing <Esc>TGS.

### ▶ Filling In the Invoice

To fill in your custom form, start with a blank screen in *Word*.

1. Pop up the form by typing INVOICE at the top of the screen and pressing <F3>. Press <Ctrl>-<Page Up> to jump to the top of the form.

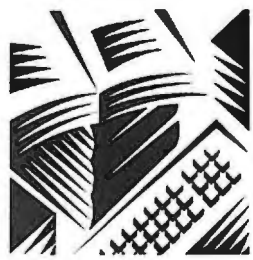
2. To move to the first field marker, press <Ctrl>->. Type in text, but *don't* press <Enter> or you'll alter the form.

3. Press <Ctrl>-> to move to the next marker. To move to a previous marker, press <Ctrl>-<.

When you're finished, print the form or save it as a file.

Once you've set up your form, you can apply *Word*'s math functions to columns of figures or use the program's mail-merge procedure to import data. With a little effort, you'll be able to produce good-looking forms to fit almost every business need.

*—George Campbell*



Desktop Publishing

# Snappy Spreadsheets, Ventura Style

**With Ventura Professional Extension's table generator, it's easy to turn a 1-2-3 worksheet into a sharp-looking table.**

What you need: Ventura Publisher 2.0; Professional Extension 1.0; 1-2-3 release 2.0 to 2.2 or compatible program

Creating a table in Xerox's *Ventura Publisher* is tricky enough, but try importing a *1-2-3* worksheet, and you could spend hours replacing spaces with tabs. Use the table generator in the *Professional Extension* add-on, however, and creating a table from a worksheet or from scratch is a snap—and the formatting options are abundant.

This article takes you step by step through the process of importing a *1-2-3* worksheet (the AWSAMPLE.WK1 five-column worksheet included with *1-2-3* release 2.2), adding it to a frame in a sample *Ventura* chapter, and fine-tuning it with *Professional Extension*'s column controls, rule formatting options, background tints, and more. Although this example uses *1-2-3*, the process is similar for any spreadsheet package that can output PRN files.

#### Prepare the Worksheet

Before importing the worksheet into *Ventura*, you must properly prepare it for the journey using *1-2-3*. Make sure there are at least two spaces between each column, and delete blank rows and rows that contain repeating hyphens or asterisks. Select */Print File*, enter a file name without an extension, select *Range*, specify the entire worksheet, and select *Options Other Unformatted*. If the worksheet were wider than *1-2-3*'s default 76 characters, you would increase the right margin at this point. In this example, however, the AWSAMPLE.WK1 worksheet fits easily. So "print" it as an unformatted PRN file (no headers, footers, or page breaks) by selecting *Quit Go Quit*.

#### Prepare the Frame

Before you import a worksheet into *Ventura*, you should decide if you want to place the table di-

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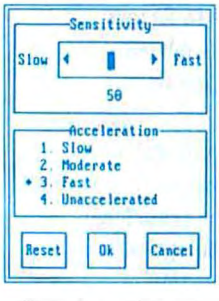


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rectly on the underlying page or in a frame. The underlying page is better for long tables because *Professional Extension* will automatically paginate the table. A frame is better if you're integrating a small table into existing text. If you want the table width to differ from the text width, you merely resize the frame. In this example, you'll use a frame, expand it, and pour a worksheet into it:

1. Exit *1-2-3* and load *Professional Extension*.

2. Open the File menu, select Open Chapter, and load the &PRPT-P1.CHP example chapter.

3. Open the Options menu and turn on the Show Rulers command.

4. Open the Options menu, and make sure the Turn Column Snap On command is enabled (the menu item should read Turn Column Snap Off).

5. Select the Options menu's Set Ruler command, and make sure the vertical and horizontal units are set for inches.

6. Click the Frame mode icon, and then click the empty frame (labeled Figure 1-1) on the opening page of the sample chapter.

7. Position the cursor on the frame's left handle, and expand the frame to the text's left margin (about the 1¼-inch mark on the horizontal ruler).

8. Pull the frame's bottom handle down to the 7-inch mark on the vertical ruler.

### Adjust the Body Text

Before you import the worksheet, you must insert the cursor inside the frame and then select the desired point size:

1. Click the Text Editing icon, place the pointer just inside the top left corner of the empty frame, and click. A blinking text cursor appears, followed by an end-of-file box.

2. Select the Paragraph Tagging icon, and then click the end-of-file box. Text entered in the frame will have Body Text attributes by default.

3. You will, however, change the font size. Open the Paragraph menu, select the Font option, change the Body Text type size to 10 points, and click OK.

### Import the Worksheet

Now it's time to import the worksheet:

1. Click the Text Editing icon, and once again click just inside the top left corner of the empty frame.

2. Open the File menu and select Load Text/Picture.

3. In the next dialog box, select the PRN-to-Table option under Text Format, and choose Text Cursor for the destination. Click OK.

4. Select the PRN file you want to import, and click OK. *Professional Extension* automatically converts the file into a table and inserts it at the cursor. By default, each cell is marked off by grid lines, and a ruled box surrounds the table.

### Manipulate the Table

To format the table, you'll use a combination of the table generator's special commands and traditional *Ventura* tagging techniques. It's usually best to start with the table commands, making large-scale changes before getting down to the fine points of formatting. Select Table Edit mode (located directly under *Ventura*'s standard four mode icons), and you'll see the table generator's tools displayed in the assignment list. First, you'll format the table's title, "Profit and Loss Projection—1989," by joining the top row's five cells to make one, and adding a background fill pattern that makes the title stand out:

1. Select the top row. The range displayed in the Current Selection box in the lower left corner should read R0C0..R1C5, meaning Row 0, Column 0 through Row 1, Column 5.

2. Click the Join Cells command in the Assignment list to make the five cells become one.

3. To put a gray shade behind the row, select the Set Tint command in the assignment list. To achieve the desired effect, you must combine a color with a fill pattern. Unless you have a color printer, click the dialog box's Color option and select Black.

4. While in the Set Tint dialog box, click the Pattern option and select a pattern between 1 (light gray) and 4 (50 percent gray). A light tint usually works best for normal type under 12 points, while a darker tint is better for large or bold type. In this case, we'll be formatting the title at 14 points, so select pattern 2.

5. Repeat the steps for joining cells and adding tints to format the table's two major subheadings, Revenues and Cost of Sales.

Next, format the rule under the table's title. Select the line under the top row, and transform it using any of the rule options listed in the bottom section of the Assigment list. To select a thick rule, click on Z_THICK.

By default, *Ventura* assigns each column in the table the same width. To widen the first column to make room for the Revenues and Cost subheadings,

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Jan Hallett, an engineer at Allied Chemicall states: "We use it extensively here and are really sold on it. Plant layouts, pipe runs, fabrications, along with a lot of other things are drawn and designed. I've got AutoCAD, but very seldom if ever use it anymore."

**PC MAGAZINE SAYS...**

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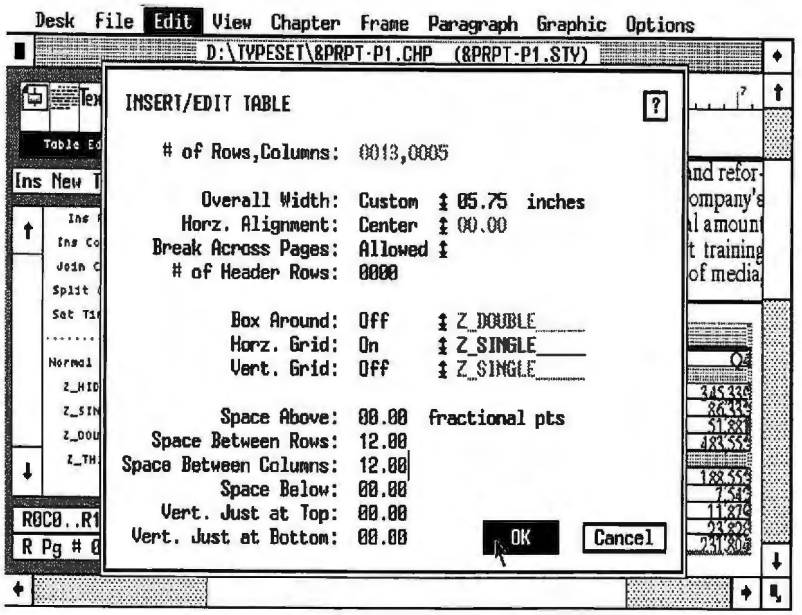
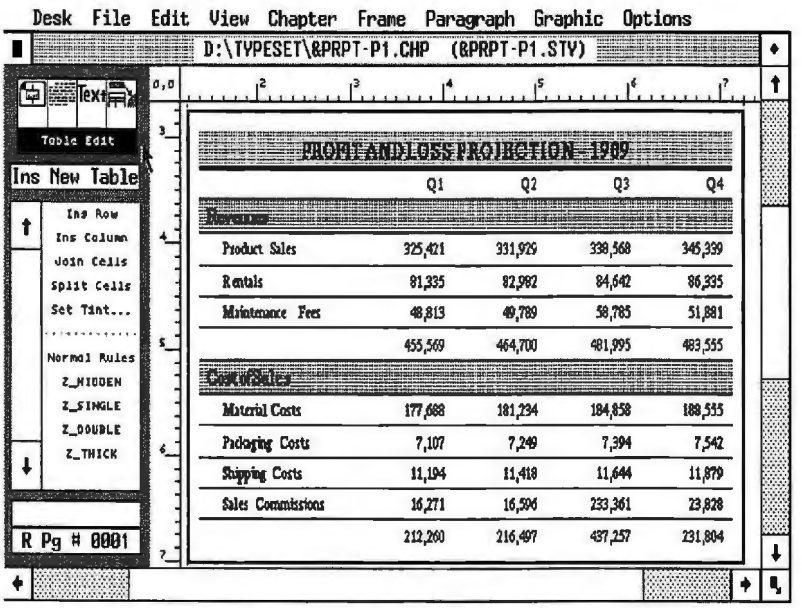



**SCREEN 1: Using Professional Extension's table generator, you can easily import a 1-2-3 worksheet. Here, you call on the Edit menu to hide part of the grid that Ventura automatically applies and to adjust line spacing between rows.**




**SCREEN 2: Modify the table with rules and background tints, add a few tags, and you're done. With Ventura Publisher Professional Extension, you can easily design a presentation-quality table.**

place the cursor in the middle of the column, hold down the <Alt> key and the left mouse button, and drag the mouse to the right until the right edge of the column lines up with the 3-inch mark on the horizontal ruler.

