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- Page mode interleaved memory architecture.
- VGA systems include a high performance 16-bit video adapter.
- Socket for 20 MHz Intel 80387 or 20 MHz WEITEK 3167 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
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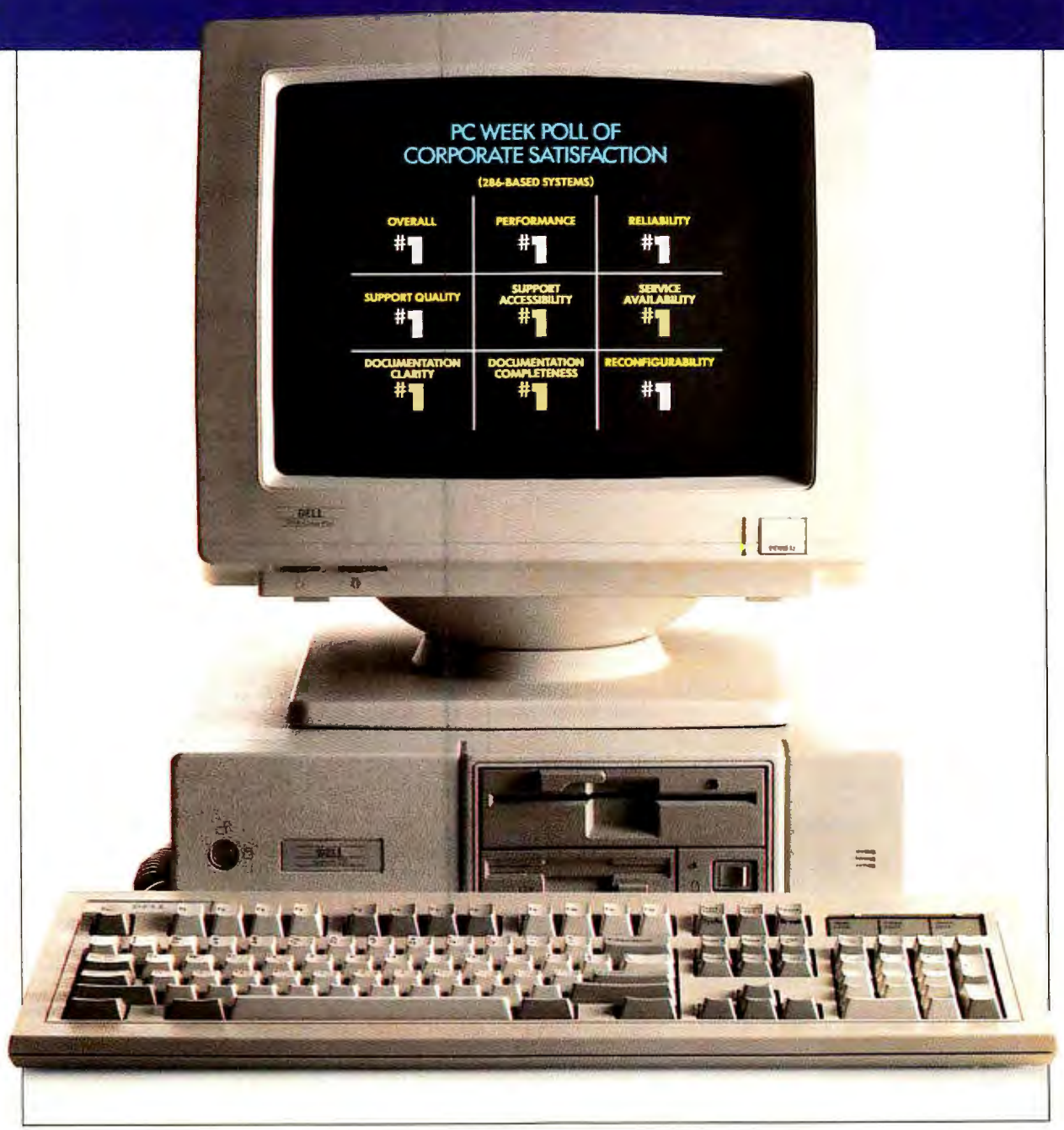

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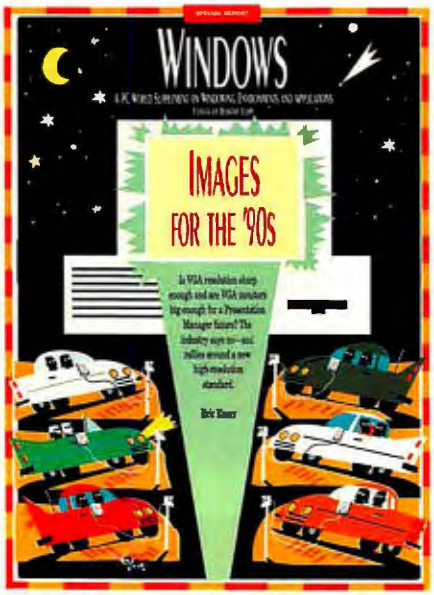

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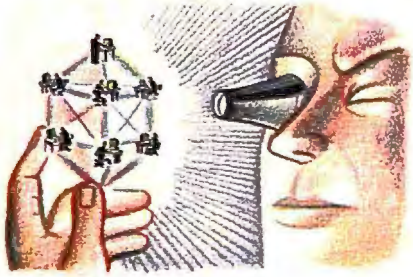

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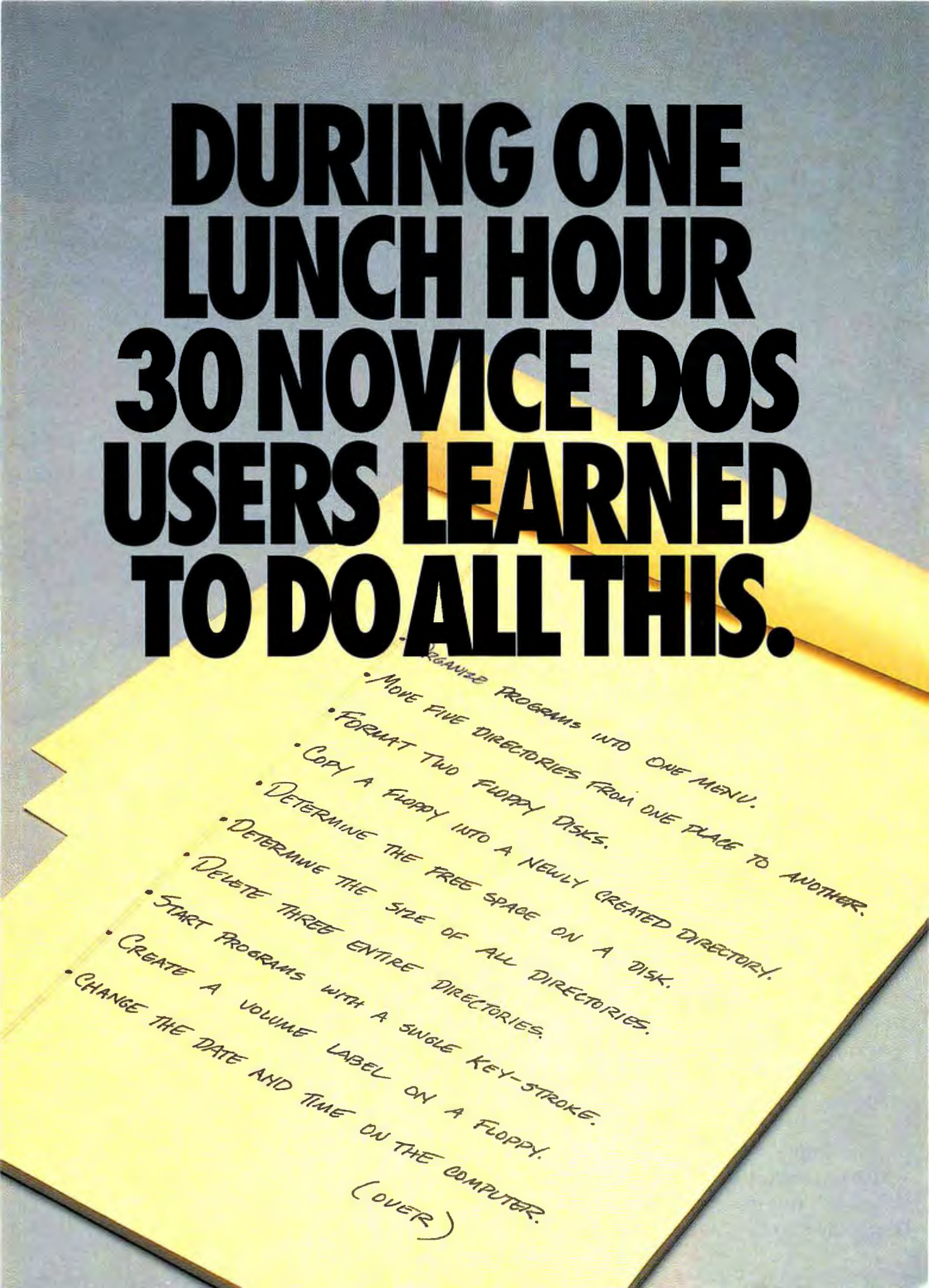

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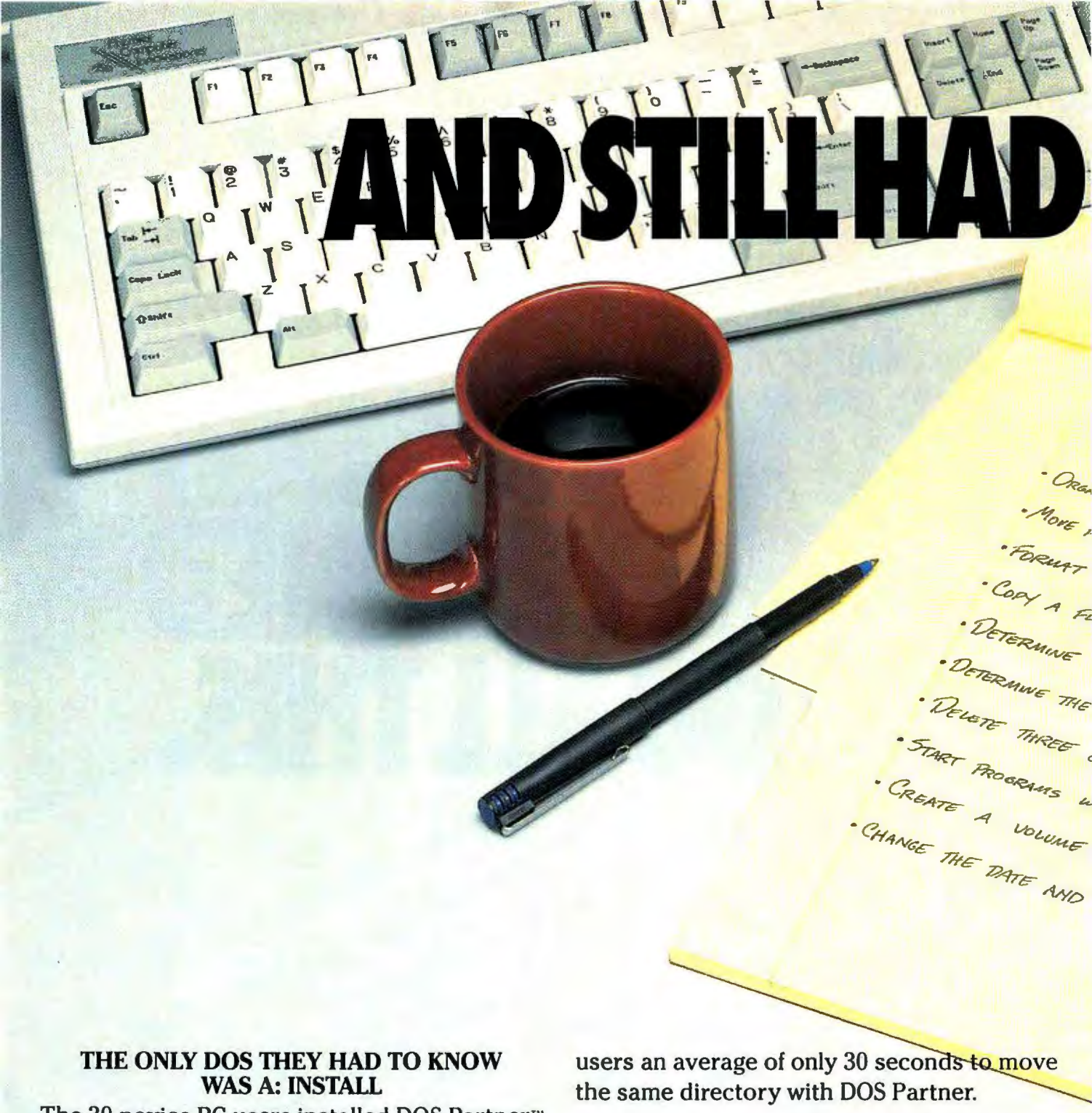

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Scanning the Horizons

ROBERT CARDIN

Contributing Editor Richard Jantz

Lately, we've noticed a welcome trend in business computing: What were once expensive tools for specialists are becoming affordable resources for all sorts of users. It's happened with desktop publishing software and with PostScript printers. Is it time to add gray-scale scanners to the list?

Until recently, publishing professionals like Contributing Editor Richard Jantz made up the market for scanners. With his background as magazine editor, book publisher, freelance writer, and author of a pair of desktop-produced books on *Ventura Publisher*, Jantz has had ample opportunity to put image scanning technology to good use.

These days, though, scanners are attractive for a lot more applications than desktop publishing, says the author of this month's roundup review, "Gray-Scale Scanners Enter the Mainstream." Scanned images are still a tremendous low-cost alternative to conventional halftones. But as they've become cheaper and more versatile, scanners have been transformed from an expensive novelty into a nearly essential business tool. In fact, Jantz contends, "it's hard to imagine the average businessperson *not* wanting to invest in a scanner today."

One obvious incentive is dollars and cents. In the past year, Jantz reports, prices have tumbled. "Today, you can pick up a top-quality scanner for a street price of around $2000. That's about half what it was just a couple of years ago."