### Get the Lead In and the Lines Out

To modify the table's overall width, alignment, grid, and spacing, you must venture to the Edit menu. Note that each setting affects only the section of the table that's highlighted. First, you'll reduce the table's width and center it in the frame, then remove the vertical rules between columns, and lastly add space between the cramped rows:

1. Select the entire table with the mouse. The Current Selection box should read R0C0..R13C5.

2. Open the Edit menu, and select Edit Table Settings to access the dialog box shown in **SCREEN 1.**

3. At the Overall Width item, select Custom. Change the default width of 6 inches to 5.75 inches.

4. Change Horz. Alignment from Left to Center.

5. At the Box Around and Vert. Grid items, select Off.

6. Move to the Space Between Rows item, and enter a number that's slightly larger than the text's point size. Since this example uses 10-point text, enter 12 points.

7. Move to the Space Between Columns item and enter 12 points.

8. Click OK. The spacing between rows and columns should increase, the vertical lines between columns should disappear, and the box around the table should also vanish.

### Tag Team Formatting

Now you can typeset text and add indents to the table using standard *Ventura* tagging procedures. The only difference is that you tag cells as if they were paragraphs, because each cell contains a paragraph. Most of the cells in the table will be formatted with the Table Text tag, which has the same attributes as the Body Text tag. However, you will change a few of this tag's attributes, and create a few

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corel Draw! 1.01 (Corel Systems Corp.) | 82 | 2.4/1.0 | 89 | 86 | 84 | 83 | 82 | 83 | 78 | 82 | 79 | 83 | 73 | 81 |
| Arts & Letters Graphics Editor 1.02 (Computer Support Corp.) | 80 | 3.0/1.0 | 87 | 80 | 84 | 79 | 78 | 79 | 76 | 82 | 74 | 78 | 90 | 76 |
| Micrografx Designer 2.0 (Micrografx Inc.) | 78 | 6.3/1.0 | 84 | 80 | 80 | 77 | 73 | 78 | 78 | 81 | 74 | 74 | 78 | 77 |
| Kinetic Art 1.20G (Kinetic Presentations Inc.) | 76 | 11.6/2.0 | 92 | 83 | 80 | 67 | 76 | 84 | 58 | 76 | 87 | 83 | 63 | 78 |
| Artline 1.0 (Digital Research Inc.) | 72 | 3.7/1.0 | 87 | 77 | 81 | 70 | 71 | 69 | 61 | 78 | 66 | 74 | 57 | 67 |
| Adobe Illustrator 88 1.8 (Adobe Systems Inc.) | 71 | 5.6/2.0 | 83 | 68 | 78 | 73 | 61 | 76 | 70 | 74 | 70 | 62 | 63 | 67 |

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PC WEEK CORPORATE SATISFACTION POLL

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|---|---|---|---|---|---|---|
| List price | | $695 | $695 | $495* | $495 | $695 |
| **Performance** | | | | | | |
| Speed | (125) | Poor | Satisfactory | Very Good | Very Good | Very Good |
| Input/output | (125) | Good | Good | Very Good | Good | Excellent |
| Drawing/editing | (200) | Good | Good | Very Good | Satisfactory | Very Good |
| **Documentation** | (100) | Excellent | Good | Excellent | Satisfactory | Very Good |
| **Ease of learning** | (100) | Very Good | Good | Excellent | Good | Very Good |
| **Ease of use** | (100) | Satisfactory | Satisfactory | Very Good | Satisfactory | Good |
| **Error handling** | (75) | Good | Satisfactory | Good | Satisfactory | Good |
| **Support** | | | | | | |
| Support policies | (50) | Satisfactory | Satisfactory | Good | Poor | Poor |
| Technical support | (50) | Good | Very Good | Very Good | Good | Good |
| **Value** | (75) | Poor | Satisfactory | Excellent | Good | Very Good |
| **Final scores** | | 5.8 | 5.7 | 8.0 | 5.6 | 7.2 |

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new tags for various column headings.

To reproduce the formatting shown in SCREEN 2, do the following:

1. To modify the Table Text tag, click the Paragraph Tagging icon, and select any cell.

2. Open the Paragraph menu and select the Alignment option. For Horz. Alignment, select Right, then click OK. (If the table entries had decimal points, you would select Decimal instead.) All of the frame's text should now appear right aligned.

3. To create a new tag for the table's title, select the top row and click on Add a New Tag.

4. In the subsequent dialog box, name the tag Table Center, and click OK.

5. Open the Paragraph menu, select the Font option, and select 14 points to enlarge the title.

6. Open the Paragraph menu again and select Alignment. At Horz. Alignment, select Center and click OK. The title should now appear centered.

7. Use these same techniques to create other tags. Select the Revenues cell, and add a new tag called Table Left. Select a left alignment and a 12-point font size. Select the Cost of Sales cell and tag it with the Table Left tag, too.

8. Select the Product Sales cell, and create a tag called Table Indent. Select the Paragraph menu's Alignment option, tab down to the In/Outdent Width item, and specify an indent of .2 inch. Click OK. Now apply the new Table Indent tag to Rentals, Maintenance Fees, and the other remaining subheads.

9. You're done! Print the file to see how it looks.

**Professional Formatting**

Most tables require scant formatting, but you could add leaders to fill empty cells or place frames over empty cells and add graphics. If you have a PostScript printer, you can even rotate column headings. With *Professional Extension*, you can easily transform a stark worksheet into a stylish, presentation-quality table. —*Richard Jantz*

Upgrade

# Plug-and-Print PostScript for the LaserJet

### Just pop in a cartridge and—presto!—your LaserJet Series II speaks PostScript.

What you need: a LaserJet Series II printer

Back in the old days (circa 1985), Times Roman and Helvetica were all the fonts you needed to give a report that extra dash. These days users covet the flexibility and fonts of PostScript—but they don't want to give up their LaserJet Series IIs.

Hewlett-Packard has heard the rumbling and responded with a plug-and-print PostScript cartridge—for the Series IID. Series II users seeking PostScript punch had to either buy the Adobe-approved JetScript board (a painful $2795 upgrade) or turn to slow, disk-hogging software emulators such as *Freedom of the Press* or *UltraScript PC Plus*.

Until now, that is. Pacific Data, the king of the LaserJet upgrade, has just released the PacificPage cartridge. For $695—as low as $500 from some dealers—you get a reliable PostScript-clone-in-a-cartridge for LaserJet Series II printers (not the IIP or IID) that includes 35 scalable fonts you can manipulate any which way.

As with most Pacific Data products, installation is painless. Turn off the LaserJet, slip the PacificPage into the left cartridge slot, and turn the unit back on. That's it. No special drivers or commands are needed—just install your program for output on an Apple LaserWriter IINT. Any program that supports the LaserWriter should work with PacificPage, including *WordPerfect*, *Word*, *Excel*, *1-2-3* release 3, *PageMaker*, *Ventura Publisher*, and any *Windows* application. When you print a file, the Series II front panel lights up like the sky on Independence Day, the printer's LCD tallies how much data has been processed, and your document rolls out in due time. It's as simple as that.