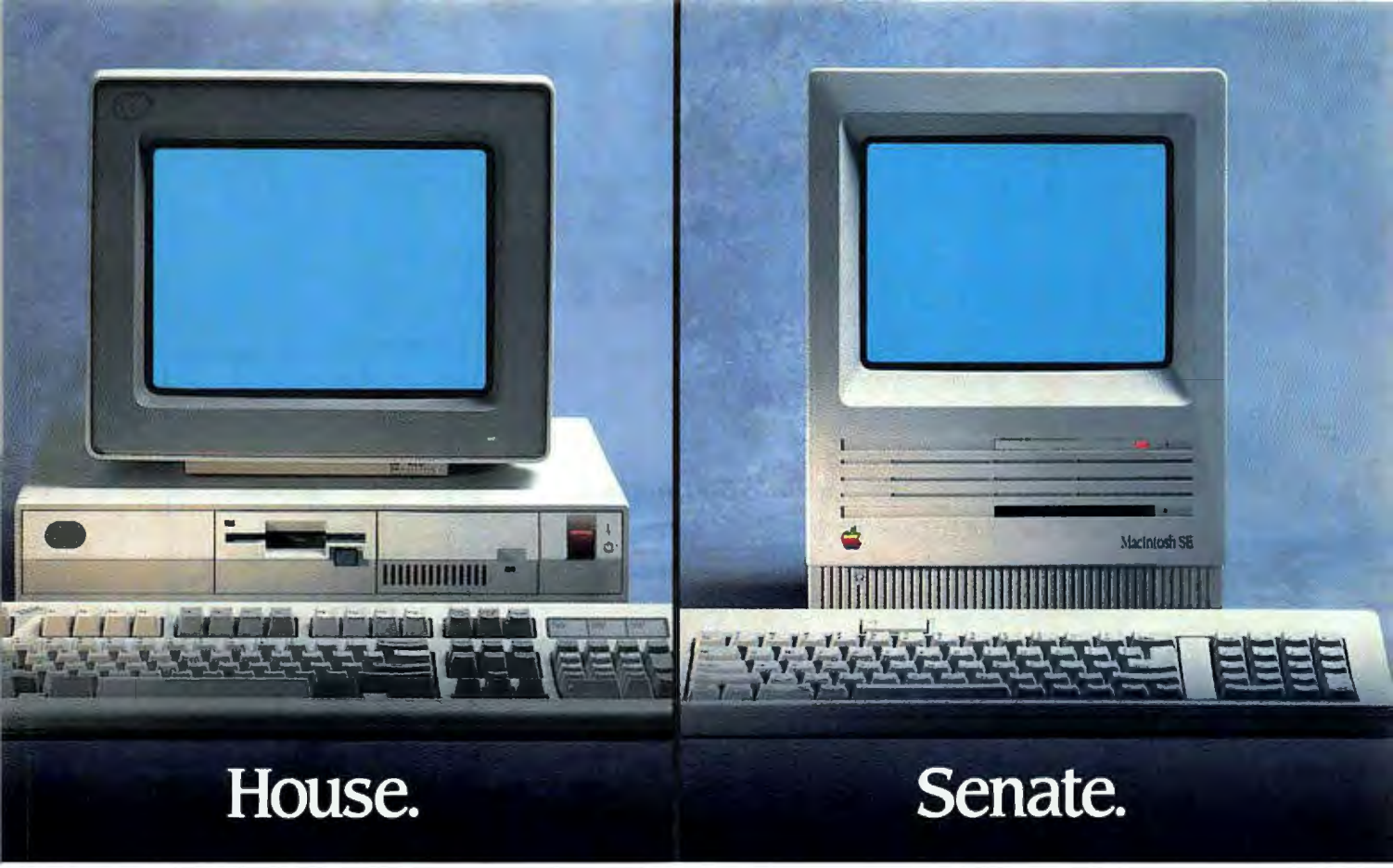
A much more powerful inducement is the sheer versatility of the latest generation of scanners. "Even if you just buy one to scan in some company artwork you've commissioned in the past, you'll probably come out ahead," says Jantz. "But you can also use a scanner for optical character recognition. There's an emerging technology to do raster-to-vector conversions, which will allow you to move images into other programs, like *AutoCAD*. You can even use scanned images with a data base—to store, say, pictures of all your employees."

Given the march of technology and the steady decline in prices, does it make sense to wait a little longer before springing for a scanner? Jantz doesn't think so. "When prices fall too low, buyer beware. Gray-scale scanners come in different flavors, so you have to be sharp about what you buy. The difference between a 4-bit scanner and an 8-bit scanner, for example, is profound. The compatibility issue is likely to raise its head as well."

You may feel that your business isn't quite ready to take advantage of gray-scale scanning. But after you read Jantz's review, we won't be surprised if you start looking for a little extra room on the desktop. ●

Ed Bott

Ed Bott
Managing Editor



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

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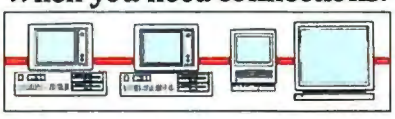

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Circle 221 on reader service card

Mike Hogan

Color Laptop Ships

NECHE Shows 386SX-Based Portable: The First Small Step for Color

NEC Home Electronics heralds a new era in portable computing this month by introducing the first color laptop—and at a relatively affordable price. For $8499, the 16-MHz, 386SX-based ProSpeed CSX offers a standard configuration of 2MB of RAM, one 3½-inch floppy, and a 28ms 42MB hard drive. A 23ms 100MB ESDI hard drive and a 2400-bps modem are available for about $1100 and $600, respectively. The ProSpeed CSX's 80-column-by-25-line display measures about 10 inches diagonally and is powered by an on-board VGA controller that can drive an external monitor at VGA resolution. However, the laptop display's maximum resolution is only 640 by 350 with 16 colors in graphics mode, and 640 by 400 in text mode. Rather than use active-matrix technology, which produces crisp images at a high price, NECHE settled on a less costly multiplexed twisted-nematic display, enhanced to reduce color blurring. "The CSX is not the be-all and end-all of color," explains Tom Martin, vice president of NECHE's computer business unit, "but we wanted to introduce a color screen early on in order to establish realistic expectations among customers and to begin production of color screens in quantity so that we could bring the cost down." The 18½-pound CSX costs only $2000 more than monochrome versions of the ProSpeed. Because of the color display's power requirements, the clamshell-shaped computer is not battery operated.

IBM Shows New Laser

10-ppm Device Slightly More Functional Than LaserJet, Much Cheaper to Run

IBM introduced a laser printer this month that's faster, smaller, and cheaper to operate than Hewlett-Packard's 8-ppm LaserJet Series II. The question is, has HP anticipated such moves and undercut the competition? The 10-ppm IBM LaserPrinter 4019 matches the Series II's $2695 list price but is 40 percent smaller. Its $199 combined print drum/toner cartridge has a 10,000-page life, giving it a per-page consumables cost of roughly 2 cents, compared with 3 cents for the Series II. And the IBM label automatically gives Big Blue's corporate sales force an edge even over HP, says Dataquest's John Boldt. "There are just an awful lot of Blue companies." But it may be tougher sledding among non-Blue shops; HP accounts for about 70 percent of all laser sales, and it long anticipated the spate of laser introductions this fall. As a countermeasure, HP is redefining the market by bracketing the general-purpose Series II with the 8-ppm IID work-group printer and the 4-ppm IIP personal printer—both very aggressively priced (see *Top of the News*, *PCW*, October 1989). The IIP is likely to sell for under $1000 on the street, and many of its features surpass those of the Series II. The IBM 4019's price and feature set stack up well against the Series II, but as a personal printer, it may just end up competing at retail with an HP LaserJet IIP that is half its street price.

Speedo Debuts

Bitstream's New Technology Speeds Font Scaling, Reduces Memory Demands

Bitstream has developed a new add-in font-rendering technology called Speedo that promises to bring fast, scalable fonts to users of popular DOS software. Bitstream president Rob Friedman says that software developers who license Speedo can embed it directly in their programs. Users will simply select a typeface and point size from an application's menu and watch the font build on screen almost immediately. For example, Speedo can build a 12-point Swiss font at EGA resolution at a rate of 115 characters per second on a standard 286-based computer. The faster the processor and the smaller and less complex the font, the faster the font displays. Users can also create some PostScript-like effects such as mirroring and rotated text. Speedo saves disk space since it stores only a 30K-to-60K font-outline master rather than the fonts themselves. When the user needs a font, Speedo generates it on the fly. Speedo itself adds only roughly 20K to the size of an application. Approximately 15 software developers are working with the technology. One of the first to market is the newest version of *Designer*, Micrografx's draw package, introduced at the Seybold Computer Publishing Conference last month. "It's fast, well coded, and efficient," says Micrografx chairman Paul Grayson. "We think it's a great technology and went to a lot of trouble to get it into *Designer 3.0*." How well screen display matches printer output will depend on the developer, says Friedman.

PCL Upgraded

HP Plans Poor Man's PostScript, Adds PostScript Cartridges

Seeking to cement its leadership in the laser printer markets, Hewlett-Packard is not only launching the downsized $1495 LaserJet IIP (see this month's preview) and PostScript cartridges but is also upgrading the LaserJet standard Printer Command Language (PCL). The new PCL Level 5 will take users a step closer to the graphics and font-scaling capabilities of Adobe's PostScript page-description language. Due out early next year, PCL Level 5 will add support for Compugraphic's scalable fonts and for HP's HPGL plotter language. PCL 5 will be backwardly compatible with packages written for today's LaserJets. The IIDs also will accept a $995 PostScript cartridge containing 35 Adobe fonts. Over a year ago, HP decided to make the LaserJet a "universal peripheral that connects to many platforms," explains Product Marketing Manager Cathy Lyons. Though HP and Adobe hadn't seen eye to eye earlier, "market pressure forced the two companies to work toward a mutually agreeable solution," says Lyons. HP's moves aim to forestall marketing pressure of another kind—IBM, Toshiba America, and Epson, among others, are making major pushes into the LaserJet-compatibles arena this fall. Moves like the IID's aggressive pricing, says Lyons, send a message to rivals: "This is a high-stakes game, and it's going to cost you a lot of money to play." As one analyst remarks, "It will be a battle of bull elephants."

Floppy Capacity Rises

First Models of New High-Density Floppy Standard Go On Sale

This month, several vendors will begin shipping high-density drives capable of reading and writing 2.8MB of data on 3½-inch barium-ferrite floppies. Dealers will be provided with external 2.8MB drives with a controller and software for $499 from Pacific Rim Systems of Hayward, California, and for $449 from Micro Solutions of De Kalb, Illinois. Pacific Rim will use drives from Y.E. Data, while Micro Solutions will use Teac drives. Toshiba Corporation, expected to be a major supplier of both drives and media, is shipping samples to OEM customers, with quantity deliveries planned for the first quarter. The floppy disks, expected to retail for about $10 each, may be scarce for a while but will be available from the disk drive suppliers and retailers. The higher-density drives will read standard 1.44MB disks, but the reverse won't be true. Still higher capacity media has been discussed—notably, a long-delayed 21MB-plus drive from San Jose's Brier Technology (see January's *Top of the News*), which uses preformatted versions of the same barium-ferrite media. But the 2.8MB drives stand a better chance of becoming the next industry standard because they represent an incremental upgrade and don't require preformatted media, claims Pacific Rim director of marketing Roger Peters. Interest in the drives is being spurred by the increase in laptop sales and by rumors that IBM plans to introduce a computer with a high-density drive sometime this fall.

Wang to Sell PCs

Troubled Mini Giant Makes a Run at PC Business With Inexpensive Systems

Professing renewed interest in the microcomputer market, Wang Laboratories has introduced four PCs that it plans to sell retail. The $3 billion mini vendor is shipping 16-MHz and 20-MHz 286 computers and two 16-MHz models using Intel's 386SX—one with a standard AT-style bus and one with IBM's Micro Channel. Peter Berkel, in charge of Wang Labs' PC group, hopes that attractive discounts and better service and financing arrangements will double Wang's current complement of 100 dealers over the next year. The systems themselves are aggressively priced; the Micro Channel–equipped MC 350/16S with 2MB of memory, a 28ms 40MB hard drive, and five available slots sells for $900 less than IBM's $3895 55 SX, which has only three slots and a 39ms 30MB drive. Other Wang assets include unique software that lets users combine images, data, and voice. But noting Wang's formidable competition, International Data Corporation PC analyst Bruce Stephen is skeptical. "They aren't a major player, haven't been for a couple of years, and the customer confidence level is way down," Stephen says, referring to the $375 million loss for the fiscal year ended June 30 that forced the resignation of former president Fred Wang and a restructuring of the entire company. The company, which has something of a checkered history in the PC market, does boast 400,000 PCs installed as workstations for its VS minis. ●

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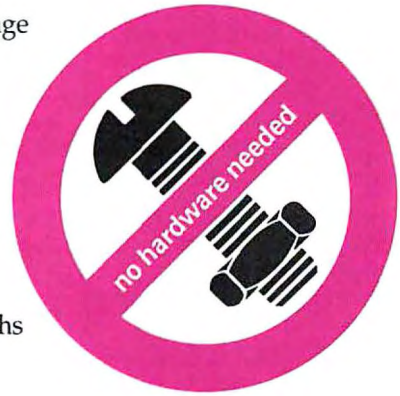

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1 The NeXT™ Computer System is the first computer in the world (and so far the only) to use read/write/erasable optical storage. While PCs today are typically equipped with Winchester drives that store 20 to 40 MB, a single optical disk can store 256 MB. Plus, it is removable, for portability and added security. This dramatically new technology provides storage that is simultaneously vast, reliable and cost-effective—a combination unmatched by computers of any size.

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3 To achieve the power needed for the 90s, NeXT bypassed traditional workstation architecture and went directly to that of a mainframe. This eliminates bottlenecks and attains an extraordinary level of system "throughput"—the true measure of computer performance. Only through the use of VLSI (Very Large Scale Integration) technology could this architecture be reduced in size so that it could fit inside a desktop computer. It's a mainframe on two chips.

4 While PostScript® has long been the industr standard for printing, NeXT has made it fast enoug to also be used on the displa This "unified imaging model" ensures that what you see or

the display is precisely what you will get on paper. All you work, in any size type and an degree of rotation or magnifi-cation, appears with perfect 92-dots-per-inch clarity on the NeXT MegaPixel Display. And with laser precision at 40 dpi on the NeXT Laser Printe

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5 The NeXT Computer System is the first to be capable of producing CD-quality sound. Without requiring any additional equipment. This feat is made possible by a chip that has been specifically designed for the task of manipulating sound–the Digital Signal Processor (DSP). Because this processor is standard in every NeXT machine, software developers will be able to call upon its power to enrich programs we use every day. Now computers will not just be seen, but heard.

6 NeXT Mail takes electronic communications beyond anything you've seen on a personal computer before. Now you can send and receive multimedia mail–including text (with varied type fonts, styles and sizes), graphics and voice messages. And despite its high level of sophistication, NeXT Mail is so intuitive, you may not ever need to open the manual. NeXT Mail is built into the system, along with Ethernet and TCP/IP, so the NeXT machine can quickly become a part of existing networks.

7 Programmers can create software on the NeXT Computer up to ten times faster than on any other computer–the result of a breakthrough called NextStep.® It gives software developers the power to create the graphical user interface portion of their applications (often the most time-consuming and difficult part) without any programming at all. This revolutionary environment means we will see more programs, and better ones, in less time than ever possible before.

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GERARD KUNKEL

AGE: "31, last March."

PROFESSION: Artist & Designer. Director of Design & Electronic Publishing, *PC Magazine.*

CREDITS: Gerard's designs, both traditional and electronic, have graced publications from *Personal Computing* to *Business Week.*

LATEST PROJECT: Author of *Graphic Design in PostScript,*® published by Scott, Foresman & Co.

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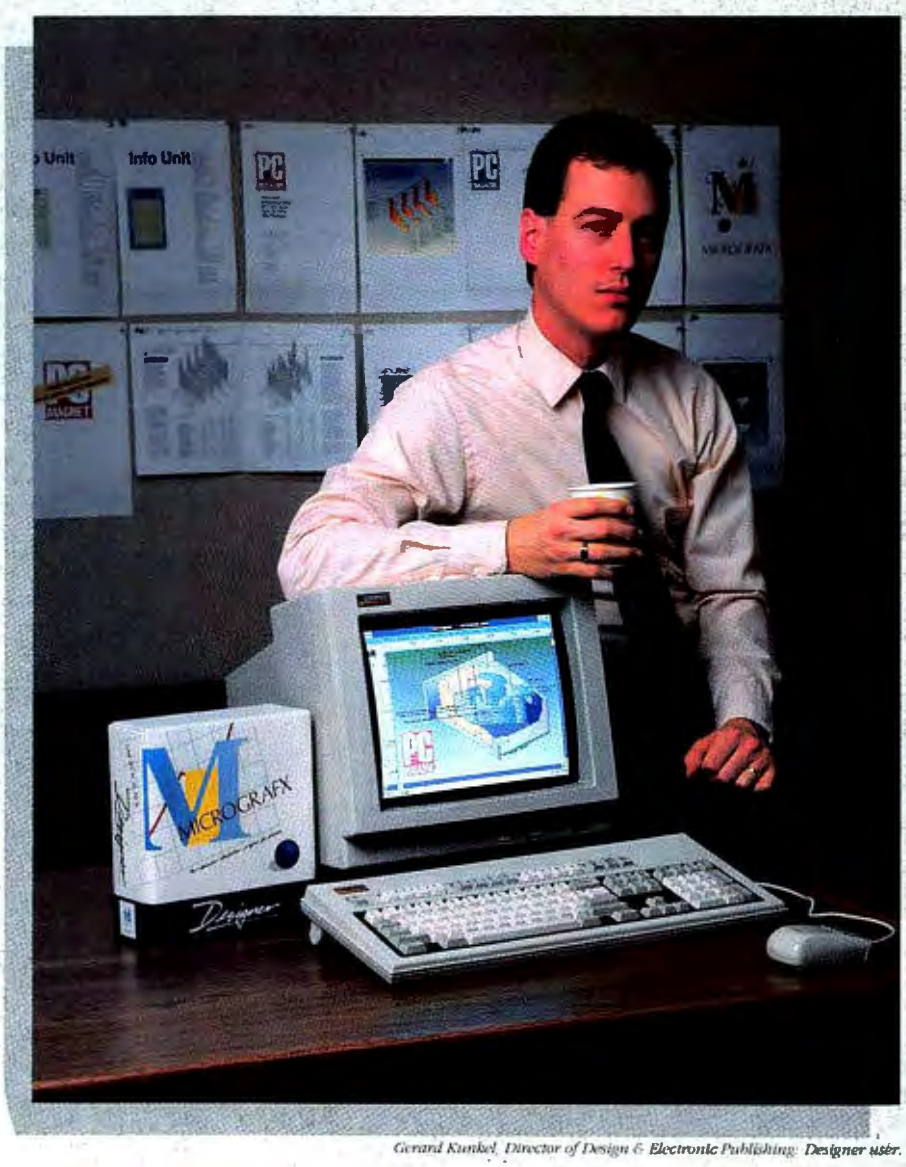

Gerard Kunkel, Director of Design & Electronic Publishing, Designer user.