The PacificPage uses a reliable (and very compatible) Phoenix Technologies clone of Adobe PostScript version 47. That's not the lastest version, but it still provides a wealth of text manipulation features. With the right graphics or desktop publishing program, you can rotate, outline,

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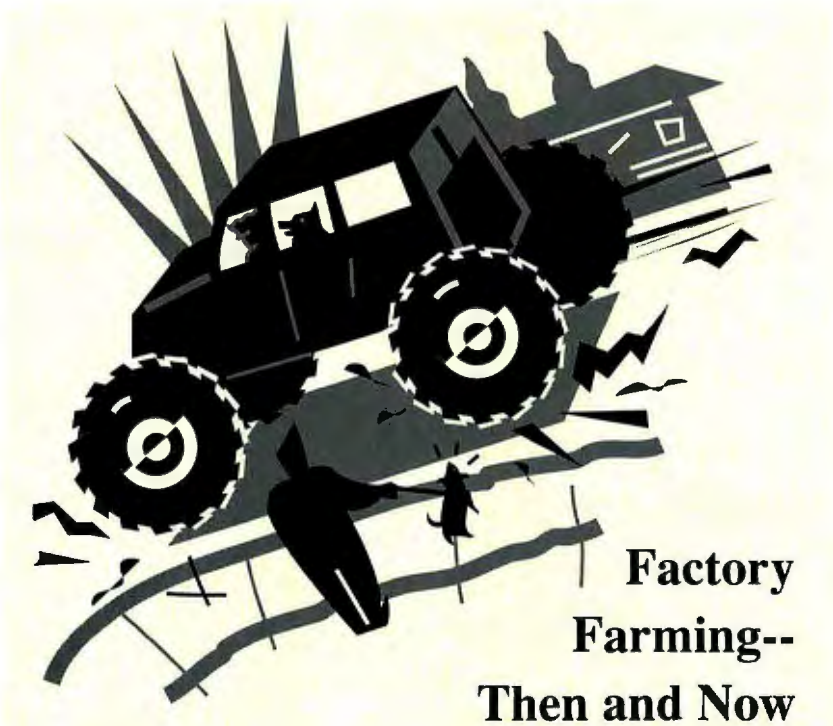

# Factory Farming-- Then and Now

*April may be the cruelest month for poets, but on the farm, it's too busy for analysis. The fields—newly softened by the thaw from winter's hard frost—need to be turned over, and to that end, the farmer has to be up with the chickens and straight into his tractor. Sorry T. S. Eliot, but April is the busiest month.*

Different soils behave differently. Plowing is not a uniform science, though the geometry may look the same—all parallel lines furrowed into the ground. Clay soil needs a robust plowshare—just called "share" by your average plowman—with a 50 percent harder torque than standard. But then again, clay soil produces little in the way of cash crops anyway. Sandy soil is much easier to plow—but it again is not the best yielder of corn, grains, or other North American crops. Ideal soil—fertilized using organic and substantial fertilizer that rejuvenates and bulks out the topsoil, namely animal waste and composted foodstuffs—is easy enough to plow, and has the advantage of producing a heavy yield of crops.

Not all writers are so far from the soil as Mr. Eliot. Jack London, for example, used the proceeds from his phenomenal best-seller, *Call of the Wild*, to buy a substantial tract of land in the wine-growing farmlands of Northern California. His farm, Glen Ellen, was worked using revolutionary methods for the time—no chemical nitrates were used to fertilize the land, and the animals' shelters were designed so that all their waste could easily be transported to arable land to produce organic fertilizer. London was scorned as a "city farmer" with crackpot ideas, but in reality, his schemes were backed with solid research.

The University of California's agricultural depart-

**PacificPage turns a LaserJet Series II into a reliable if slow PostScript clone capable of printing Encapsulated PostScript graphics and scaling 35 fonts to any size your software can manage.**

stretch, reverse, and screen text in 35 typefaces ranging from Avant Garde to Century Schoolbook in just about any point size. Output generated by the PacificPage-LaserJet duo matches the sharpness of LaserWriter print, with none of the irregular widths on ascenders and descenders that characterize output from poor PostScript clones. The cartridge can even handle Encapsulated PostScript files and graphics produced with *Adobe Illustrator*.

Just remember that PostScript is slow compared to the LaserJet's own printer control language. Although a PacificPage-equipped LaserJet is about as fast as Texas Instruments' Omnilaser 2115 and faster than some PostScript clone printers, that's not much consolation when documents take two to three times as long to print.

Unfortunately, switching your printer back to LaserJet mode is something of a pain. Unlike some PostScript boards that automatically toggle between PCL and PostScript depending on the file, the PacificPage forces you to exit your application and run a one-line program or issue commands from the Series II control panel. This naturally causes havoc if the LaserJet is networked and somebody else is trying to print a file.

Other headaches: The PacificPage requires a hefty 2.5MB of printer memory and won't work with Adobe's downloadable PostScript fonts. (The cartridge will support Bitstream's *Fontware* fonts.) However, upcoming versions will be compatible—and the company will offer upgrades to current customers in early 1990 for about $100. —*Matt Lake*

**WHERE TO BUY**

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*Evelyn Morrison is a marketing manager for a retail clothing chain headquartered in the San Francisco Bay Area. Tony Lima, a dBASE author and programmer, wrote* Developing dBASE IV Applications: Programming With the Template Language *(Addison-Wesley, Reading, Massachusetts, 1989). George Campbell is a columnist for* Compute's PC Magazine; *he*

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*lives in Los Osos, California. Richard Jantz is a contributing editor for* PC World *and the author of* Advanced Ventura: Desktop Publishing for Professionals *(John Wiley & Sons, New York, 1989). Matt Lake is an editorial assistant for* PC World.

## USER GROUP TIPS

### Helpful hints from members of the nation's user groups

#### Modem Mute for Lotus Express

Many people find the loud whine of a modem going on line irritating. Fortunately, Hayes-compatible modems can be muted to take the edge off that noise. The MCI Mail front end *Lotus Express* uses a setup string to do this. After loading *Lotus Express*, press <Alt>-<Shift>-X to bring up the communications manager. If you see the message 'polling now', press <F10>D to disable automatic communications. Press <Enter> to bring up the detail screen. Move down to 'Connection string', then type the following string without spaces on one line:

+++¦~ATZ¦
~ATQ0V1E1F1X1¦
~ATL1¦~ATDT@n¦
@+w@m

Press <F10>, select Summary, and press <F10> again. Select either Now to dial immediately or Enable to turn automatic communications back on. From now on, the modem will be considerably quieter.

*Gary Oppenheimer*
*NYPC Users Group*

**FINDTEXT.BAT**

```
@echo off
if exist find.$_$ del find.$_$
if "%1" == "" goto Noparam
if exist %8 for %%f in (%1 %2 %3 %4 %5 %6 %7 %8) do call f1 %%f %9
if exist %8 goto end
if exist %7 for %%f in (%1 %2 %3 %4 %5 %6 %7) do call f1 %%f %8 %9
if exist %7 goto end
if exist %6 for %%f in (%1 %2 %3 %4 %5 %6) do call f1 %%f %7 %8 %9
if exist %6 goto end
if exist %5 for %%f in (%1 %2 %3 %4 %5) do call f1 %%f %6 %7 %8 %9
if exist %5 goto end
if exist %4 for %%f in (%1 %2 %3 %4) do call f1 %%f %5 %6 %7 %8 %9
if exist %4 goto end
if exist %3 for %%f in (%1 %2 %3) do call f1 %%f %4 %5 %6 %7 %8 %9
if exist %3 goto end
if exist %2 for %%f in (%1 %2) do call f1 %%f %3 %4 %5 %6 %7 %8 %9
if exist %2 goto end
for %%f in (%1) do call f1 %%f %2 %3 %4 %5 %6 %7 %8 %9
goto end
:noparam
echo ^GUSAGE: Findtext [text file(s)] [string(s) to search for]
:end
if exist find.$_$ more <find.$_$
```

**F1.BAT**

```
echo searching %1
for %%f in (%2 %3 %4 %5 %6 %7 %8 %9) do find /n "%%f" %1 >>find.$_$
echo.
```

**FIGURE 1: Two batch files that work together for text-string searches.**

#### Text Searches From the DOS Prompt

If you need to search for text in ASCII files and you have DOS 3.3 or a later version but lack a text-search utility, the two batch files in **FIGURE 1** will do the trick, albeit slowly. Using DOS's FIND command, they allow you to search one or more files for multiple text strings, each less than or equal to nine characters. (Press <Ctrl>-G to create the ^G in the last ECHO command of FINDTEXT.BAT.)

Once you have created the batch files and saved them in your batch directory (make sure that your DOS and batch directories are referenced by your system's PATH command), you can type FINDTEXT followed by the names of the files you want to search and the text strings you want to find. DOS wild cards are permitted in file names, and all file names should be listed before text strings. These searches are case sensitive, so a search for *TEXT* will not find *Text* or *text*. A typical FINDTEXT command line would look something like FINDTEXT *.WP *.DOC *.TXT PROFITS ROLLBACK.

FINDTEXT.BAT begins by testing the last command line parameter, then the second to last, and so on, until it finds where the file names stop and the text strings start. A FOR command is then used to call F1.BAT for each of the specified files. F1.BAT searches the files for each specified text string, puts the output, if any, in the file FIND.$_$, and returns to FINDTEXT.BAT.

After all the files have been searched, FINDTEXT.BAT branches to :END and displays the contents of FIND.$_$, using the DOS command MORE to pause every 24 lines.

*Don Simpson*
*Tucson Computer Society*

**Screen Blanking Without TSRs**

If you need a screen saver but the normal memory-resident ones interfere with your regular applications, you can blank your screen with a simple batch file. Save these three lines in an ASCII text file called BLANK-.BAT, omitting the @ character if you use a pre-3.3 version of DOS.

```
@echo off
cls
pause > nul
```

Since this screen blanker isn't a TSR, you need to exit your application or shell to DOS in order to run the batch file. It's useful for blanking the screen during lunchtime or other extended breaks, leaving only a cursor in the top left corner to show the screen is working. Pressing any key returns you to DOS.

*Paul Katzer*
*San Francisco PC Users Group*

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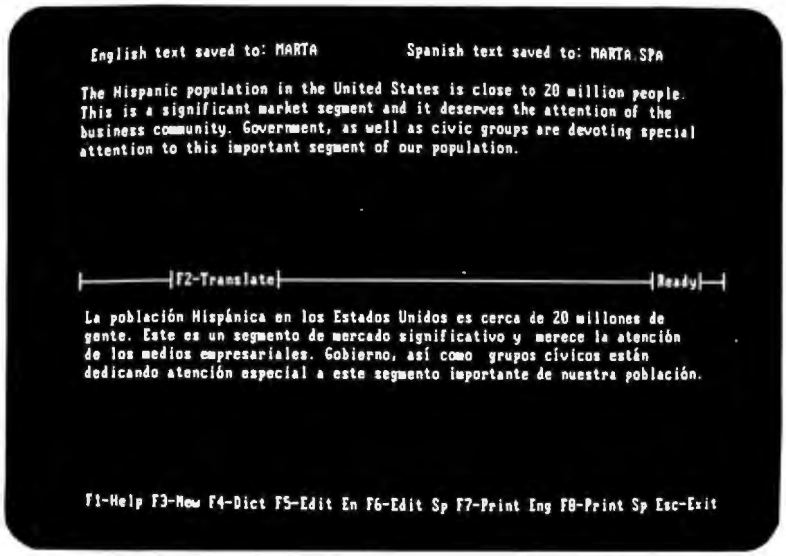


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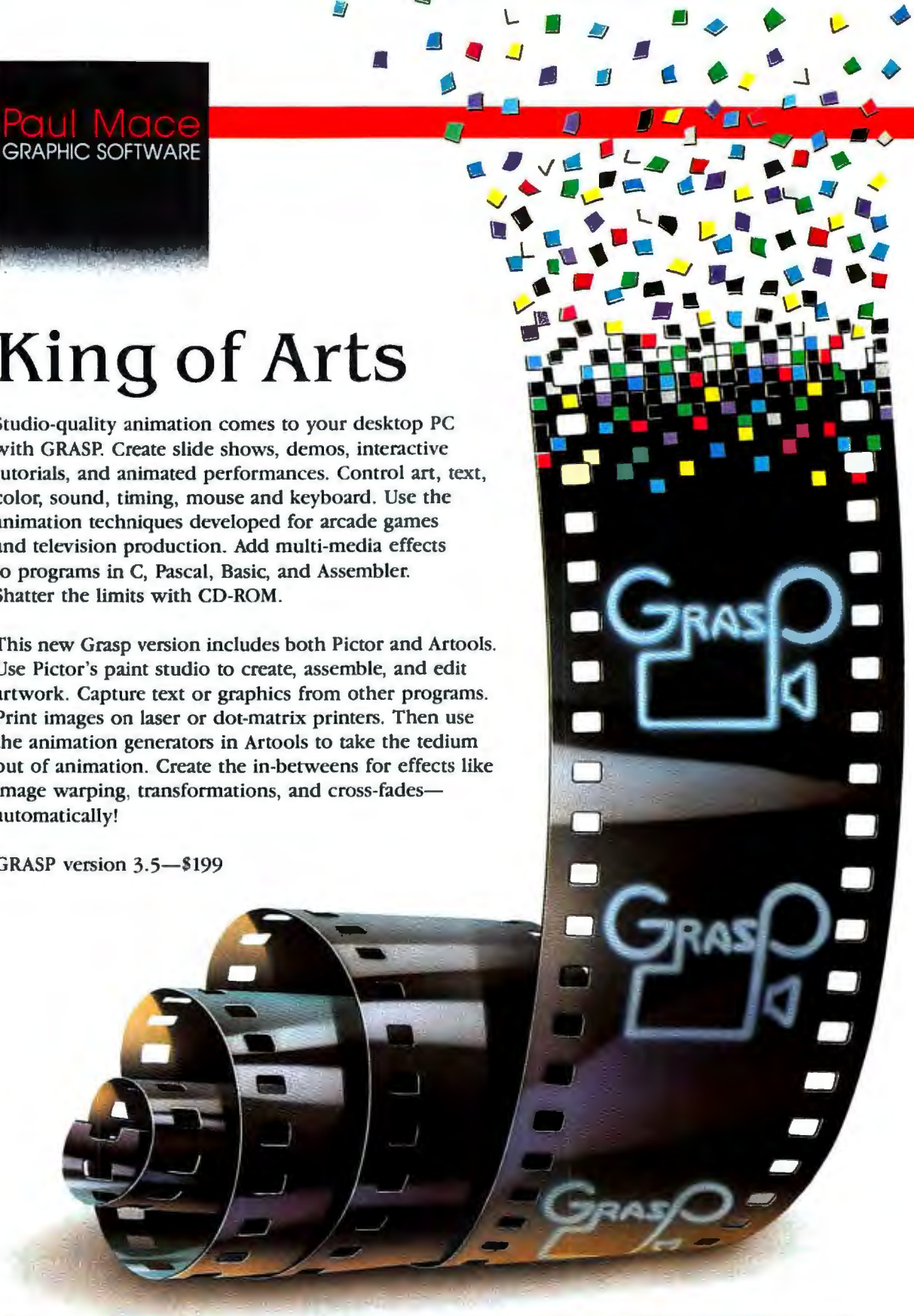


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***Edited by Tom Swan***

ANTHONY RUSSO

### Once Is Enough

Because I don't have a mouse, I use a batch file to load a small resident keyboard accelerator before my paint program. The trouble is, if I exit the paint program and use the batch file to enter it again, I end up with multiple copies of the keyboard enhancer in RAM.

I've hit upon a useful way to prevent reloading the same resident program. Create a batch file [see **LISTING 1**] that loads a RAM-resident program, notes that action to a DOS environment variable, then loads the application. When run a second time, the batch file checks the variable, sees that the TSR is loaded, and goes directly to the application. The sample here is generic; to use this batch file, replace the terms *tsr*, *appdir*, and *app* with the name of your TSR, the directory your application is in, and the name of your application, respectively.

Before running this batch file, you must initialize the environment variable. Insert the command SET *TSR* = NOT_INSTALLED in your AUTOEXEC.BAT file, replacing *TSR* with the name of your own TSR.

This technique will ensure that your resident utility is installed only once, no matter how many times you run the application via its batch-file loader.

*Michael Payne*
*Bridge City, Texas*

*Editor's note: If a resident program can remove itself from RAM, this technique may prevent reloading the TSR. For that reason, use this technique only with resident programs that can't remove themselves.*

### Faster Fonts

I use Bitstream fonts and *PageMaker*, and I've accumulated hundreds of soft fonts on my hard disk. Unfortunately, whenever I change fonts, *PageMaker* reads the specifications of every font in the directory, making the program run like molasses at the North Pole.

Of course, I could delete some font files or move them to another directory, but I discovered that hiding unneeded font files speeds things up considerably. All you need is *The Norton Utilities*' file attribute program, FA.COM. For example, to hide all fonts that start with *A*, I type FA A*.HPF /HID+.

Another solution is to delete references to seldom-used fonts from *Windows*' WIN.INI file. Just make sure you save those deleted lines in a file for later use. (You can't turn them into

*(continues)*

```
@echo off
if %tsr%==installed goto run_app
tsr
set tsr=installed
:run_app
c:
cd /appdir
app
```

**LISTING 1: To ensure that a resident program is loaded only once, replace the terms "tsr," "appdir," and "app" in this batch file with the name of your resident program, the directory your application is in, and the name of your application, respectively.**

comments without also removing their equal signs.)

*David Lavin*
*Van Nuys, California*

*Editor's note:* Norton Utilities, PC Tools Deluxe, *and other utility packages let you change file attributes. Although DOS 3.0 added the attribute-changing ATTRIB.EXE, that program can't hide or unhide files.*

*If you take the approach of deleting font references in WIN.INI, you may want to keep one or more alternate files with different extensions. Then you could easily change your initial* Windows *configuration by simply copying the appropriate file over WIN.INI before running* Windows.

### Formless Data

I often need to fill in purchase orders, invoices, and other preprinted forms. Although Bloc Publishing's *FormTool* can duplicate these and other forms, the program can't suppress the form design at print time and just output the data; or so I thought, until I discovered this trick.

The following tip assumes that you have created a form that duplicates a preprinted form's design, and that it's currently loaded in the *FormTool* Editor.

1. Press **<Alt>-F** to select the Easy Fill-Out Form command.
2. Fill in the form, pressing <Tab> to move from field to field.
3. Press **<F1>** to 'Save as New Form'.
4. Press **2** to select the 'Save just the Data' option.
5. Type **PRN** for the output file, and press **<Enter>** to print.

*James B. Tighe*
*Wheeling, West Virginia*

*Editor's note: This trick works very nicely, at least on a local printer, but you'll have to print several tests to align output perfectly. On a network printer, the output can be garbled.*

*To avoid rekeying data and LAN printing problems, type a file name instead of PRN to save your data to disk for editing and printing later. Since the data is saved as an ASCII file, you can print it from the DOS prompt by typing TYPE FILENAME-.EXT>PRN. If you often need to fill in complex, preprinted forms, you may want to purchase Bloc Publishing's new* FormFiller, *which is designed for just this task.*

### Rubber Wheels and Heavy Weights

The problems mentioned in your recent item "Fading Memory" [*The Help Screen*, November 1989] sound all too familiar. We, too, had seemingly random crashes on several of the PCs in our office, all accompanied by parity check messages.

One day we realized that the crashes occurred when users rolled their rubber-wheeled chairs across the carpet. It suddenly dawned on us that static electricity buildup might be causing the problem. We installed antistatic mats under the chairs and placed touchpads [devices that electrically ground people who touch them] near the more problematic PCs. This solved some, but not all, of our parity problems.

We then noticed that many of the problem PCs had both power directors [flat surge protectors with added control features] and swivel-base–equipped monitors on top of them. While the better-built PCs—IBMs, for example—could take the extra weight, others couldn't. The pressure was bending the PC case, causing the motherboard to warp slightly and loosen connections, creating more parity problems. By moving the hardware off of our fussier PCs, we eliminated nearly all of our crashes.