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Illustration by Gary Kaplow. Micrografx Designer was used extensively in producing PC Magazine's new look. Many of the illustrations in this issue were done with Designer.

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DSPCW 11.02

FRED STIMSON

Richard Landry

Now It's—Font Wars!

Old wine, new bottles:

Today's industry struggle over imaging models is really a classic PC battle between choice and ease of use.

Macintosh lovers think their systems have PCs beat on several counts, but PCs still hold the edge in sheer complexity. Here's an example: Several months ago, Apple let loose a quiet revolution in Mac graphics with System 7.0, the next-generation operating system that enhances the Mac's QuickDraw imaging model and gives it scalable fonts—typefaces that can be displayed and printed at any size and distorted to produce special effects. Even though this development means an end to Apple's reliance on Adobe's PostScript in favor of a whole new imaging and printing technology based on QuickDraw, Mac users won't be in for any rude shocks. With System 7.0, Apple promises a no-pain/big-gain upgrade.

Meanwhile, at press time PC giants IBM, Microsoft, and Hewlett-Packard were said to be working out an agreement on a similar imaging and font technology for IBM's next-generation environment, OS/2 with Presentation Manager. This agreement reportedly also sidesteps PostScript but doesn't reject it altogether, and makes room for competing technologies like an enhanced Hewlett-Packard PCL printer control language (see *Top of the News* and *Industry Outlook* in this issue). Incredibly, it looks as though the deal even accommodates Apple, with the goal of creating a new market of peripherals that work equally well on Macs and PCs. With so many choices, users are bound to get more graphics power. But they also may find themselves asking an already-too-familiar question: Will this software work with this printer?

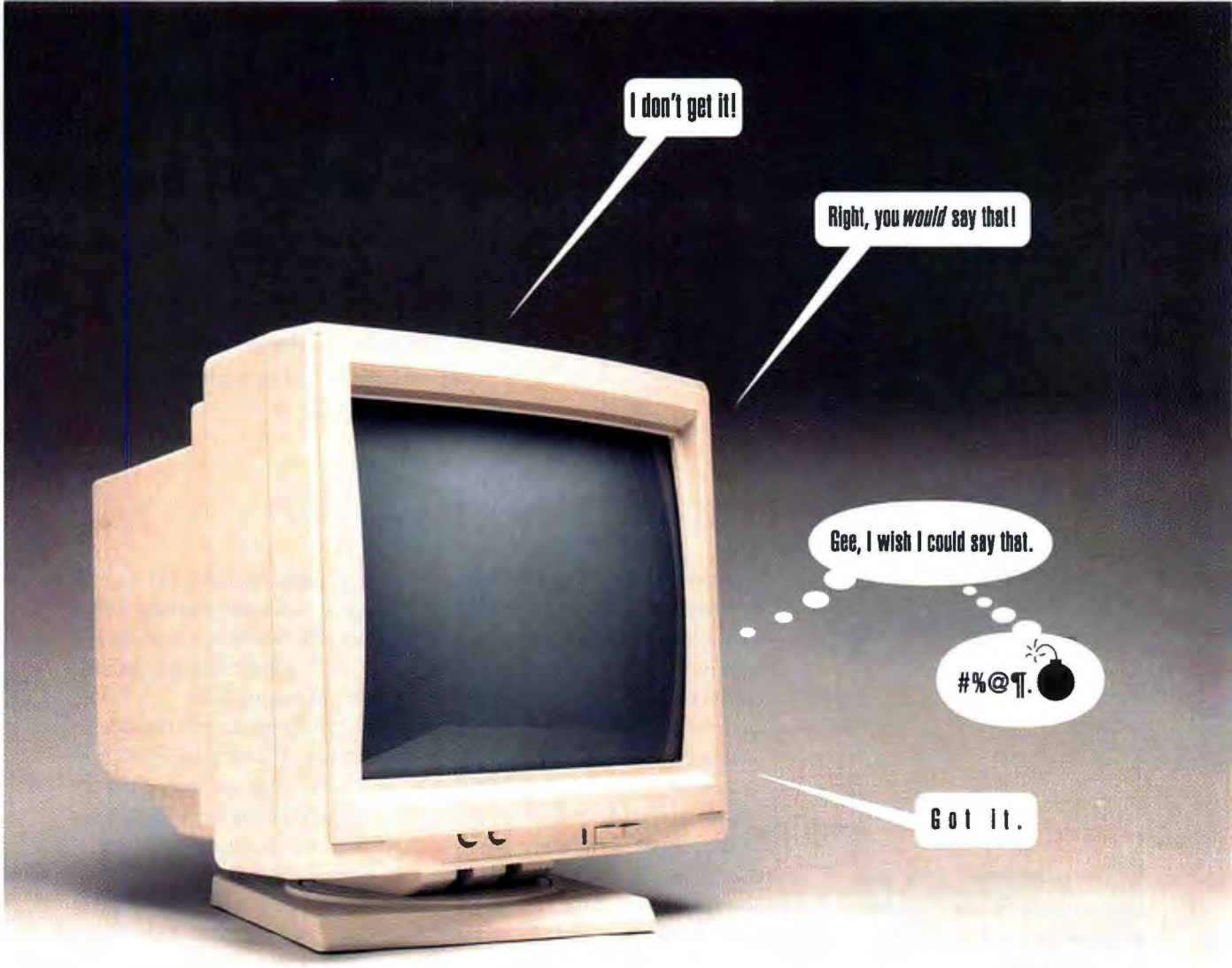
Why Imaging Technology Is Important

Another important question: Do "font wars" over imaging standards really matter? To most *PC World* readers, they definitely will. You've demonstrated a serious appetite for products that extend your powers of communication graphically: word processors with desktop publishing capabilities, laser printers, business graphics programs. All these products can deliver impressive-looking output—depending, of course, on the kinds of fonts and graphics they support. But today, using scalable fonts on a PC can be a time-consuming, complicated, and error-prone process. A good imaging standard should change that.

What's more, good imaging technology is crucial to the next generation of software running under *Windows* and Presentation Manager. Graphical software doesn't simply mean pull-down menus and dialog boxes. The most powerful of these products let you view and analyze information in a graphical way, through custom forms that make it easy to spot important details or trends, for example. With powerful font technology you can highlight the significant information on screen, then reproduce it easily and faithfully on a printer, typesetter, or slide maker.

In the Mac world, Apple has long counted on a combination of QuickDraw and PostScript to keep the peace between display and output. In the *Windows*/PM world, the HP LaserJet reigns as the output standard, but today's PCL language isn't really designed to act as a full-blown imaging standard. The beauty of the reported IBM/Microsoft/HP approach to the problem is that it can accommodate a variety of solutions, each of which has a

(continues)



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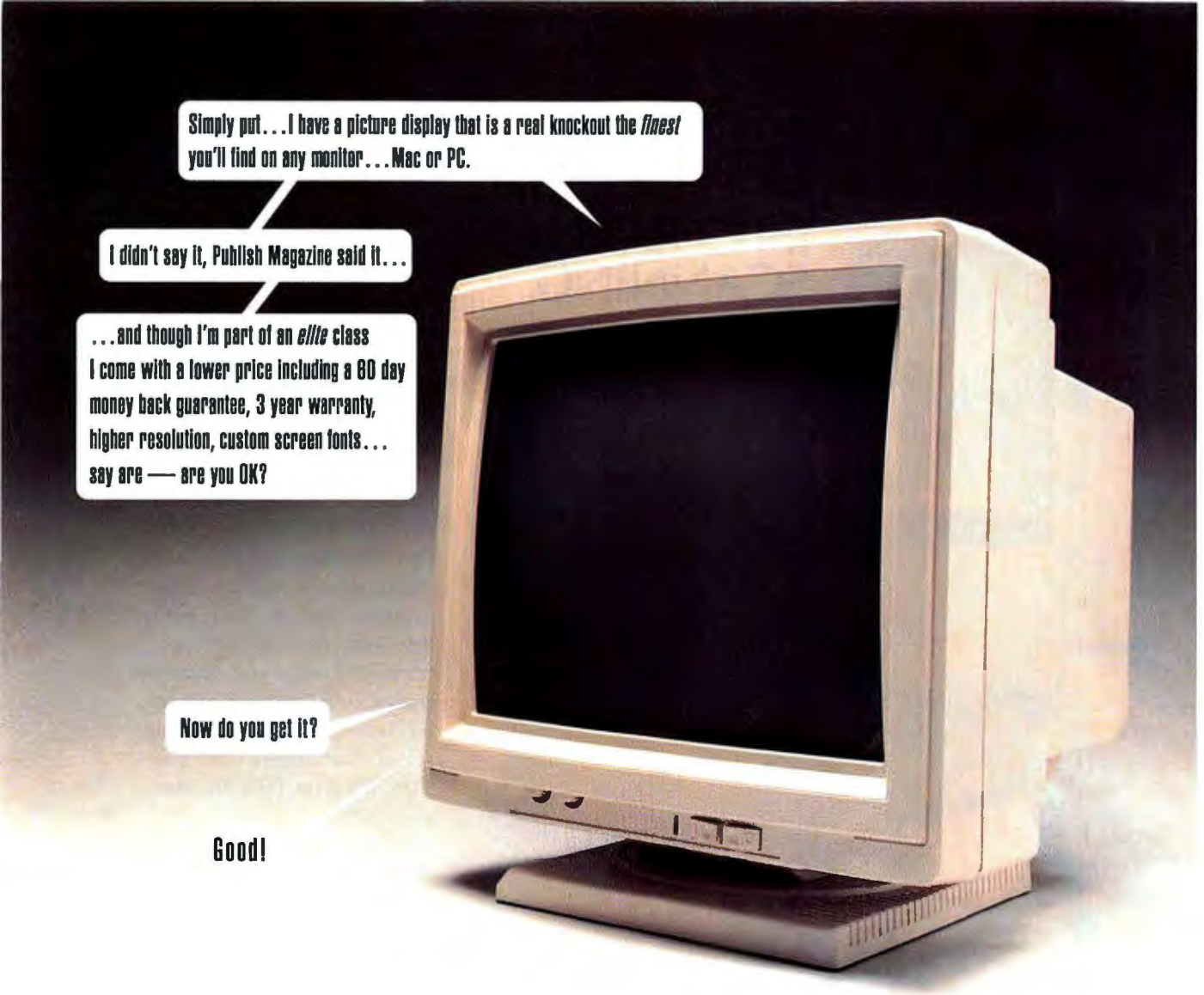

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shot at delivering the best performance and ease of use at the best price. Users can't kick about that.

Open or Universal?

Still, multiple competing standards usually means confusion and incompatibilities; so if you need a high-performance imaging standard, why not stick with PostScript? It's been around a long time; it has great support from font vendors; and it's well supported by many PC software packages. Further, Adobe argues that PostScript could serve as the perfect universal medium for transferring formatted information between multiple operating systems and environments like DOS, *Windows*, OS/2, the Mac, and UNIX.

Such arguments don't seem to hold much weight with Microsoft, HP, Apple, et al. They'd rather avoid PostScript's licensing fees and instead devise a new standard that allows free document exchange between Macs and PCs. Furthermore, all parties appear eager to encourage a new generation of high-performance, low-cost printers and other peripherals that would take advantage of an open imaging model built directly into the Mac operating system and OS/2.

In the short run, nobody knows how much pain or gain will come from an open imaging model in Presentation Manager. Macintosh owners can rest easy—minimal choices will mean a minimum of disruption. But PC users may not have it so good.

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. ●

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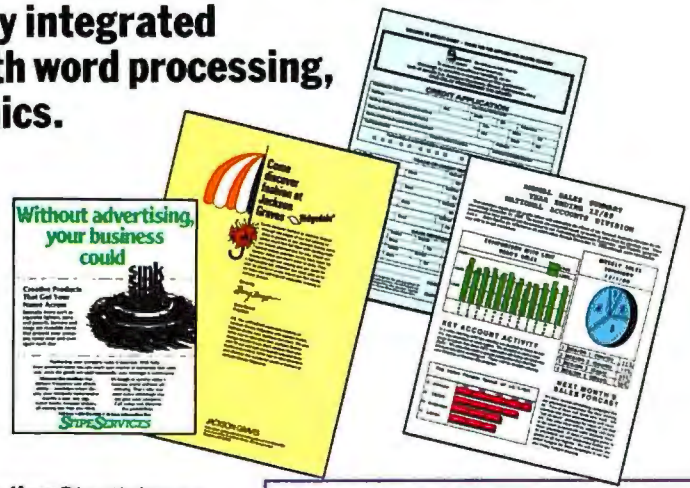

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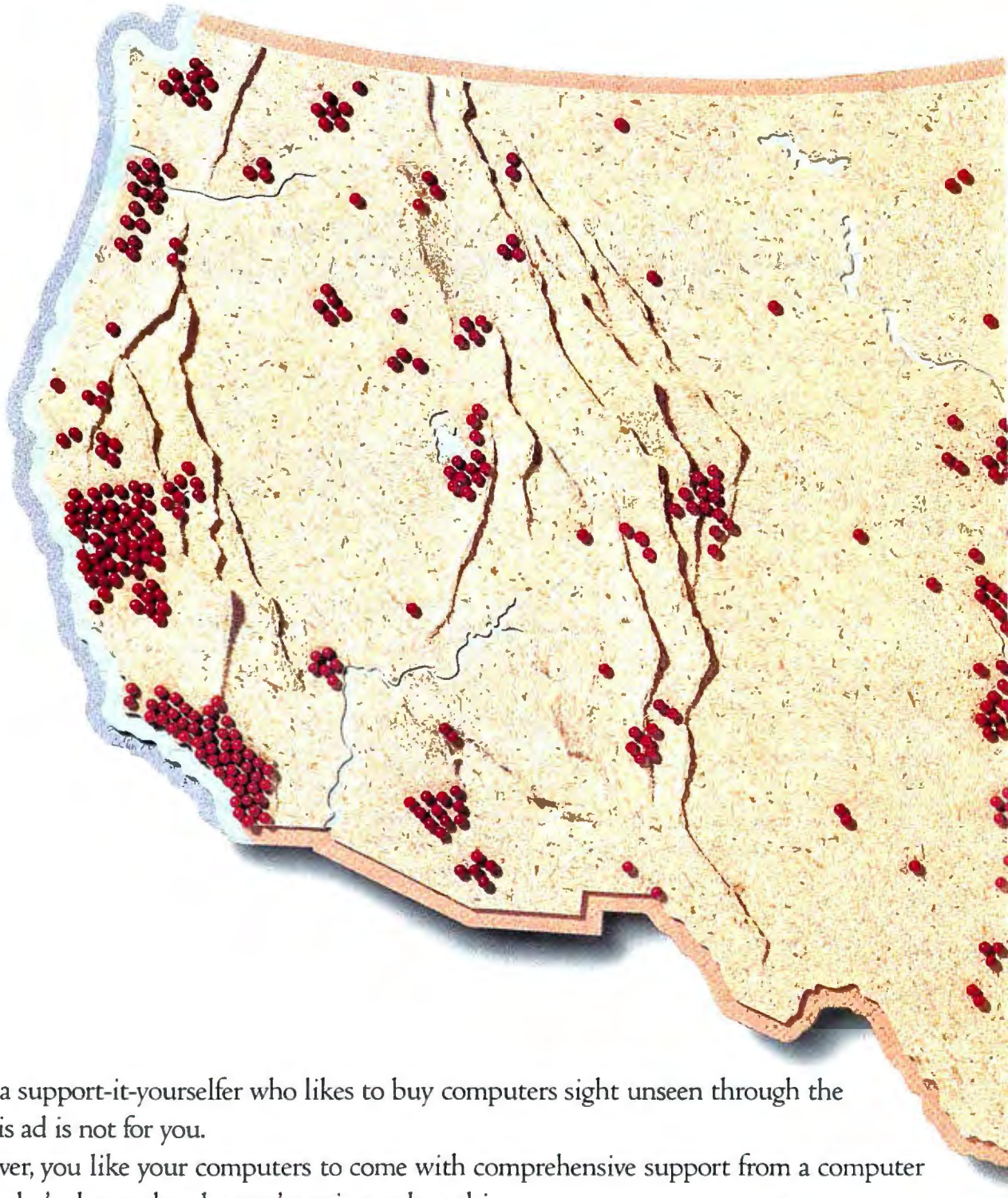
Several steps closer than the competition.