*Joe DelPrincipe*
*Schaumburg, Illinois*

### You'll Get a Charge out of This

When running my Zenith 286 SupersPort laptop on battery power, I sometimes receive a low-power alarm even though I've just charged the battery. This is because nickel-cadmium batteries can put out only as much power as they received in their last charge, no matter how full they were before charging. When that happens, I can often breathe new life into my depleted power reserves with the help of Traveling Software's *Battery Watch*, a TSR for laptops that monitors how much power is left in the battery. *Battery Watch* uses 6K to 16K of RAM.

After the red alert lights up, signaling low power, I save any open files and return to the DOS prompt. I then press <Shift>-<Alt>-B to bring up *Battery Watch*'s main menu. I select Utilities (<F3>) and Deep Discharge (<F4>). After 2 to 3 minutes, the green full-power light returns. I can then press <Esc> to quit *Battery Watch*. Usually, this gives me enough power to continue working for a while.

*Jack M. Crowther*
*Hilo, Hawaii*

*Editor's note: This is an unusual use of the Deep Discharge feature, which is intended to empty*

*(continues)*

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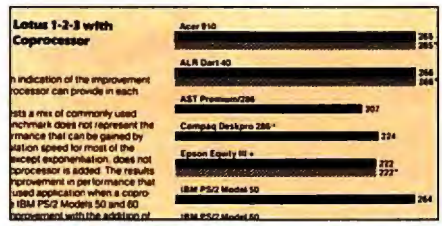


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— **Eric Knorr,** Senior Associate Editor

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| Microprocessor | 80286 | 80286 | 80386 | 8086 | 80286 | 80286 | 80286 | 80 |
| Memory Cache | 16K | 8K | 64K | 8K | N | 8K | 8K | 12 |
| On-board memory | N | N | OP1 | N | 1024K | N | N | N |
| Computer processor retained | N | Y | N | N | Y | N | N | N |
| Change Speed | YS | YS | YS | YE | YS | YI | YI | YI |
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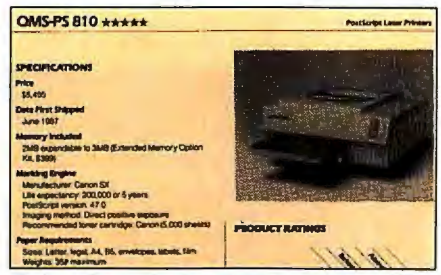


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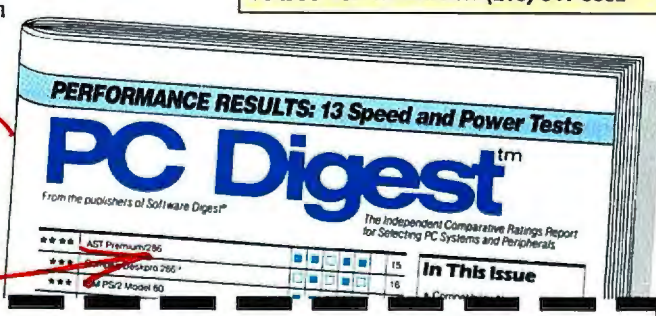


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## DEVELOPER'S TOOLBOX

### Give BRIEF 3.0 the Gold

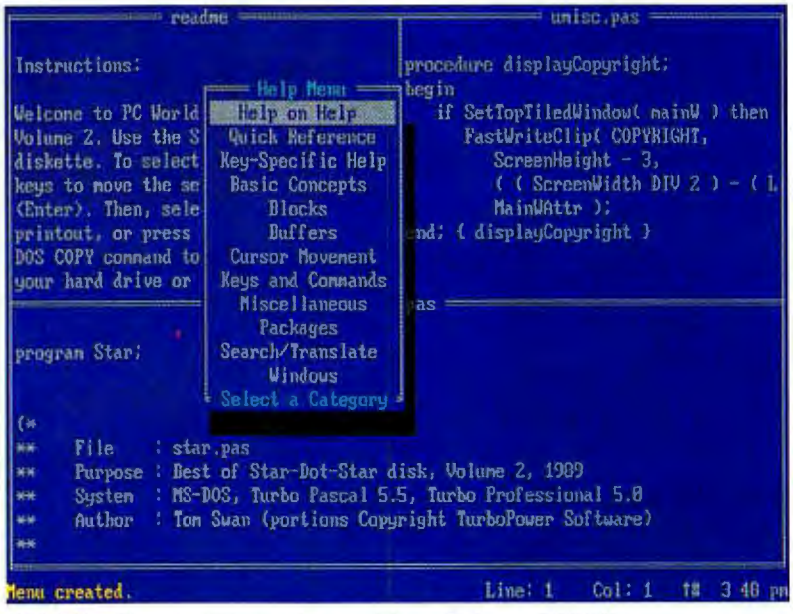
For months, Underware has been racing to release *BRIEF 3.0*—a major upgrade of my favorite text editor. Finally this hot performer is out, and it's leaving the competition in the dust.

For the past year or so, I've used *BRIEF 2.1* to write this column, two books, and zillions of program listings. But like many users, I was nervous about upgrading. Would I recognize my old teammate? Would I still be able to edit dozens, even hundreds, of files simultaneously? Would my cursor continue to whiz through text with the speed of an Olympian bobsled? And would the program's wide-ranging undo feature still let me recover from mistakes as varied as an accidentally deleted line and an incorrect search and replace?

Minutes after installing the program, I had my answer: If they ever award gold medals for software, *BRIEF 3.0* deserves a trunkful. It retains all of 2.1's merits and adds new features, among them the abilities to zoom windows to full screen at the touch of a key and to save and restore keyboard macros in disk files.

*BRIEF 3.0* can run a slew of compilers directly from the editor, including C compilers from Watcom, Borland, and Microsoft. It also supports *QuickPascal, Turbo Pascal, Microsoft Macro Assembler, Turbo Assembler, Topspeed Modula-2, Zortech C++*, and many others. To ease language-specific editing, the editor provides templates and automatic indents for Ada, BASIC, C, COBOL, FORTRAN, Modula-2, and Pascal. This greatly reduces my work load while keeping my listings in peak condition.

I'm impressed most by the new CBRIEF macro language, which closely resembles C. The former half-C, half-LISP syntax is still supported, but unless you're familiar with that macro style, you'll want to use CBRIEF. In only a few minutes, I was able to convert all my existing macros to the new format. Many of *BRIEF*'s commands are written in CBRIEF, so if you know C, you can reprogram the editor to perform to your specs.




**BRIEF 3.0's split-screen windows make it possible to edit dozens of ASCII files simultaneously.**

Other improvements are subtler but no less welcome. For example, improved subdirectory navigation lets me press <Tab> to move to a new directory, then press <Tab> or <Enter> to display a file list. Previously I had to press both <Enter> and <Tab> to display a file list. That may seem a small point, but after using the double-key operation several thousand times, it became a major annoyance. This and other small improvements suggest that Underware paid close attention to customer suggestions.

Even so, *BRIEF 3.0* doesn't quite rate a perfect 10. The editor doesn't support a mouse, which would ease operations such as selecting windows and marking text blocks. Also, a bug sometimes locks my system after I reformat a paragraph. *BRIEF*'s developers are attempting a fix.

One final note: As good as it is, *BRIEF* is *not* a word processor. Printing features are limited, and the program won't reformat paragraphs automatically. To me those limitations are benefits, but to others they may be drawbacks. If what you're looking for is a text editor, you won't find a more fleet-footed competitor. *BRIEF 3.0* is an unbeatable champion.

I welcome your comments. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. —*Tom Swan*

#### WHERE TO BUY

**BRIEF 3.0**
Solution Systems
541 Main St. #410
South Weymouth, MA 02190
800/821-2492, 617/337-6963
LIST PRICE: $199
REQUIREMENTS: 256K, DOS 2.1 or later version, two disk drives
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| | |
|---|---|
| $e[s | saves the cursor's current position |
| $e[1;56H | moves the cursor to row 1, column 56 |
| $e[1;33;44m | specifies bright (1) yellow text (33) on a blue background (44) |
| $t | displays the time |
| $h$h$h$h$h$h | erases the digits showing seconds and hundredths of seconds |
| $d | displays the date |
| $e[0m | resets text to normal |
| $e[u | returns the cursor to its former position |
| $p | displays the current drive and path |
| $g | displays a greater-than sign |

**FIGURE 1: These ANSI.SYS and PROMPT command codes create a clock in the upper right corner of your screen.**

*all power from the battery before recharging. I can't say whether the trick will work on other laptops.*

### Time for Displays

There are several commercial and public domain programs that display the time on screen, but they all consume RAM. Fortunately, I found a way to place a colorful clock in the corner of my screen without using a TSR.

Put the following PROMPT command on one line of your AUTOEXEC.BAT file:

PROMPT $e[s$e[1;56H$e[1;33;44m $t$h$h$h$h$h$h $d $e[0m$e[u$p$g

(For monochrome monitors, replace *$e[1;33;44m* with *$e[7m*.) Insert the line DEVICE=C:\DOS\ANSI.SYS into your CONFIG.SYS file, and make sure that ANSI.SYS is in your DOS directory. Reboot your system, and the clock's on line. [For a commented breakdown of the command, see **FIGURE 1**.]

*Scott Hawley*
*Middlefield, Connecticut*

*Editor's note: The only drawback to this technique is that the date and time are not updated automatically; if you've been away from your keyboard for a minute or more, press <Enter> to update the time. Also, you can replace the number 33 and/or 44 with a value from 30 to 39 and 40 to 49, respectively, to try different color combinations. For more about assigning colors with the PROMPT command, see "The Color of DOS,"* The Help Screen, *December 1989.*

### Liquidating a Directory

As a bulletin board SYSOP (system operator), I frequently have to erase directories full of user files. In the past, I would go to the directory by typing CD*DIRNAME*, delete all of the files with DEL *.*, go back to the previous directory with CD.., and then type RD *DIRNAME* to remove the directory itself. Then I discovered a quick trick that does the same job with only two commands. To erase all files in *DIRNAME*, I type DEL *DIRNAME*, press <Enter>, and answer Y to the prompt 'Are you sure (Y/N)?' I then type RD and a space and press <Enter> to erase the empty directory.

*Lucas Skoczkowski*
*Ottawa, Ontario, Canada*

*Editor's note: DOS requires a directory to be clean as a whistle before RD will remove it. After you think you've deleted all files from a directory, you may still receive an 'Invalid path' error from RD. In that case, you must remove other subdirectories and their files from inside the directory you're trying to remove. If the error still persists, check for read-only and hidden files, neither of which can be erased until you have changed their attributes (see "Faster Fonts" in this column).*

### Antiviral Bug

Because I access many bulletin boards, I worry that my PC may catch a virus. I installed the commands described in "Antiviral Vaccine" [*Star-Dot-Star*, October 1989] in my AUTOEXEC.BAT file. At first the commands didn't work, but when I placed them *after* my PATH command, they worked fine.

*Doug Peterson*
*Bellevue, Washington*

*Editor's note: Four readers contacted us about this problem. In the October column, we didn't mention that the commands listed must come* after *the PATH command. This is required because the virus-checking commands use DOS's FIND utility, which would most likely be located in your C:\DOS subdirectory.*

*Tom Swan is a contributing editor for* PC World *and the author of* Mastering Turbo Pascal 5.5 *(Howard W. Sams and Co., Indianapolis, 1989).*

*Share your tips and discoveries with* PC World *readers; see How to Contact PC World, page 4.* ●

# FOURTH ANNUAL ANDREW FLUEGELMAN AWARD 1990

## Purpose

The Andrew Fluegelman Award is given annually to encourage personal computer software excellence and to recognize a software programmer or team of programmers. We are looking for people who have made a substantial, innovative contribution to the personal computer community in commercial, shareware, or public-domain software.

The award was established in 1986 by PCW Communications to commemorate Fluegelman's contributions to the software field. Fluegelman developed PC-Talk, the first easy-to-use and powerful communications program for the IBM PC. His concept of freeware remains one of the most innovative means of sharing and marketing software. Fluegelman died in July 1985, and a fund was established in his name. The annual award, sponsored by PCW Communications and the Software Publishers Association, is made possible through the Andrew Fluegelman Fund.

## Eligibility

Any commercial, shareware, or public-domain personal computer software—including utilities, applications, and languages—developed by an individual or a team is eligible. The program must have been released between January 1, 1986, and December 31, 1989. Nominations can be submitted by anyone who did not participate in the software's development. Companies are encouraged to submit nominations for software that they market; but only individuals, not companies, are to be nominated.

## Judging

Each program will be evaluated according to the following criteria:

* It advances the state of the art of personal computing.
* It manifests innovation in concept and design.
* It demonstrates orientation to personal computer users.

## Program Copies

Finalists will be asked to submit six copies of their program for the judges' evaluation. These will be returned after judging. Please do not send programs until you are notified that you are a finalist.

## Selection of Winners

The award recipient is selected in a two-step procedure. First, an independent screening committee will review nominations and select the finalists.

Second, a panel of judges will evaluate the work of the finalists. From these, an award recipient will be selected.

## Prize

The award winner will receive $5000 and a commemorative plaque. The award will be presented at the Software Publishers Association annual awards dinner in March 1990.

# CALL FOR NOMINATIONS

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Nomination entries must be postmarked no later than February 15, 1990. Mail six completed copies of this nomination form to:

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**1990 Andrew Fluegelman Award Nomination Form.** Please type your entries; no handwritten entries will be accepted. Attach additional pages with a brief description of the program (100 words or less) and the reason for your nomination.

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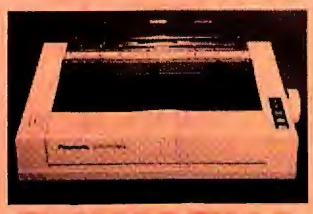

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# NETWORK Q&A

## Tips and strategies for departmental networking

Client-server computing promises much faster performance for large multiuser data bases. But what can you buy today?

*David Ferris*

**Q.** *Our 30-station work group uses* Paradox *as an order-entry system, with up to ten people making entries simultaneously. We have a 25-MHz 80386 file server in which we've installed two network boards and 24MB of RAM, but performance still degrades badly when more than five people try to make entries at the same time. I've been hearing about "client-server" data base products like* SQL Server. *How many are currently available? And how much will they help?*

*Frank Jimenez*
*San Antonio, Texas*

**A.** In today's file-server–based LANs, both applications and the data they use are stored on the server's hard disk. When you start an application like *Paradox* from a "client" workstation, the program itself is downloaded from the server and thereafter runs in workstation RAM at the speed of the workstation CPU. If the application needs access to data, the server must download it to your workstation, where it is processed. The data is then sent back up the wire to be stored on the server's disk.

Hence your PC (usually a low-cost, low-performance system) has to do most of the work while your expensive, high-performance server loafs. Furthermore, the movement of large blocks of data between clients and server tends to congest the LAN bus and degrade performance under heavy loads.

It seems to me that your hardware is already optimized for maximum performance. You may be able to achieve some short-term improvements by minimizing the number of file indexes and refining your data base design so that reads and writes access only one data file at a time.

However, the world of LAN computing is about to change drastically—and very much for the better. Software vendors are working on client-server (C-S) LAN products in which some of the actual computing work is offloaded onto a high-performance, multitasking server running OS/2 or *NetWare*. Ideally, these servers will be 80386- or 80486-based systems using a high-throughput architecture like MCA or EISA or a proprietary multibus box like NetFrame's *NetWare/386* server—and, of course, a fast hard disk subsystem.

Client-server computing requires specially written applications, which are just starting to appear. Most of the development to date has been in the data base area, but soon we can expect to see C-S versions of spreadsheet, word processing, DTP, and CAD/CAM applications, too.

### Data Bases First, Need It Worst

It's no coincidence that data bases are the first C-S applications to emerge from programmers' workshops: Conventional LAN data base performance falls off badly with more than five concurrent users. Here's why. If you want to update or add a single record, blocks of surrounding records must be downloaded to your workstation. If indexes are defined on the records, index files have to be downloaded as well. Having received this overdose of information, your PC has to update the various file and index blocks as best it can and send everything back to the server disk. Not only do you experience slowdown due to bus congestion, but no one else can access any information with pointers to or from the data you're using until you're done.

The solution to data base gridlock is C-S architecture, featur-

*(continues)*

ANTHONY RUSSO

ing a program like *SQL Server* that performs data base file and index operations *on the server*, without sending a lot of data over the network—only requests and answers go over the network bus. Such a data base is known as a *back-end data base engine.*

Currently, you can choose between a number of candidates: Sybase/Microsoft/Ashton-Tate's *SQL Server* seems to be the favorite at the moment, but Gupta's *SQLBase*, Novell's *NetWare SQL*, and *Oracle Server for OS/2* are also available. Several other back ends will probably be on the market by the time you read this, including the Remote Data Services component of IBM's OS/2 Extended Edition.

To use a back-end data base engine on your server, you need a *front-end* data base on your workstation. These front ends provide screen support and let you enter data, produce reports, and so on. All the leading data base vendors are working feverishly to produce front ends that will work with one of the standard back-end data base engines.

Currently, you can get Gupta's *SQL Windows* (which works with *SQLBase*, *Oracle Server*, and *SQL Server*), and MDBS's *Object/1* and Information Builders' *PC/Focus* (both of which work with *SQL Server*). Novell also offers two front ends for its *NetWare SQL* engine: *XQL* and *Xtrieve Plus.* In addition, by the time you read this, you will probably be able to buy newly released front-end versions of *DataEase*, *Paradox*, and *Revelation 2.0*, all of which have been designed to work with *SQL Server.*

### Other Server-Based Applications

Data base users will get the greatest benefit from C-S technology (access to a multiuser data base is one of the most important reasons business users install LANs in the first place), but other application areas are close behind.

**Word Processing** Under C-S architecture, several writers will be able to work on a large proposal (or a lengthy section of source code) at the same time; the file itself will be maintained at the server. Spelling checks, pagination, keyword searches, and so on will be off-loaded to the server as background tasks. A number of major vendors report they are in development on C-S word processors, but no products have been announced.

**Spreadsheets** With C-S spreadsheets, large models, such as detailed departmental budgets, can reside on the server, where multiple users will be able to modify them concurrently. Clients will be able to read in a specific cell or range of cells or execute a macro against the shared model without having to move large amounts of data over the LAN. Moreover, as long as the server is equipped with plenty of memory, you'll be able to work with huge spreadsheets even if your PC is limited to 640K of RAM.