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EasyFlow

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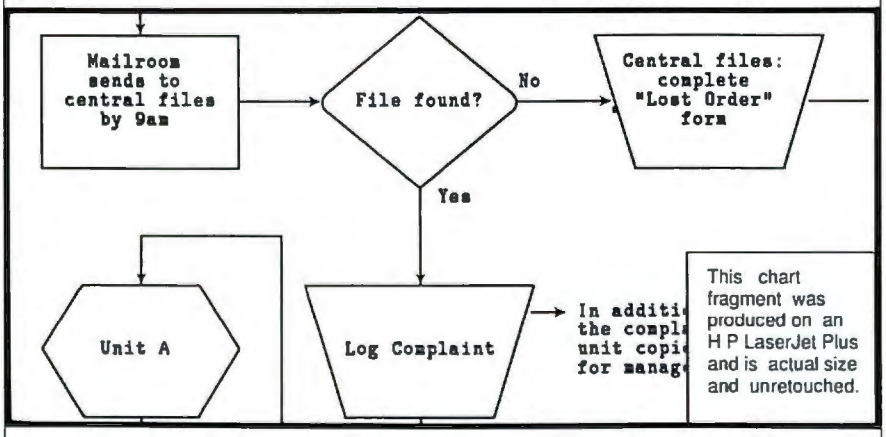
An on-screen chart processor that knows about charts and diagrams, not just another "screen-draw" program that makes you do most of the work. **EasyFlow** is a powerful full-screen graphics program dedicated to data-flow diagrams, flow charts and organization charts. With it you can quickly compose diagrams. More important, you can easily modify them so they are always up to date.



Automatic. Fully automatic text centering within shapes. Fully automatic line routing & re-routing. Fully automatic placement of text along lines.

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User friendly. Don't take our word for it. PC Magazine says *"EASYFLOW lives up to its name. It's hard to imagine any easier and more flexible way to produce basic and even complex flowcharts"*.

Mouse. Optional but fully supported.

It works. Over 50,000 copies sold. Two of the "big eight" accounting firms have world wide site licenses for the use of EasyFlow.

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EasyFlow works on IBM PC's, IBM PS/2 and compatibles. Requires 512K memory, hard disk and an IBM CGA/EGA/VGA or Hercules monochrome compatible adapter card.

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Next in

PC WORLD

December

1989 Hardware Update

From top to bottom, *PC World*'s year-end review has your hardware needs covered. We'll look at seven high-octane AT clones priced right for the home office. For business users, will systems built around Intel's 386SX chip be the entry-level workstations of the nineties? Our roundup of six top systems will present some powerful evidence.

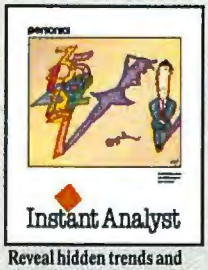
Even small networks crave big storage. We'll examine ten 300MB-and-up hard drives that promise to transform your ho-hum 386 into a top-notch file server. And we'll put five high-speed modems to the test and find out just how fast, reliable, and compatible they really are.

The Lighter Side

Of course, sometimes the most important computing gets done after quitting time. That's why we've made room in our *almost*-all-hardware issue for a Buyers' Guide to the best games in the PCuniverse.

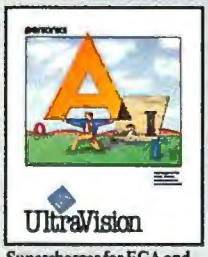
Build giant multi-sheet applications in 1-2-3.

See more rows and columns with windows and graphs.

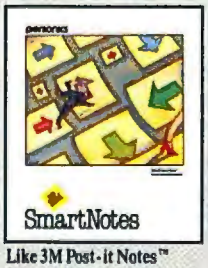


Reveal hidden trends and relationships in 1-2-3.

Turns 1-2-3 or Symphony into a powerful database.



Supercharger for EGA and VGA displays.



Like 3M Post-it Notes™ for your PC.

The cure for 1-2-3 Release 3 envy

Look&Link™

1-2-3™ Release 3 delivers impressive 3D features. But many PC users don't have the hardware to run it. And many others are surprised when they discover its trade-offs.*

Let's face it. Lotus has sold us on the *idea* of multi-sheet applications but offers a solution that many 1-2-3 users can't or won't accept. Personics offers a kinder and gentler solution.

LOOK&LINK™ lets you build true multi-sheet applications in 1-2-3 without moving to Release 3. You get dynamic linking and consolidation plus the ability to see two worksheets on screen at the same time. Noted columnist Jim Seymour says, *"LOOK&LINK could be the answer to Lotus users' prayers... It is a lot more important to a lot more users than Allways."*

With LOOK&LINK, any worksheet can pull values out of other worksheets on disk or in expanded memory. (Supported, *but not required!*) There's no limit to the number of linked sheets, and linked values flow in automatically when you load or recalculate. LOOK&LINK even supports automatic chained linking – sheet 1 draws from sheet 2 which draws from sheet 3, etc.

LOOK&LINK's dual sheet display makes setting up links a snap. Just point and shoot. You can also cut and paste between sheets.

For consolidations and roll-ups, LOOK&LINK makes life especially easy. You can sum a stack of sheets in seconds. So join the party. Now any 1-2-3 user can build applications that span across worksheets.

LOOK&LINK 1.1 is an add-in for 1-2-3 Release 2, 2.01 and 2.2. No special hardware or expanded memory is required. Satisfaction guaranteed.

LOOK&LINK adds multi-sheet features to 1-2-3 Rel 2, 2.01 and 2.2

	1-2-3 Release 3	Release 2.2 2.01 & 2.0	Release 2, 2.01 & 2.2 with LOOK&LINK
Link to a single cell	YES	2.2 only	YES
Link to a range	YES	no	YES
Link to a lookup table	YES	no	YES
Linked values in formulas	YES	no	YES
Automatic chained linking	no	no	YES
See two sheets on screen	YES	no	YES
Cut & paste between sheets	YES	no	YES
Point-and-shoot link setup	YES	no	YES
Automatic consolidation	YES	no	YES
Hierarchical consolidation	no	no	YES

*Release 3 is two to three times slower than Release 2.01 in PC Magazine benchmarks. (9/12/89 issue.) It needs lots of memory, lots of hard disk space, and does not support Release 2 add-ins. Expanded memory cards must be re-configured.

"I have a lot of programs on my hard disk, from a lot of vendors – but no other firm is represented by five titles. And no other utility vendor delivers as much value to my kind of computing as Personics."

Jim Seymour
PC Week
January 30, 1989

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LETTERS

Reactions and responses from the PC World community

Steep Upgrade Path

It's no doubt true that most people are willing to pay $51 to $100 to upgrade their software ["Rate Your Satisfaction," *Consumer Watch, PCW,* August 1989]. However, your survey would have generated more useful results if you had asked what percentage of the purchase price users would pay for an updated version.

For example, Microsoft recently charged $50 for an upgrade to *QuickC,* a product that sells for $70. That's more than 70 percent of the new user's price. I find this unacceptable. If I stay with the product long enough, I'll end up buying it three or four times over. I'd like to pay no more than 30 to 40 percent as an upgrade fee.

Mike Blaszczak
East Hartford, Connecticut

BUD PEEN

ANTHONY RUSSO

Who's Serving Whom?

There's no free lunch. Your August 1989 feature "Well-Connected Data Bases" vividly illustrates the point. Data base servers offer many advantages over file servers, but at the cost of concentrating processing power and data at one point in the network. If the data base server is down, the user is stopped cold.

If a fellow were skeptical, he could imagine that PCs networked to a data base server regress to the *status quo ante*—namely, dumb terminals connected to a mainframe, controlled by a central MIS department. And so the pendulum swings—at least it will if we let it.

Henry Schofield Noble
Gaithersburg, Maryland

Window Shopping by Modem

So Stewart Alsop [*Windows Journal, PCW,* July 1989] believes that there hasn't been "any explosion in shareware or public-domain software" for *Windows?* Bunk! If he would log on to any sizable BBS, he would find tons of *Windows* shareware applications, including full-blown communications programs, disk and file utilities, graphics conversion programs, and even a little program called EEMWINFO, which answers Mr. Alsop's request for a way to view and allocate expanded memory. *Windows* shareware is where the action is.

Robert N. Payes
New York, New York

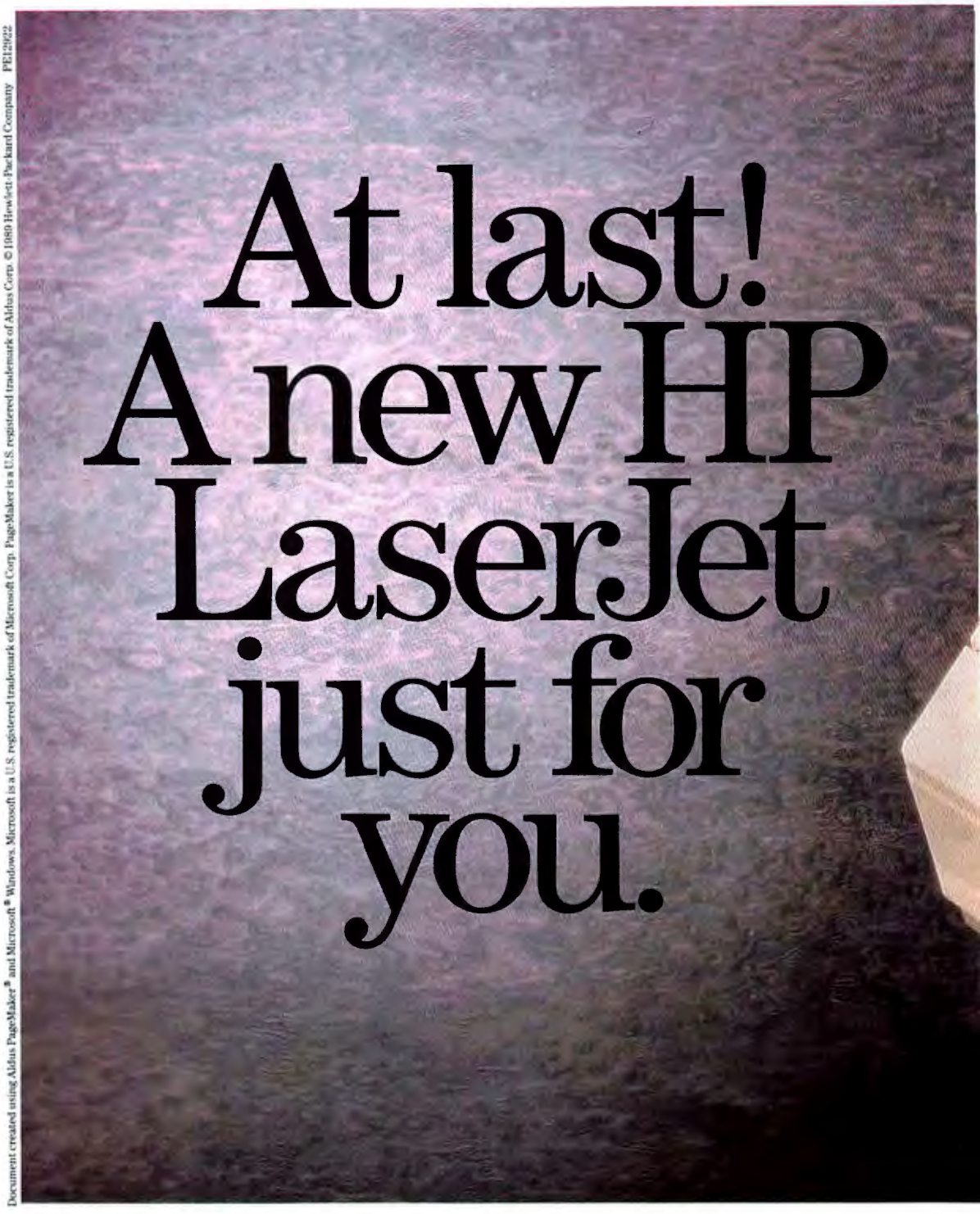
Restoring the Balance

Thank you for mentioning *Balance of Power* [*Windows Journal, PCW,* August 1989]. However, I would like to point out a few errors in Mr. Alsop's column.

When *Balance of Power* was first released for the PC in 1986, there were no boxes to click for selecting countries, but we added a menu interface—absent from the original Mac version. The recently updated *Balance of Power: The 1990 Edition* retains the menus but also allows users to click directly on a country. *Windows'* keyboard interface, multitasking, use of color, and other features have made the PC version superior to its Mac counterpart.