Lotus anticipates that future network versions of *1-2-3* will implement server-based functions, but no dates have been announced. And since Lotus is among the many firms (including Microsoft) that now own a part of Sybase—the developer of *SQL Server*—clearly Lotus will support *SQL Server.*

**CAD/CAM** This area is a perfect candidate for C-S implementation. A single engineering drawing can easily reach several megabytes in size; moving such images back and forth between server and client for local processing can bring a network to its knees. With the server controlling the source document directly, several people will be able to work on the same drawing at once, and functions like library searches for a particular type of shape will be greatly speeded. Moreover, letting a high-performance server take over the job of drawing vectors is bound to improve performance immensely.

### Into the Crystal Ball

When can we expect to see significant numbers of client-server products? The data base action is already starting, with front ends such as *DataEase*, *Paradox* and *Revelation* due in first quarter 1990. In other application areas, don't expect much in the way of shrink-wrapped products until 1991.

Finally, three things to remember: One, C-S computing will improve performance, but nobody is serving free lunch. It will still be possible to bring the LAN to a grinding halt if too many users make too many demands on a server-based data base; the only difference will be that the grinding halt will occur at a higher user count. Two, high-end hardware is essential to take advantage of the C-S performance upgrade—and it won't

*(continues)*

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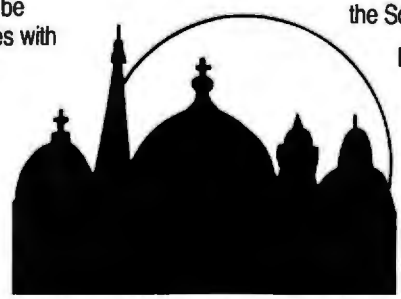

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*David Ferris is the president of Ferris Networks, a San Francisco–based consulting firm specializing in networks.*

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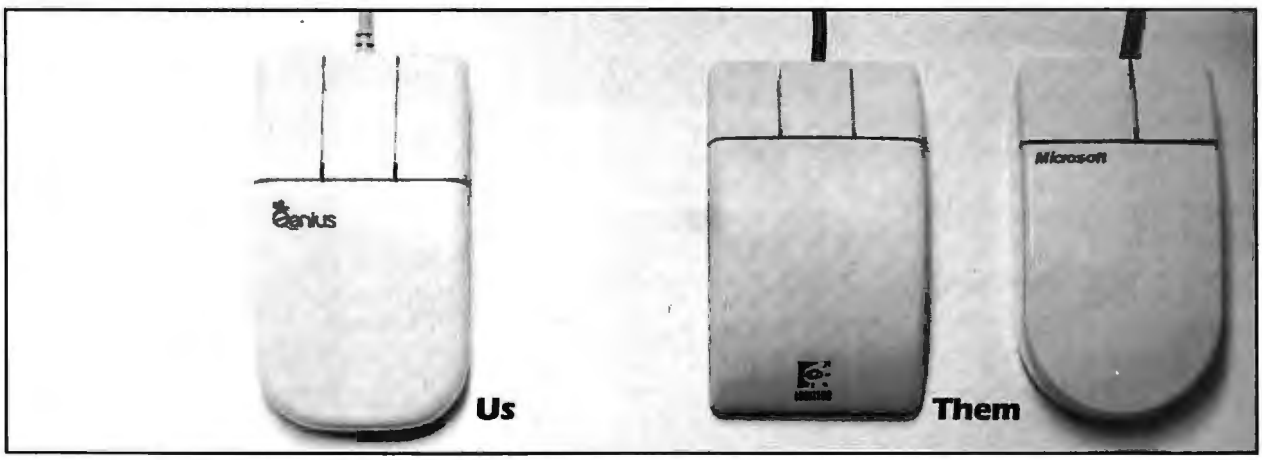


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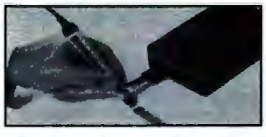

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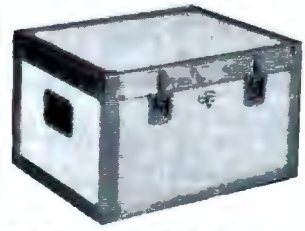

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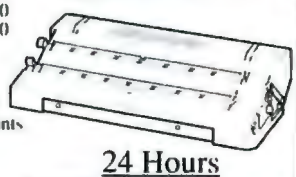

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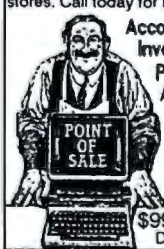


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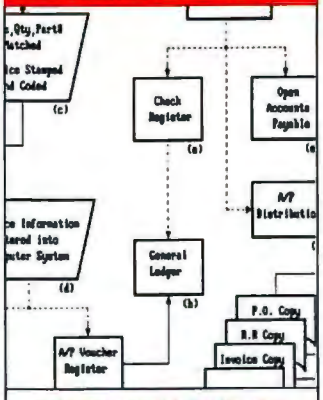


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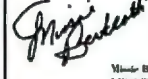

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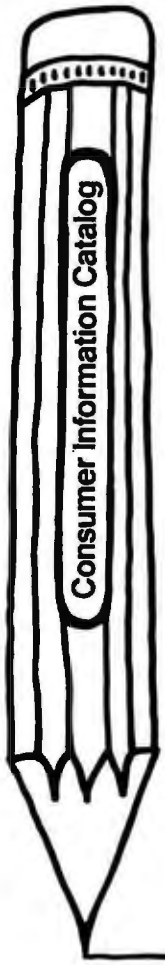


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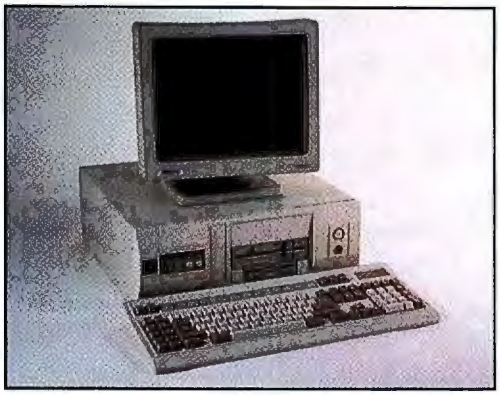

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- Clock calendar, parallel port, and two serial ports.
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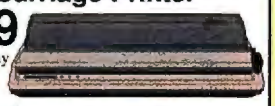

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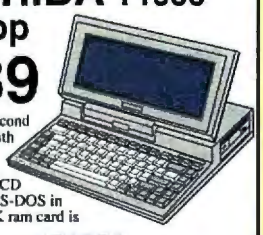

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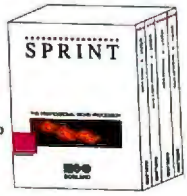

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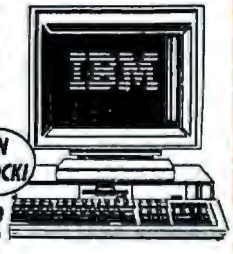

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| AST PC XT/AT 5250 Emulation | $575 |
| EVEREX 1200 w/SW | $75 |
| EVEREX 2400 Int/Ext | $137/195 |
| HAYES 1200B Int/SCII | $243/282 |
| HAYES 1200 Ext | $277 |
| HAYES 2400 Ext | $419 |
| HAYES 2400B w/SCII Int | $418 |
| IBM PS/2 50-80 5250 Emulation | $675 |
| IBM PC XT/AT 5250 Emulation | $675 |
| IBM PC XT/AT 3270 Emulation | $450 |
| MEGAHERTZ 2400B | $169 |
| US ROBOTICS 1200 Int | $100 |
| US ROBOTICS 2400 Int | $159 |

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| COMPAQ VGA | $419 |
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| GENOA Super Hi Res 800X600 | $175 |
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| PARADISE Auto Switch-480 | $195 |
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| 80387-33/20/25/SX | $599/400/500/289 |

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| CA P15 Power Director | $100 |
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| Toshiba 1600 | 3250 |
| T3200/T5100 | 3395/4239 |
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| Seagate 40 mb for AT ST251 | 309 |
| Seagate 80 mb ST4096 | 559 |
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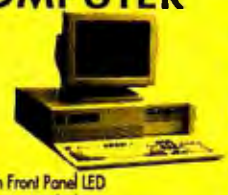

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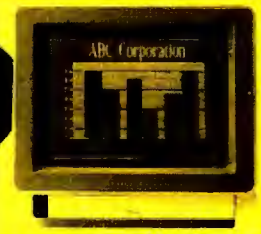


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### ACCESSORIES

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# HARDWARE

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| Allegro | $315 |
| All Other Models | Call |
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| **Citizen** | |
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| All Other Models | Call |
| **Diconix** | |
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| LQ850 | 559 |
| LQ510 | 335 |
| LX810 | 199 |
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| Desk Jet + | 729 |
| Laser Jet Series II | 1785 |
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| 890 Silentwriter | 3139 |
| Other Models | Call |
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| 321 | 485 |
| 390 | 485 |
| 391 | 629 |
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| **Packard Bell** | |
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| 1191 | 236 |
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| Lazer 4450 | 1419 |
| All Other Models | Call |
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| NX 1000 Ver. 2 | 170 |
| NX 1000 Rainbow | 225 |
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| 301 | 319 |
| 311 | 389 |
| 321 SL | 438 |

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| 9600 | 405 |
| Communicator | 519 |
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| FX BM89 | 825 |

### SCANNERS

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| 400 Hand Scan | $145 |
| Half Page | 170 |
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| AQUILA Arcnet Card | 89 |
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| SMC 131 Arcnet | 145 |
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| Other Boards | Call |