I would encourage other games developers to investigate the *Windows* interface. As *Windows* enters the 1990s with linear memory addressing, fast animation routines, device-independent color bit maps, and improved sound support, I expect

(continues)



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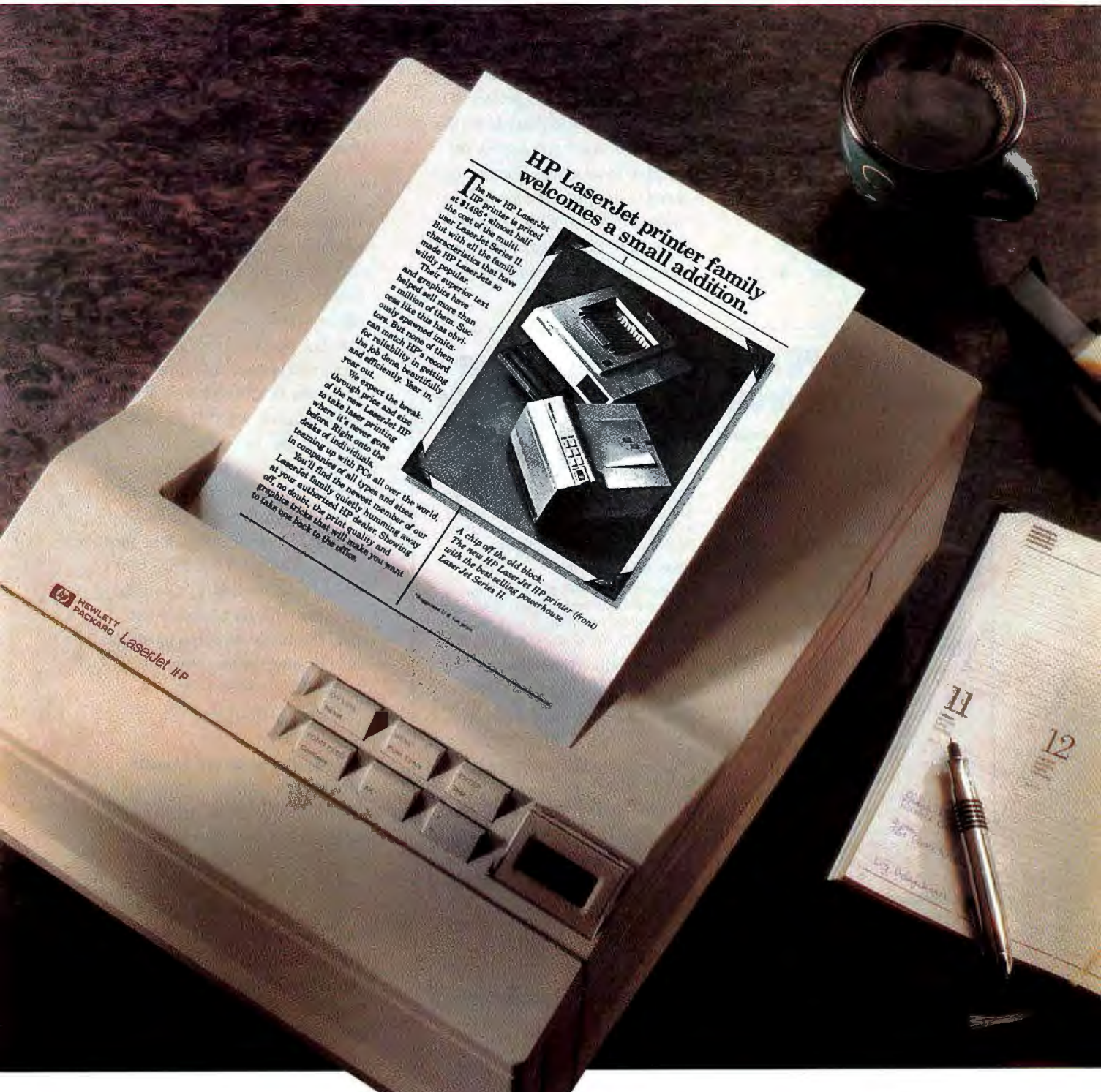
Its simple front panel gives you easy, push-button control over the menu, the 14 internal fonts, form feed and other functions. It handles four different paper sizes: letter, legal, executive and A4, as well as envelopes. In portrait

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



The new HP LaserJet IIP printer.

or landscape configurations. At four pages a minute. From one or two paper bins (the second is optional).

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to see many more games for this powerful environment.

Peter Sills
Product Manager, Mindscape
Northbrook, Illinois

LaserJets Are Here to Stay

The review "PostScript Printers—Right for the Office" [*PCW*, August 1989] ignores some basic tenets of selecting a printer. The first consideration should be the volume of work you expect the printer to produce. Comparing a printer designed for low-volume home office use with one engineered to turn out 25,000 pages per month is like comparing a Chevrolet convertible with a Mack truck; their prices may overlap, but they're made for different work loads.

In addition, the implication on the issue's cover—that PostScript printers are making LaserJets obsolete—is misleading. If LaserJet users need more fonts, a multifont cartridge may prove satisfactory. For a greater number of point sizes, PostScript emulation software can translate PostScript output from any program into PCL format to print on the LaserJet. Also, QMS's JetScript board—sanctioned by Hewlett-Packard and Adobe—can turn the LaserJet II into a PostScript machine for less than $4000 total. With this operational flexibility, cost-effectiveness, and high-quality output, the LaserJet is the most viable printer for business.

Martin P. Neudel
Chicago, Illinois

This Bulletin Board Means Business

We applaud William Rodarmor's summary of the advantages and possible pitfalls of bulletin boards ["The Business BBS: Better Communication Across the Board," *PCW*, August 1989]. BBS platforms are too often maligned or misunderstood. However, the article's title uses our trademarked name. The Business BBS (213/477-2707 voice, 213/477-0408 electronic) offers on-line electronic customer support, runs the worldwide user group for *Xerox Formbase*, and handles private bulletin boards for an annual company fee and hourly rate.

Jim Appleby
SYSOP, The Business BBS
Los Angeles, California

(continues)

Here's the PC Voice Mail system that can increase your productivity by over 9 weeks.

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*George Walther, *Phone Power* (New York: Berkley Books, 1986)

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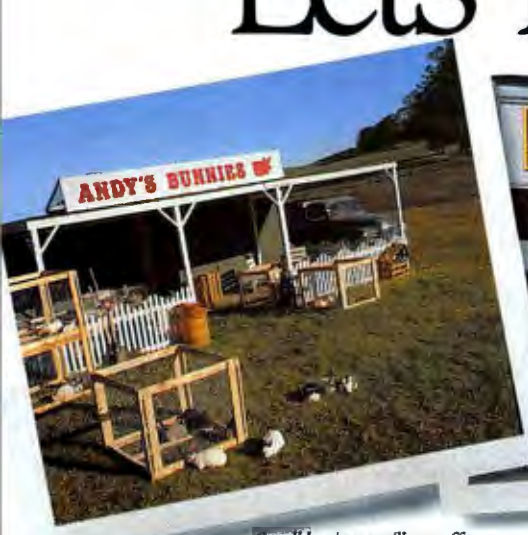

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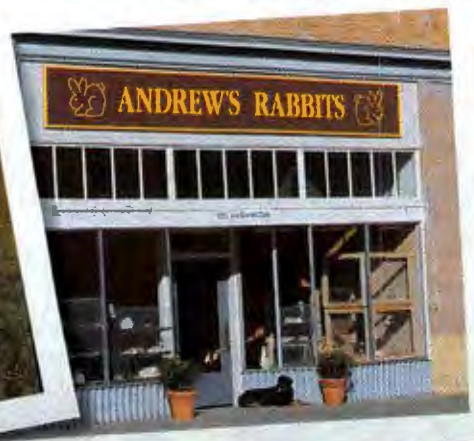

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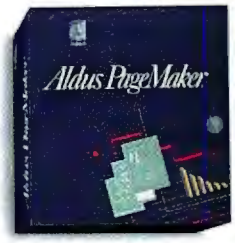

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Your computer becomes a powerful business communications tool. Which gives you greater control of deadlines and costs while making your document processing more productive.

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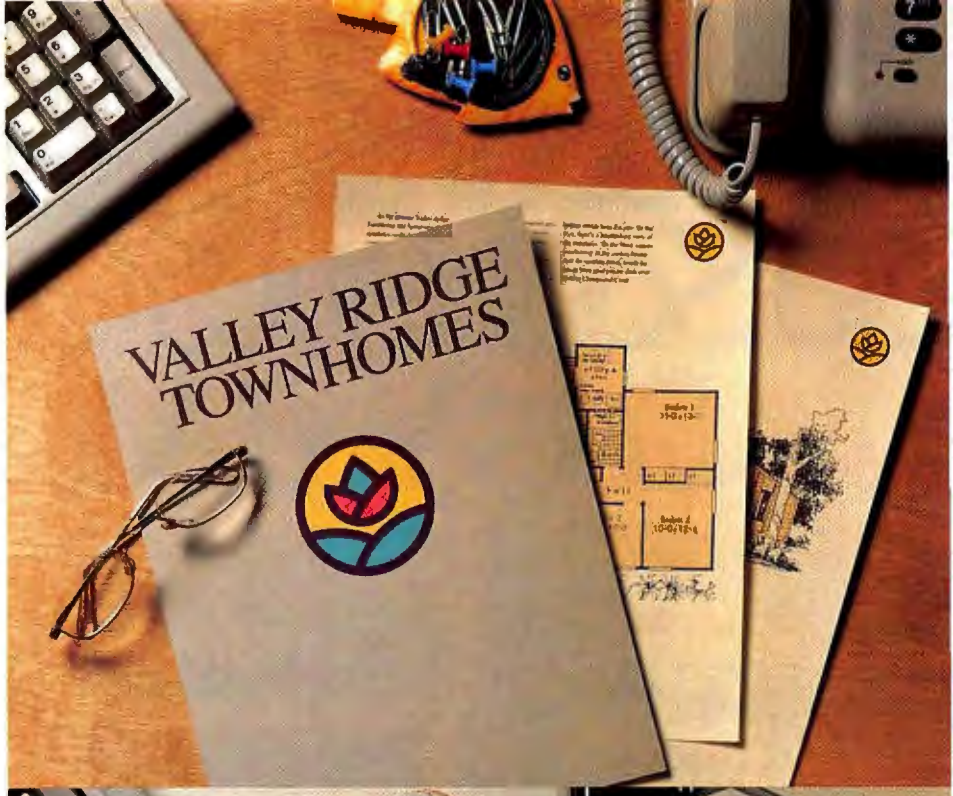

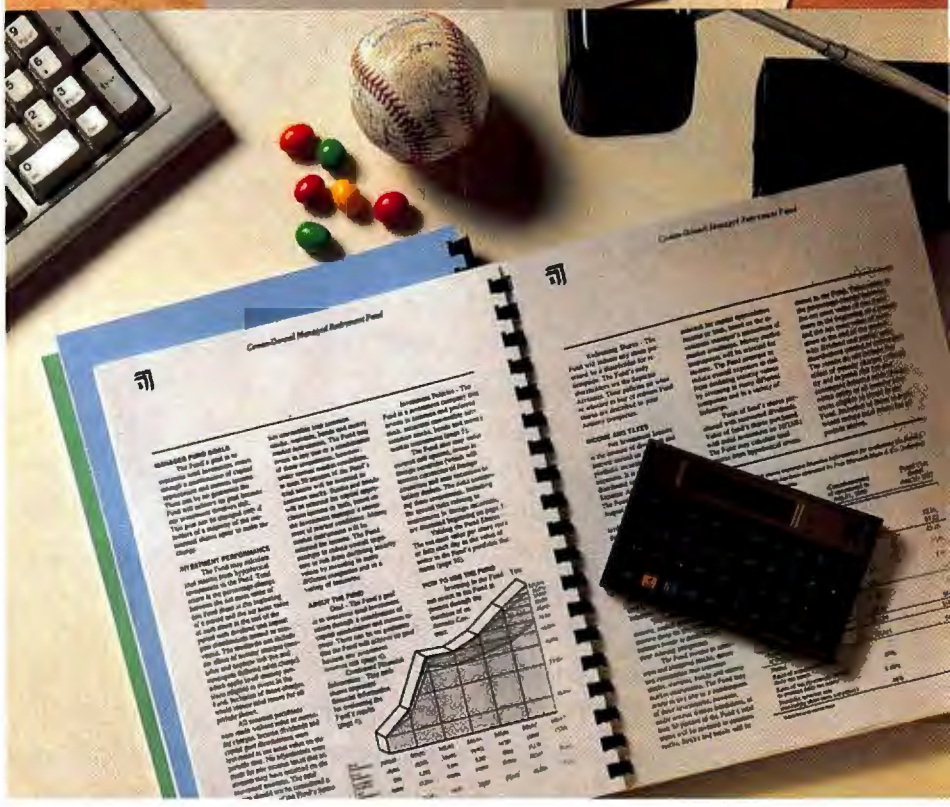

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Tell Us About the Interface

I am tired of word processing reviews that emphasize briefly seductive features over the basic user interface, which has the greater long-term effect on productivity. Your review "Advanced Word Processors—Familiar Faces, New Features" [*PCW*, July 1989] focused on "critical advanced features" and extolled mouse support because it "lets you edit at warp speed." First, the words *critical* and *advanced* don't always wed in practice: Of your list of features, only mail merge might qualify as both. Second, the mouse only helps you *learn* on-screen editing at warp speed: Not only is time lost transferring hand to mouse, but humans cannot point both quickly and accurately.

You can get used to the peculiarities of any word processor, but some interfaces are simply better than others. It's hard to believe you would rate *WordPerfect* tops while admitting it has so many options crowding the function keys that "it's hard even for experts to remember the commands."

Jim Carls
Memphis, Tennessee

The Brightest Star

Your word processing review [*PCW*, July 1989] contains several errors about *WordStar 2000 Plus 3.0*. The program *can* use simple key combinations—defined on the fly—as well as function keys to activate macros. The review states that *WordStar* cannot format portions of text; in fact *WS2000*'s style sheets are as capable as *WordPerfect*'s and

(continues)

atop any conventional overhead projector to project precisely the image your computer generates.

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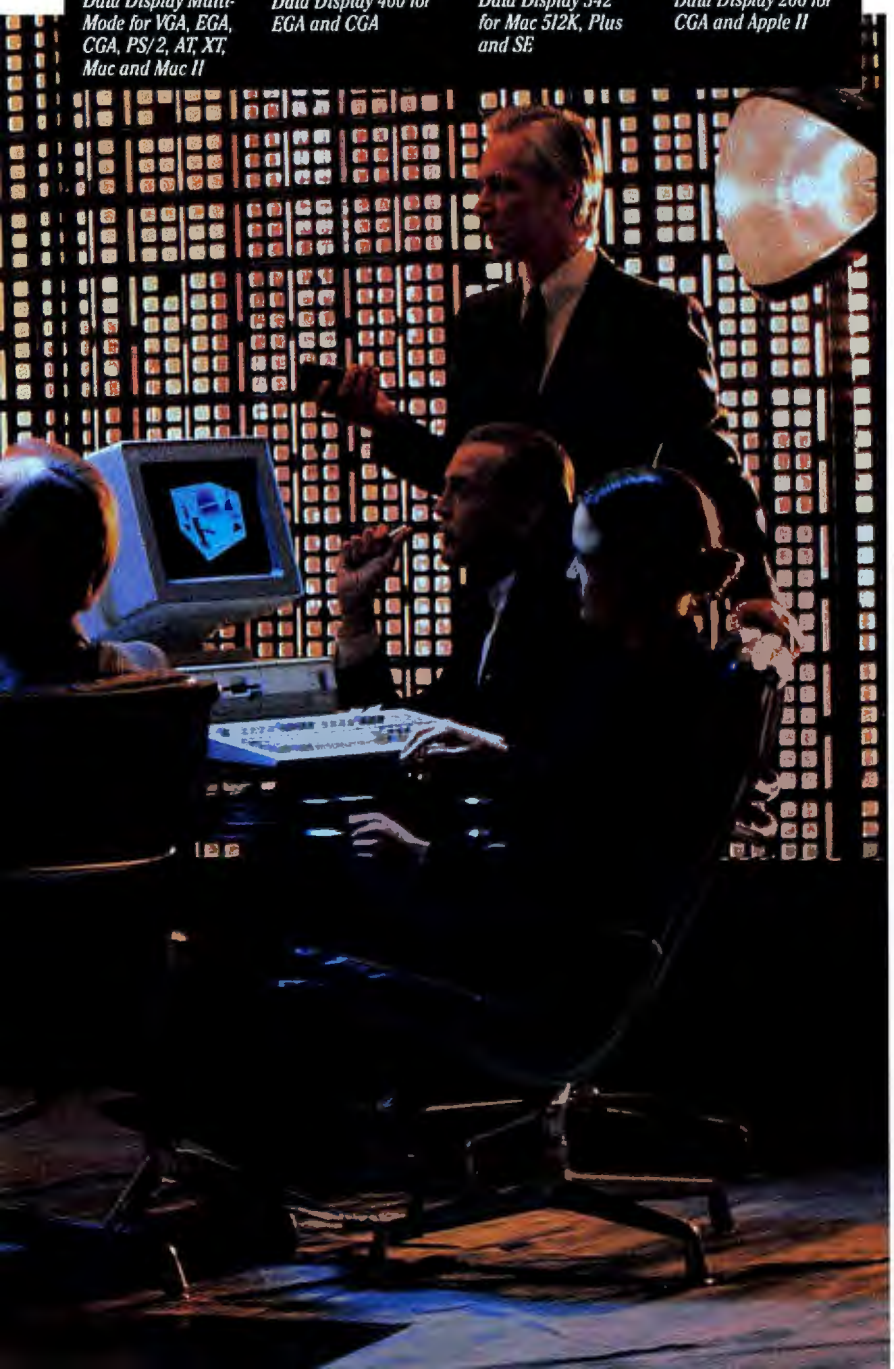

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better than most. Finally, the Features Evaluation indicates that the program does not support math. *WS2000* can calculate figures in columns and in paragraphs containing text and numbers, including exponentials and compound equations.

Mitch Chinn
Zweibrücken, West Germany

Corrections and Clarifications

Power Tip No. 59 on page 32 of *PCW* August 1989 contains an error. To mark files in a *WordPerfect* directory listing, press <Shift>-8, which marks them with an asterisk.

The August 1989 *Product Outlook* item on Electronic Speech Systems' Fax/Phone Switch II stated that the product could switch between fax, voice, and modem on one phone line. While the product can handle all three types of communication, it is limited to two device ports. *PC World* regrets the errors.

Some important changes to the program we called *Quattro Professional 2.0* occurred after our October preview went to press: Borland has renamed the spreadsheet *Quattro Pro*, dropped the price of the original *Quattro* to $129.95, and changed its upgrade policy: If you bought *Quattro* after September 6, 1989, you can upgrade to *Quattro Pro* for $199.95.

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

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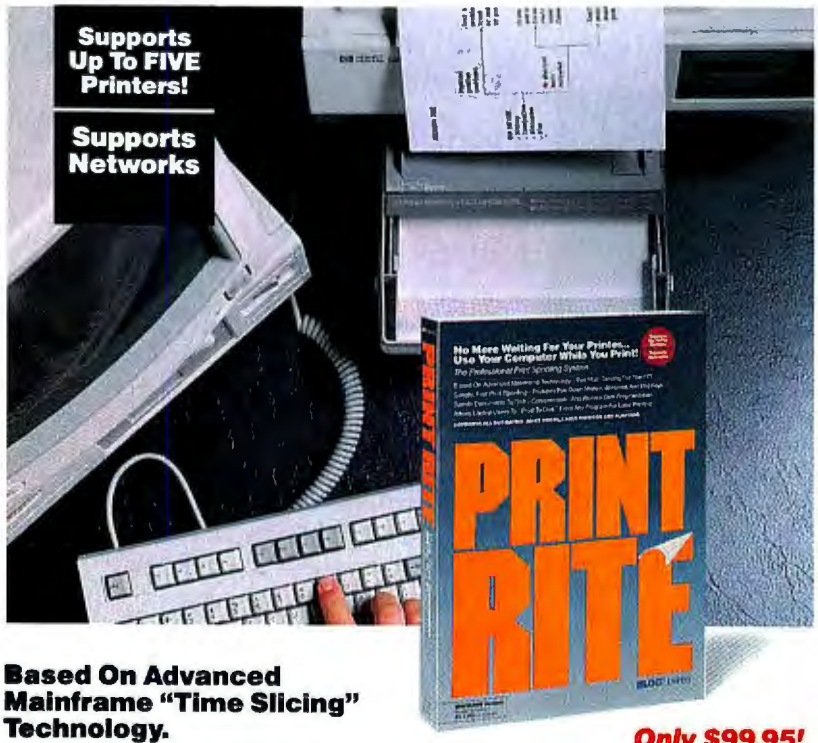

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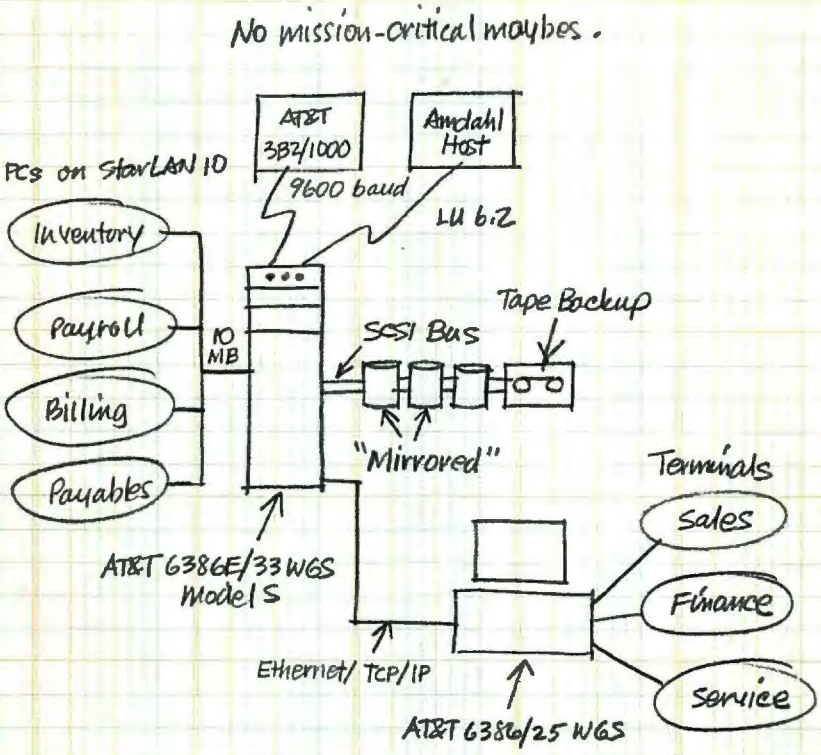

of information from people in one department can trigger action by people in another.

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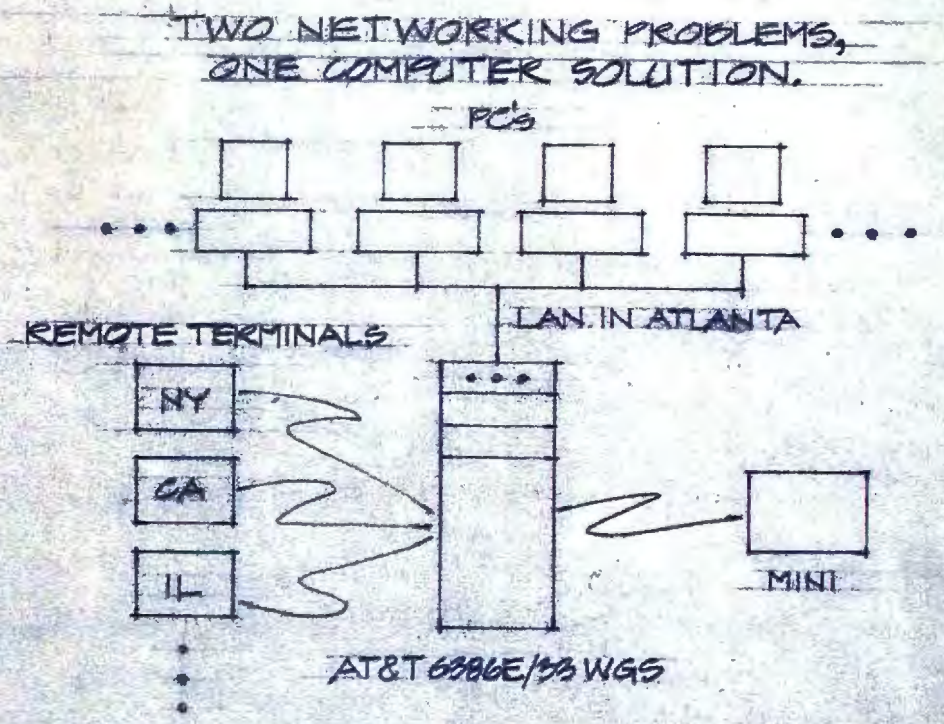

Simultaneous solutions. Chances are you need a server to support information sharing in a local PC network. Fair enough. But here's a Networked Computer that will also manage a nationwide database at the same time.

With headquarters in Atlanta, you have people in two dozen offices scattered across the U.S. Because geography makes interoffice agreement difficult, you feel more like twenty-five little companies than one big one.

In Atlanta, put 600 MB of data into the disk space of an AT&T 6386E/33 WGS. Place asynch terminals in your field offices, and connect them directly to the 6386E/33 WGS. Suddenly, everyone's working with the same numbers, the same names, everything. Which, at about 7.7 MIPS, is power that would make some mainframes blush.

Now, shift into high gear by connecting the PC LAN you already have in Atlanta. We provide the systems and expertise you need to support LAN *and* remote terminal applications at the same time.

And for mission-critical Networked Computing, our solution is the AT&T 6386E/33 WGS Model S. It shines in networks like the one shown in the final diagram—where every bit

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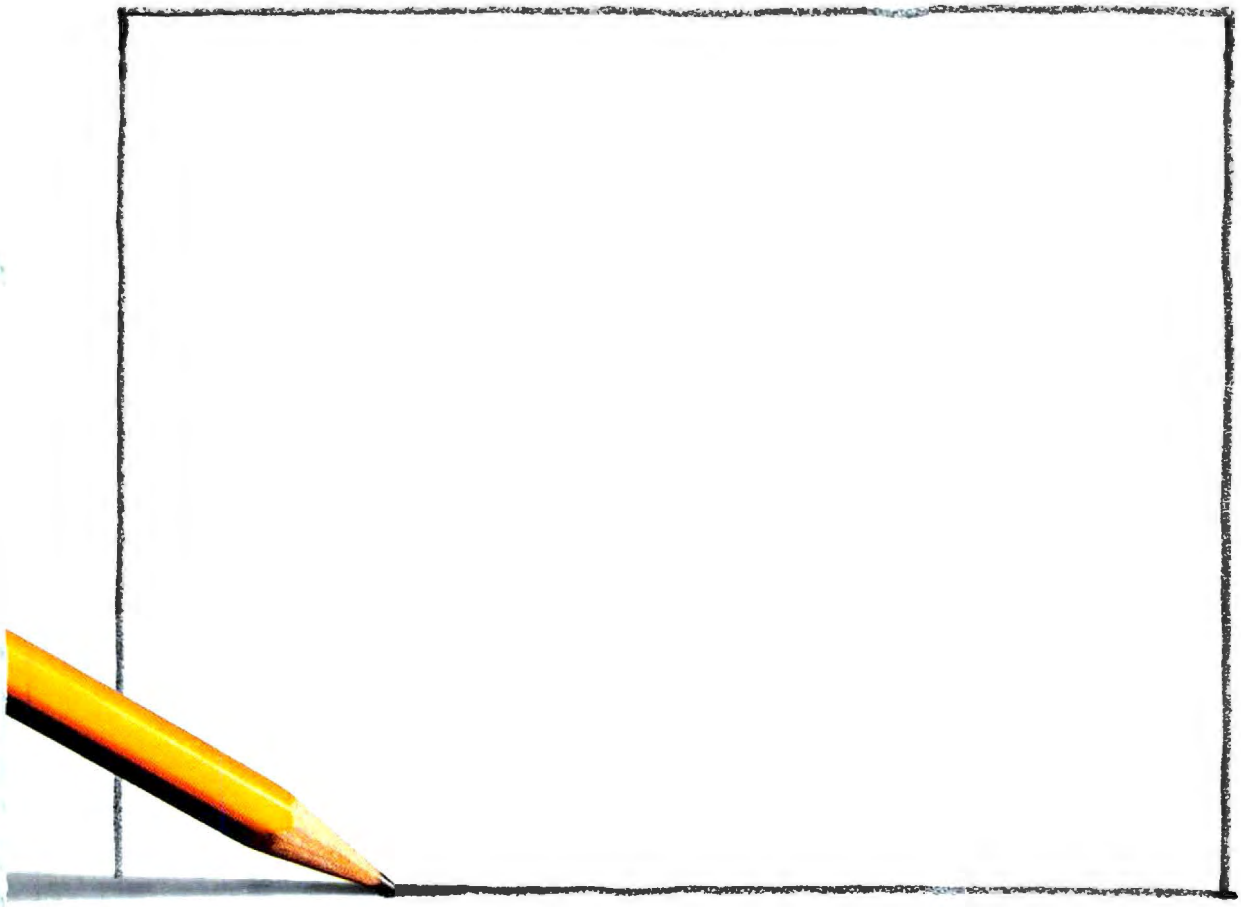
Draw or explain it below, and then Fax it to us at **1 800 833-6386,** and a sales representative will call you. Or call your AT&T Authorized Reseller, AT&T Account Executive, or **1 800 247-1212, Ext. 162,** for more information.



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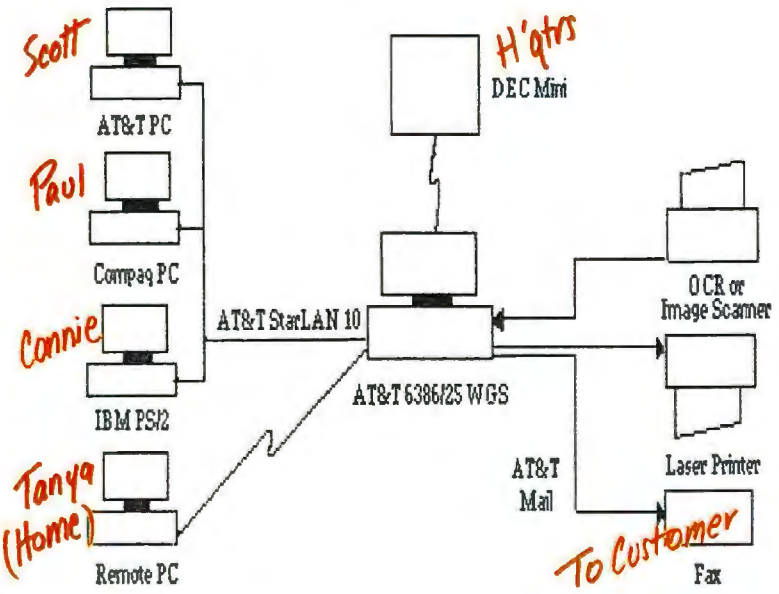

dards (SNA in this case) that let AT&T's new Networked Computers work smoothly with the systems you already have.

How to share new applications and precious resources.

Take the case of Scott, Paul, Connie and Tanya in the second diagram. They each rely on expensive peripherals, but you can't afford to get them individual sets. And their complex, networked application would really strain your existing DOS server.

Enter the AT&T 6386/25 WGS, our entry-level UNIX® System V server. UNIX System V is the only desktop operating system *designed* for communication-intensive applications. And since it also supports AT&T's OPEN LOOK™ Graphical User Interface, life can be visibly easier.

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In fact, AT&T has configured, packaged and tested solutions including communications, database and image servers. Just let us show you.