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| Plus 40 MG | 640 |

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| 40 Meg | 1585 |
| Beta Ext 20 Meg | 1005 |
| Beta Int 20 Meg | 759 |
| **Colorado Memory** | |
| Jumbo 40/80 EXT (w/Tape) | 436 |
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| 20 MG w/WD Controller | 249 |
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| Floppy 380K | 76 |
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| Other Models | Call |
| **Mitsubishi** | |
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| **Packard Bell** | |
| PB588 | 849 |
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| 80386 8/16 mhz | 1719 |
| **Panasonic** | |
| FX 1650 | 520 |
| **Samsung** | Call |
| **Toshiba** | |
| T-1000 | 670 |
| T-1200F | 1415 |
| T-1200H | 1679 |
| T-1600 | 3350 |
| T-5100 | 4359 |
| T-5200 | 5715 |
| **Zenith** | |
| Minisport Model I | 1449 |
| Supersport/2 | 1599 |
| Supersport 20 | 2349 |

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| EFAX 88 | $639 |
| **Canon** | |
| Faxphone 8 | 635 |
| Faxphone 15 | 825 |
| Faxphone 20 | 989 |
| Faxphone 25 | 1675 |
| **Epson** | |
| Priority Fax F1000 | 765 |
| **Murata** | |
| 1200 | 565 |
| **NEC** | |
| Multifax | 1250 |
| **Sharp** | |
| FO 300 | 730 |
| UX 80 | 1015 |
| **Toshiba** | |
| 30100 | 905 |
| 3300 | 849 |
| 3600 | 1010 |

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| **AST** | |
| Rampage Plus 286 | $380 |
| Six Pack Plus | 219 |
| All Other Models | Call |
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| All Other Models | Call |
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| 80287-8 | 180 |
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| 80387-16 | 319 |
| 80387-20 | 359 |
| 80387-25 | 459 |
| 8087-1 | 150 |
| 8087-2 | 115 |
| Aboveboard + | 360 |
| Aboveboard + P/S | 389 |
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| Other Models | Call |
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| Fastwrite VGA | 245 |
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| 2400 Ext | 139 |
| **ATI** | |
| 2400 ETC w/Software | 150 |
| **Everex** | |
| Evercom 12 INT | 49 |
| **Hayes** | |
| 1200B | 140 |
| 2400B | 205 |
| Other Models | Call |
| **Practical** | |
| 2400 EXT | 155 |
| 2400 INT | 160 |
| **Prometheus** | |
| 1200B w/Software | 45 |
| 2400B w/Software | 100 |
| Other Models | Call |
| **US Robotics** | |
| Courier 2400 | 255 |
| Courier 2400E w/MNP | 310 |
| HST 9600 | 589 |

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| 410 | 135 |
| **Mitsubishi** | |
| Diamond Scan 14" | 485 |
| Diamond Scan 16" | 1150 |
| **NEC** | |
| Multisync 2A | 500 |
| Multisync 3D | 640 |
| Multisync 4D | 1149 |
| Multisync 5D | 2361 |
| Other Models | Call |
| **Princeton** | |
| Max 15 | 240 |
| Ultrasync 14" | 465 |
| Ultrasync 16" | 845 |
| Other Models | Call |
| **Sony** | |
| 1304 | 655 |
| Multiscan (1302A) | 635 |
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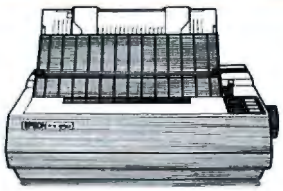

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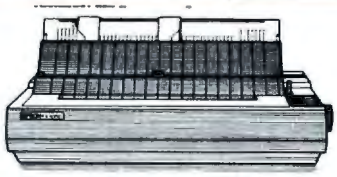

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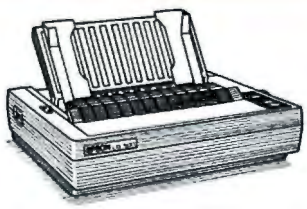

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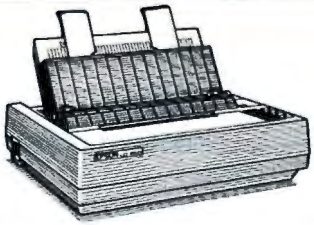

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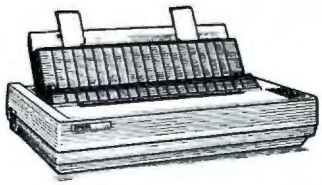

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- 264 Characters per second in the high-speed draft mode delivers outstanding productivity
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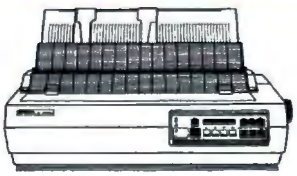
- Exclusive SelecType front control panel offers quick, easy selection of popular typestyles, fonts and pitch



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- 80386-20
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- 1 MB RAM (Max 8 MB on board)
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| 2400 | 338.84 | Personal Modem | 109.70 |

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| AME-450AT | 321.82 | | |

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| BORLAND Quattro / Sidekick + | 149.52 / 131.25 |
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# Highway to Nowhere

*Dan Lavin*

Imagine that the interstate highways were toll roads owned by the auto makers, and that as a way to increase demand for cars and boost profits from toll fees, the auto makers decided to quadruple the maximum highway speed to 220 miles per hour.

Such a signal event would of course demand a technology demonstration. A new road architecture capable of handling the increased load would debut before an uncritical press and curious potential users who, no doubt, would buy into it unquestioningly. After all, if getting there at 55 mph is good, getting there at 220 mph is better, right?

But government would say that the first orders of business were to produce cars that traveled safely at such speeds, to redesign on and off ramps so that people could enter and exit safely, and to arrange for competent service stations along the way.

A marketing ploy analogous to that of these fictitious auto makers is being perpetrated on PC users, but no watchdog agency is taking realistic measures to protect users. The industry is too focused on quadrupling bus speeds and juggling multiple applications.

We lack *reasonably priced* hardware and useful applications able to deliver on the bus/operating system promises, a decent user interface that fits the average machine, and retail stores with staff capable of explaining all this stuff.

My first gripe concerns the highway. Whether you choose the 20-MHz bandwidth of IBM's Micro Channel architecture (MCA) or the 33-MHz Extended Industry Standard Architecture (EISA), neither does anything for the average user. The speed of the machine is bound by the hard disk controller, the operating system (the real one, not a blue-sky version), and the applications.

Three years ago at IBM's PS/2 and OS/2 introductions, I heard that soon I wouldn't be able to get along without an MCA machine equipped with bus masters. I've got news for IBM: I have upgraded from my Model 50 without realizing any advantages from the MCA bus and without seeing a single usable bus master on the market. Even when running "simultaneous" applications under Quarterdeck's *Desqview*, I can't seem to use up more than a fraction of the bus bandwidth.

I don't expect any more help from EISA, either. Just give me a reliable, self-configuring machine that handles the reasonable data loads of easy-to-use, highly compatible applications.

And how about OS/2, that great multithreading operating system that would let us control multiple MCA bus masters with an intuitive interface? Not even Bill Gates maintains that OS/2 1.2 will do the trick. Which version will it be? And when will we see mainstream applications?

OS/2 solves no user problems and requires significant knowledge to install and maintain. Ditto for *Windows*, the five-year-old program that's only now providing effective multitasking and memory management.

As for an interface, if PCs provided a decent user interface, John Sculley would simply be out of a job.

Finally, let me walk into a retail store whose salespeople understand all these issues. With few exceptions, computer hardware stores want to hand me a box and then send me down the street to buy the support-intensive software that will make the thing work.

Give users what we really need—and we'll respond with dollars. ●

*Dan Lavin is* PC World*'s user ombudsman and a director of the Boston Computer Society's IBM user group.*

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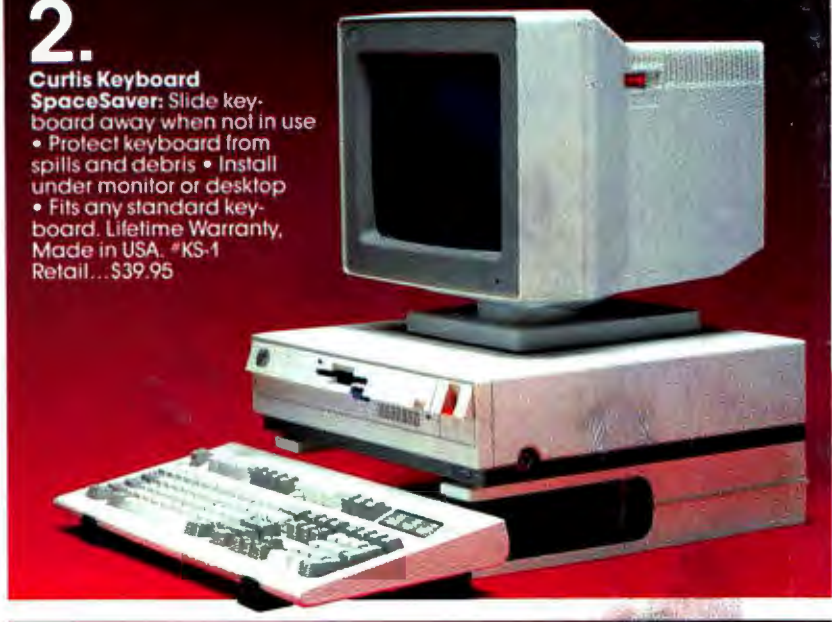

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