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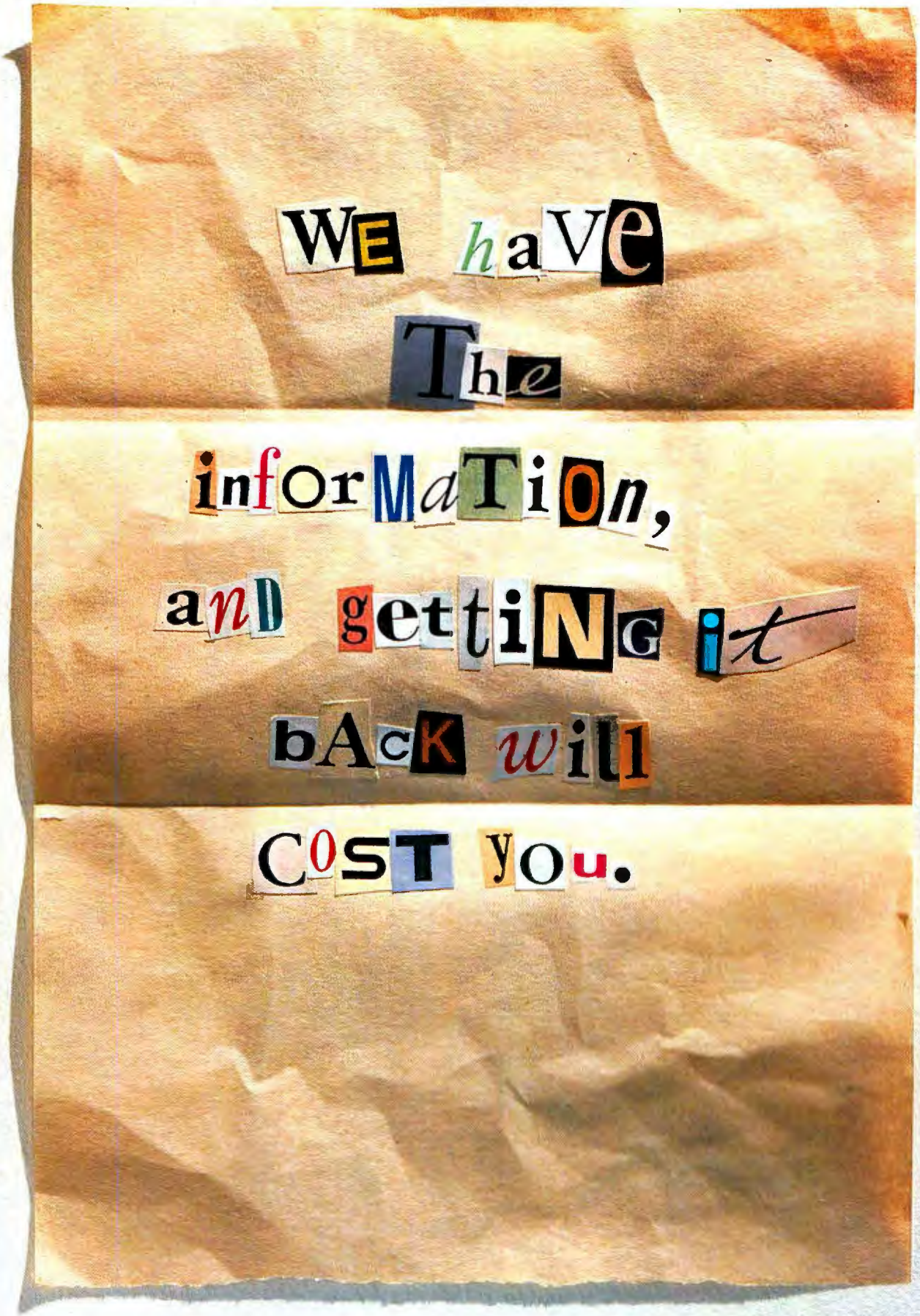
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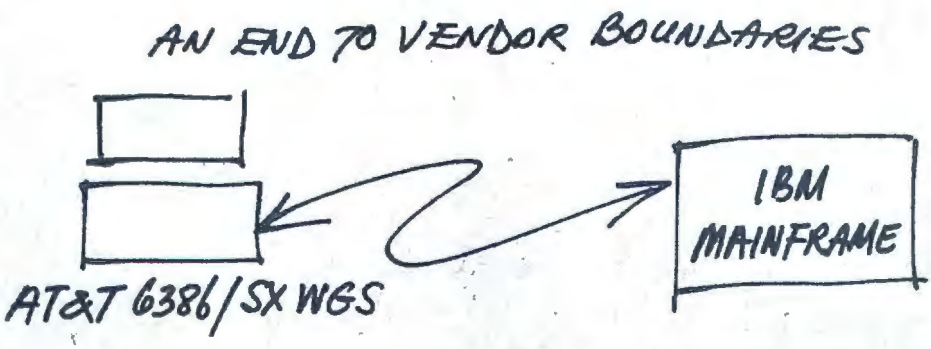

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We offer a solution: Four new desktop systems and servers designed by AT&T to *thrive* as networked systems.

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Catch on to caching, fix a file name that contains a space, prolong the life of your PC's hard disk, get a second opinion on a disagreeable diagnosis, and speed up First Publisher printing.

Karl Koessel

Catch as Cache Can

Q. *No one in my computer science class can clearly explain to me what a cache is. I know it's supposed to speed up my computer, but just how does it work?*
Wilfredo Reyes P.
Miami, Florida

A. Two kinds of caching are available for today's PCs: *memory* caching and *disk* caching. Although both serve as repositories for data, they serve different purposes and are often confused. Furthermore, caching is implemented differently depending on the manufacturer, so consider the following only a general description.

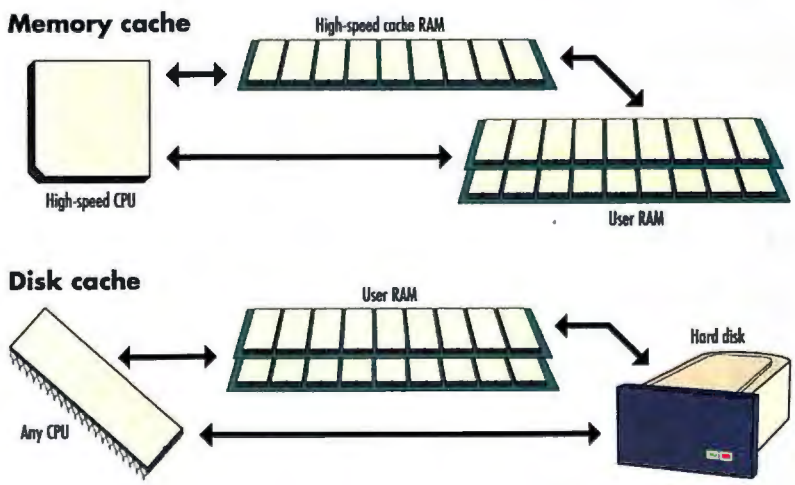
Memory caching does not in and of itself speed up a system. It is often mistakenly thought to do so because it's useful only in today's very fast PCs, in which the speed of the CPU outstrips the speed of typical memory chips.

Memory caching enables manufacturers to produce affordable high-speed systems. Such systems could use fast RAM for system memory, obviating the need for a memory cache, but the more expensive memory chips would push the system price too high to be competitive.

Memory caching cannot be added to a system; it must be designed in from the beginning. A memory cache consists of a cache controller and a small amount—typically 32K to 128K—of high-speed memory. It sits between the CPU and addressable system RAM.

When the CPU requests data from system memory, the cache controller intervenes, looking into its cache RAM to see if the requested block of data is there. If so, the data is passed quickly to the CPU byte by byte. If not, the CPU spins its wheels while it waits for slower system RAM to provide the data. This block of data passes through the cache, which keeps a copy of the data.

The cache's high-speed mem-
(continues)



Memory caching is designed into a system and enables manufacturers to use inexpensive RAM with high-speed CPUs. Disk caching relies on standard system RAM and so can be added to any system to speed disk chores.

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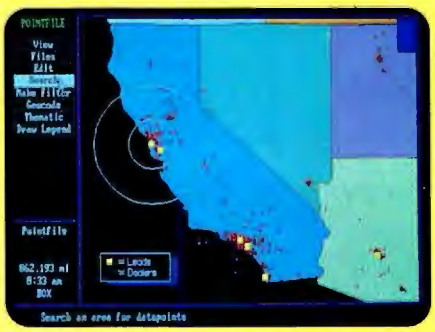

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ory allows the CPU to write data to cache memory at full speed and quickly return to other tasks. The cache controller then copies the data to its intended destinations at the slower system RAM rate.

Disk caching can be added to any system, either by installing a caching disk controller or by using a memory-resident program that employs conventional, expanded, or extended RAM. Accessing data from even the fastest disk drive is far slower than getting it from memory. So when the CPU requests disk data, the disk cache program (or controller) first checks the cache. If the requested data is in the cache, it's passed quickly to the CPU. If not, the cache program or controller reads the requested data from the disk into the cache. It also reads a few sectors of nearby data, anticipating that the CPU may soon request it as well. The cache then passes on a copy of the requested data to the CPU. When the cache is full and does not contain requested data, newly read data from the disk usually replaces a portion of cached data.

Disk caching can be fine-tuned by the user. Some disk caches let you specify that the cache should not replace certain data (for example, a program overlay) or that certain data should not be cached (downloaded fonts, for example). The size of the cache also affects system performance: If it's too large, you'll spend more time searching the cache than it would take to get the data from disk; if it's too small, you'll waste time looking in the cache for data that's never there.

Spaced Out

Q. *I inadvertently used a space in naming a file. Application programs cannot open the file, and even DOS, it seems, cannot rename or delete it even though it's listed when I execute DIR. I'm sure there's a simple trick to solve this dilemma, but I don't know what it is. Please help!*

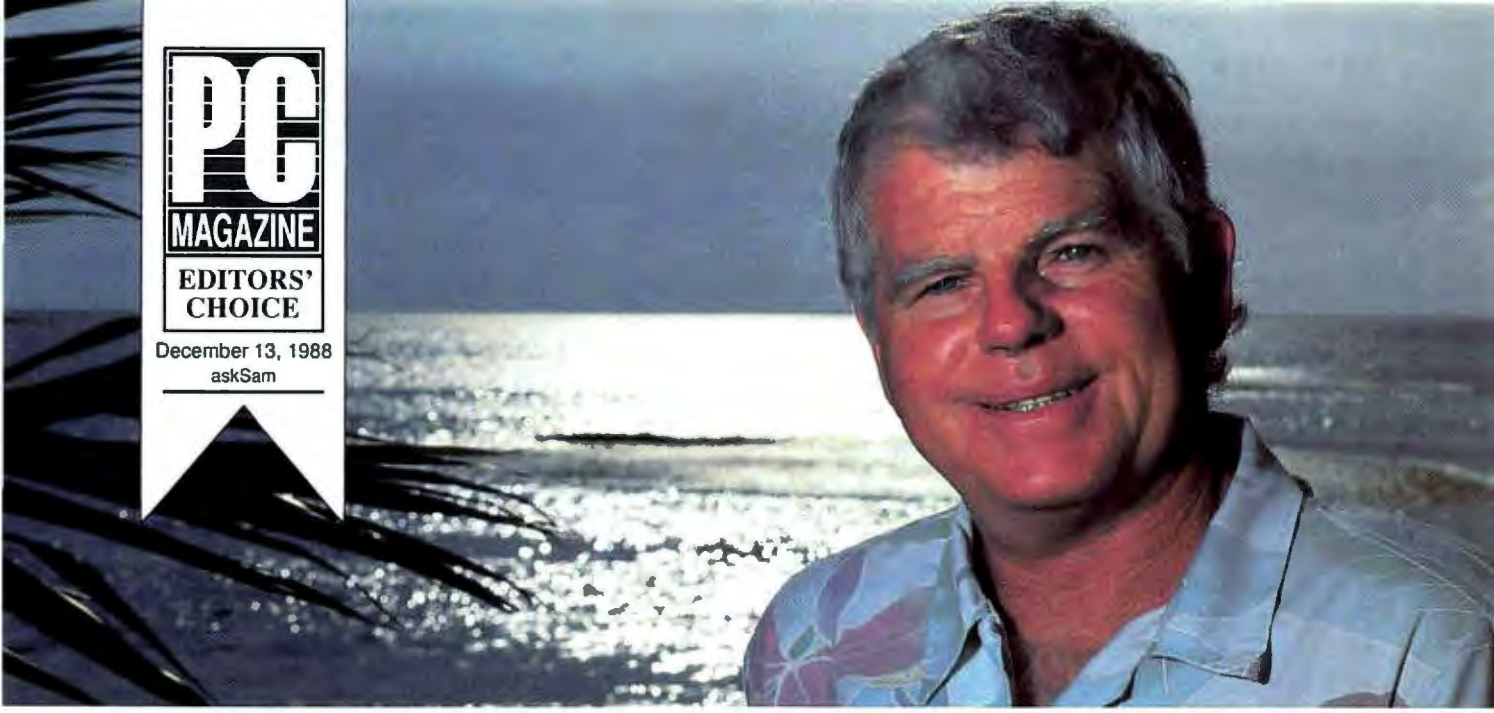
David Weber
Rochester, New York

A. Let's assume that your file is named MY FILE.DOC (with a space embedded between the *Y* and the *F*) and that it's in the current directory of the default drive. At the DOS prompt, type the command **dir my?file.doc** and press **<Enter>** to verify that MY FILE.DOC is the first or only file name that matches the mask my?file.doc. If any other file names are listed before MY FILE.DOC, rename those files using a different file name extension. Then type **ren** and press **<F3>** to display 'ren my?file.doc'. Next, type a space and an unused file name and press **<Enter>**. That's all there is to it.

Parking Providence

Q. *I run my system from a menu generated by a batch file. Whenever I exit a program selected from the menu, control returns to the batch-file menu and awaits the selection of another program. Because I was worried that I might jar my PC and damage the hard disk, I added to the batch file a command that parks the hard disk whenever I exit a program.*

It is my understanding that whenever the PC is on, the hard (continues)



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Circle 20 on reader service card

disk is spinning—and wearing out. I've assumed that parking the hard disk to keep it stationary lengthens its life. Am I right?

Doug Russell
Clearwater, Florida

A. Parking moves the hard disk's read/write heads so they aren't hovering over recorded data. While parking the heads guards against data loss due to a hard disk crash (in which a read/write head falls into the spinning disk, gouging the surface and destroying the head), parking does not stop the disk from turning at its appointed 3600 rpm. Furthermore, the next command read from the hard disk (for example, your batch file's "user input" command) unparks the heads. Your hard disk's heads probably never remain parked for more than half a second. To solve this problem, put the "user input" command in a RAM disk and have the batch file call it from there.

There are two additional measures you can take to lengthen the hard disk's life. Consolidating fragmented files with a disk-optimizing program minimizes the stressful jostling of the actuator that positions the read/write heads. So does using the memory-resident utility FASTOPEN (available in DOS 3.3 and later versions). FASTOPEN stores in memory the location of directories and recently opened files so that DOS knows where to move the heads to reread a file without first having to move the heads and reread the directory.

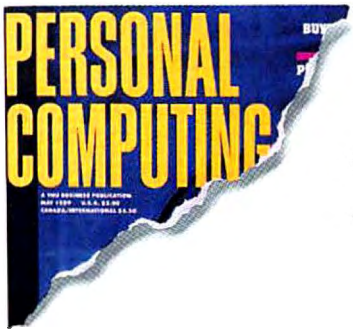
The second tip is a bit controversial. Many users believe that turning the disk on and off is more damaging to the hard disk's ball bearings than the wear caused by constant spinning. I, for one, leave my system on all the time (a screen-blanking program prevents burning in an image).

One thing is certain: No matter how long your hard disk lives, it will eventually die. Back it up religiously.

Fading Memory

Q. *My IBM PC occasionally blanks the screen and displays the message 'Parity Check 1'. At*

"this is a prime example of what a PC-based FAX package ought to be"
—April, 1989



"it worked flawlessly"
—March, 1989

"the Complete FAX/9600—best in its class"
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Circle 325 on reader service card

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that point, the system no longer functions; I must turn the power off before I can reboot the PC, and any work I haven't saved is lost. I can't find any pattern for this problem's occurrence, nor can I find an explanation for this error in any book. Do you know what's happening?

Also, when I use the diagnostics disk to test my PC's Color/Graphics Adapter and its serial port (which connects my modem), I get the error numbers '516' and '1101'. What do the error numbers mean, and how do I correct the problem?

Mary Frances Wilson
Camden, Arkansas

A. A 'Parity Check 1' error message indicates a problem with system board memory (a '2' would mean there is a problem with memory on an expansion board in one of the PC's slots). To help detect internal memory failures, the PC has a ninth "parity" bit for each 8-bit byte of memory. Each parity bit is set on or off depending on whether its associated byte has an even or odd number of "on" bits, respectively. If, when checked, a parity bit setting is incorrect for its associated byte's number of "on" bits, the validity of that byte is questionable; the system then stops and displays a parity check error message.

The fact that your computer works most of the time (after it's passed its self-diagnostic power-on memory test) and that it passes the diagnostics disk's memory test suggests you may not have a defective memory chip after all. Since the error occurs after you've been using the computer for a while, heat may be a factor.

My guess is that some memory chip isn't firmly seated in its socket, and when the PC heats up, an electrical connection is lost or weakened. If you feel comfortable working inside your PC, turn it off, open it up, and ground yourself to discharge any static electricity, which can damage PC components. (If the PC, though off, is still plugged into a grounded socket, you can ground yourself by touching the power supply's casing.) Then, as you

(continues)

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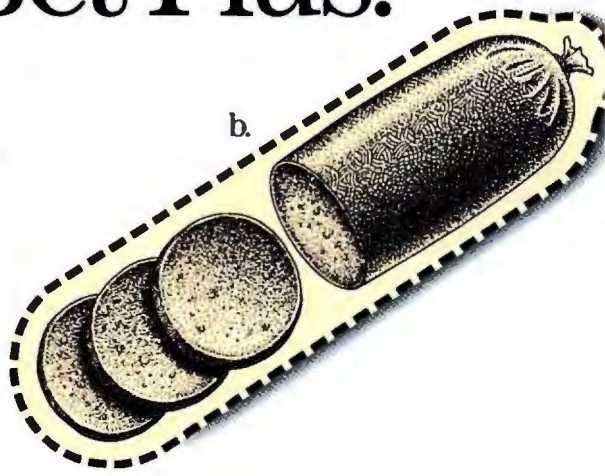
Circle 59 on reader service card

Prove to your boss why you need an HP ScanJet Plus.

a.

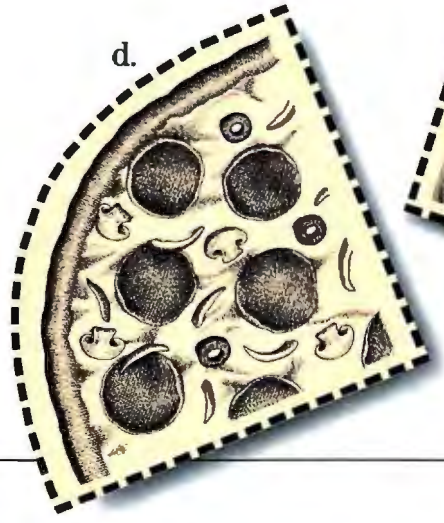
b.



Actual Scanned Images.

c.

d.



*U.S. suggested list price. ©1989 Hewlett-Packard Company PE12918

1. Cut out the photo and illustrations on the left.
2. Put that dull, wordy document down in front of the boss.
3. For the clincher, lay the graphic elements in place.

Presto! The page comes to life, almost as easily as if you'd scanned the images in with an HP ScanJet Plus scanner. Which you can do for just $2,190.* (In fact, all those images came fresh from our scanner.)

This is a small, but tasty, example of how much you can spice up your communications. With photos, illustrations, and, thanks to OCR, text. Its 8-bit power provides 256 levels of gray and lets you scale images from 4 to 200% in 1% increments.

CHEESE LOUISE PIZZA COMPANY

We need to do something to liven up Cheese Louise Pizza sales. People love our pizzas, once they sink their teeth into them. But we're having trouble getting more customers into the parlors.

What's the problem here? We have fresh, natural ingredients. Friendly people. Authentic Sicilian decor, with

a.

Have we got some winners here?

Mount Etna erupting every hour on the hour. Our salads

b.

flyers, the best deal in town. But so far, only Frankie's grandmother has come in to get ten for the price of five.

Maybe the flyers are too dull. Maybe the ingredients should jump right off the page and say: Hey, take a bite! But how do we do that? Any ideas?

The best salami. No baloney!

c.

Joe Louise wants your knockout ideas.

have Frankie's great-grandmother's secret dressing, and people keep telling us they've never tasted anything like it.

Now, for the past two months, we've been handing out 2-for-1

d.

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HEWLETT PACKARD

Circle 88 on reader service card

avoid touching the chip's pins, the back of the adapter cards, and any other electrical circuitry, press each system board memory chip into its socket (the memory chips are next to the speaker, arrayed in four rows of nine chips each). While the system's open, take the time to blow out (don't vacuum) the dust that's accumulated inside.

The diagnostic error number '516' means there's a problem with the PC's character set or that you answered no when, after the character set had been displayed, diagnostics asked 'Is the screen correct?' I'll bet on the latter because you wouldn't still be using your PC if you couldn't read the characters. Error number '1101' means there was a problem testing the serial port. I'm guessing that you didn't use the "wrap plug" that's needed to test the serial port, although your serial port must be fine because you use your modem without incident.

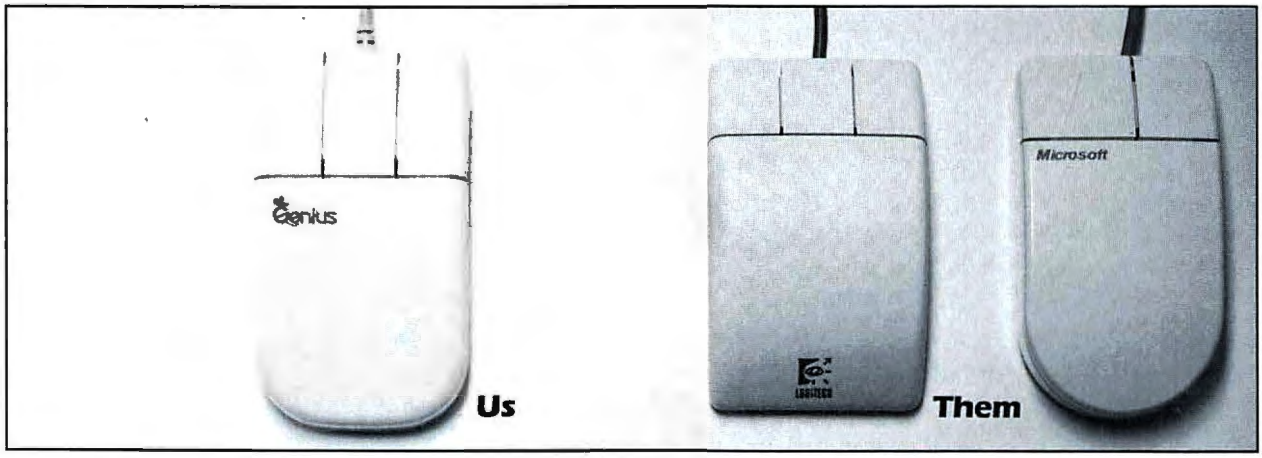
Printing From PFS: First Publisher

Two readers have suggestions regarding how to speed up printing *PFS: First Publisher* documents (see "Buffers and Spoolers Demystified," *The Help Screen*, *PCW*, June 1989). Both methods begin by having the user "print" the document to a file by entering a drive, path, and file name in the print dialog box's destination field (before "printing," be sure you have selected the proper printer driver). At that point you have two choices.

You can copy the print file to the printer using the command COPY *d:\path\filename.ext* LPT1:/B. The /B, for binary copy, must be included. Or you can use the DOS command PRINT *d:\path\filename.ext* LPT1:/B to print the document in the background, allowing you to continue to use your PC for other purposes. My thanks to Rex A. Wilkerson of Lithonia, Georgia, and Gary Burkhardt of Coldwater, Michigan.

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

IT'S US VERSUS THEM



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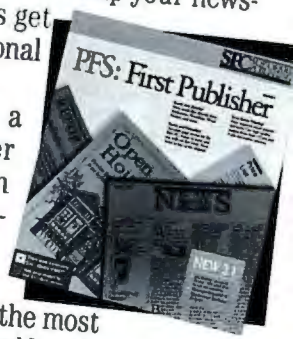

It starts with a limited time offer of free top-notch fonts for laser printers. And gives you new features for compatibility with the most popular software and hardware, including WordPerfect™ 5.0 and VGA monitors. Of course, you'll find that help screens, pull-down menus and preformatted templates keep things easy. And with graphic rotation, complex column formats and text wraparounds, you'll have superb design flexibility for more creativity.

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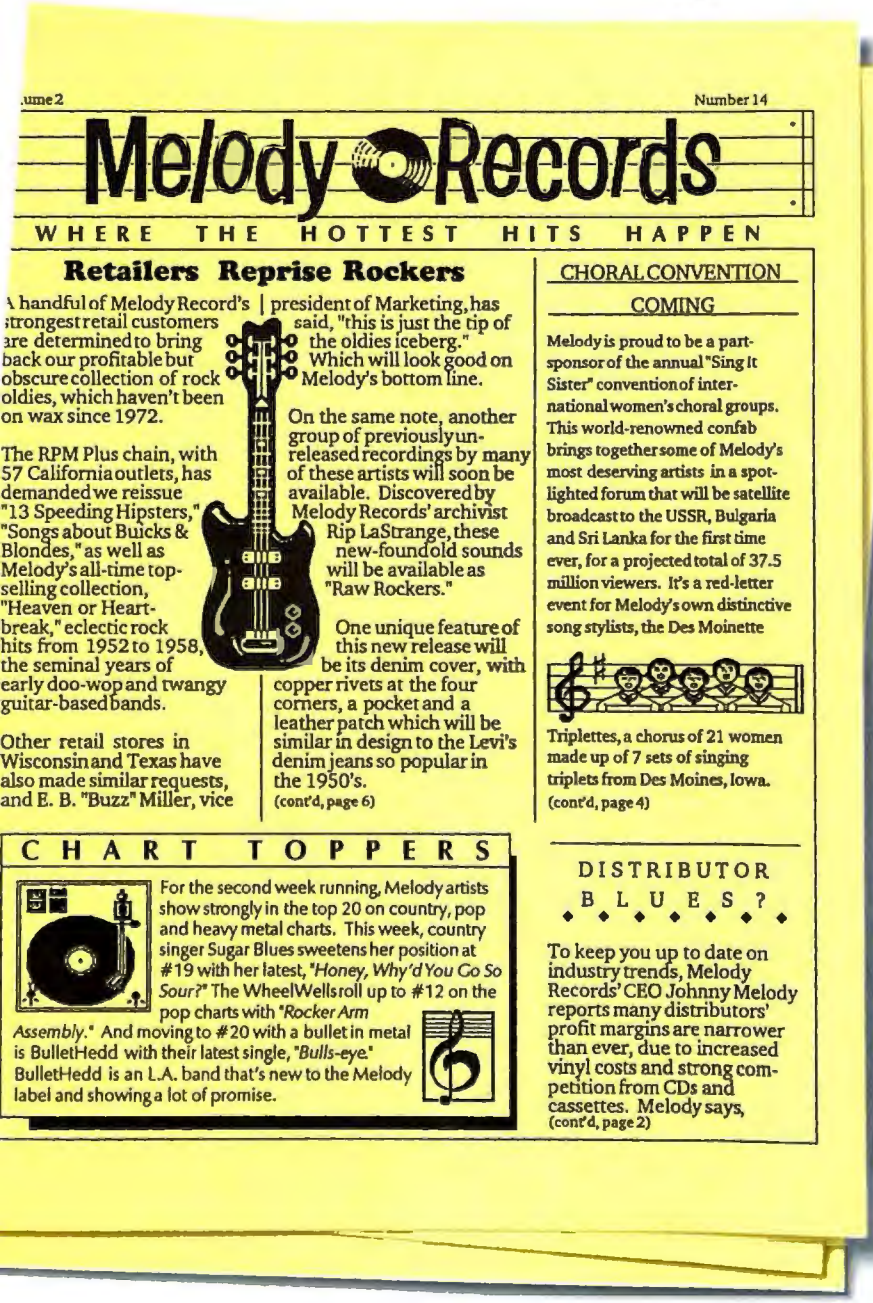

...ume 2 Number 14

Melody Records

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A handful of Melody Record's strongest retail customers are determined to bring back our profitable but obscure collection of rock oldies, which haven't been on wax since 1972.

The RPM Plus chain, with 57 California outlets, has demanded we reissue "13 Speeding Hipsters," "Songs about Buicks & Blondes," as well as Melody's all-time top-selling collection, "Heaven or Heartbreak," eclectic rock hits from 1952 to 1958, the seminal years of early doo-wop and twangy guitar-based bands.

Other retail stores in Wisconsin and Texas have also made similar requests, and E. B. "Buzz" Miller, vice president of Marketing, has said, "this is just the tip of the oldies iceberg." Which will look good on Melody's bottom line.

On the same note, another group of previously unreleased recordings by many of these artists will soon be available. Discovered by Melody Records' archivist Rip LaStrange, these new-found old sounds will be available as "Raw Rockers."

One unique feature of this new release will be its denim cover, with copper rivets at the four corners, a pocket and a leather patch which will be similar in design to the Levi's denim jeans so popular in the 1950's.

(cont'd, page 6)

CHORAL CONVENTION COMING

Melody is proud to be a part-sponsor of the annual "Sing It Sister" convention of international women's choral groups. This world-renowned confab brings together some of Melody's most deserving artists in a spot-lighted forum that will be satellite broadcast to the USSR, Bulgaria and Sri Lanka for the first time ever, for a projected total of 37.5 million viewers. It's a red-letter event for Melody's own distinctive song stylists, the Des Moinette

Triplettes, a chorus of 21 women made up of 7 sets of singing triplets from Des Moines, Iowa.

(cont'd, page 4)

CHART TOPPERS

For the second week running, Melody artists show strongly in the top 20 on country, pop and heavy metal charts. This week, country singer Sugar Blues sweetens her position at #19 with her latest, *"Honey, Why'd You Go So Sour?"* The WheelWells roll up to #12 on the pop charts with *"Rocker Arm Assembly."* And moving to #20 with a bullet in metal is BulletHedd with their latest single, *"Bulls-eye."* BulletHedd is an L.A. band that's new to the Melody label and showing a lot of promise.

DISTRIBUTOR B L U E S ?

To keep you up to date on industry trends, Melody Records' CEO Johnny Melody reports many distributors' profit margins are narrower than ever, due to increased vinyl costs and strong competition from CDs and cassettes. Melody says,

(cont'd, page 2)

FREE NOTES ON TYPE DESIGN

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Circle 183 on reader service card

WINDOWS JOURNAL

Firsthand dispatches from the Windows front

Hewlett-Packard's latest, NewWave, promises a new look in interface design and a new definition of ease of use.

Stewart Alsop

One reason I get the opportunity to complain so much about *Windows* is the nature of the relationship between Microsoft and IBM. IBM struggles to understand new ways of organizing and designing computing systems while still providing reliable service to its customers. Microsoft does its best to figure out how to design graphic interfaces and new operating systems while still trying to satisfy IBM. Meanwhile, the pace of development work on *Windows* suffers as both companies try to find a compromise that meets their common interest.

ANTHONY RUSSO

One advantage Apple has with the Macintosh is that it neither has to sell its software to an IBM nor buy it from a Microsoft. Instead it can focus exclusively on issues that it believes are important to its customers and establish a single set of priorities for its developers. Ironically, Hewlett-Packard has a similar advantage. (The irony is that Apple is suing Hewlett-Packard for infringing on Apple's interface design.) True, Hewlett-Packard licenses the underlying *Windows* software from Microsoft. But it has built *NewWave* in such a way that it doesn't have to worry too much about how Microsoft changes *Windows*. This lets it focus on making *NewWave* a solid, state-of-the-art system for users.

And that is exactly what it has done. In the first customer version of *NewWave*, released this past September, Hewlett-Packard took the first tangible step forward in user interface design since the Macintosh was delivered in 1984. Actually, Hewlett-Packard has taken two steps forward, in the form of objects and agents.

Object-Management Oomph

The first innovation in *NewWave* is its object-management facility (fondly known in Santa Clara, California, home of the *NewWave* development team, as the OMF). The OMF is what makes *NewWave* an object-oriented environment. Ask half a dozen people what *object oriented* means, and you'll get a dozen answers, all wrong. Yet the OMF provides a significant benefit to the user.

The underlying idea is that the system takes a higher level of responsibility than ever before for keeping track of what's going on inside the computer, thereby simplifying the user's job and letting him or her focus on work. Within *NewWave*, everything—software, data, tasks—is defined as an object with a certain relationship to other objects. The OMF manages these relationships. Instead of having to remember that you stored *WordPerfect* and its related files in the WDPFT directory and that you made several directories for different kinds of text files—such as letters and reports—*NewWave* hides the software and the directory system so all you need to remember is that you have documents, which you can open, or print, or send.

Because you deal only with objects and not with programs and files, you can work in a way that is more like the way you work without a computer. The transition is seamless, and that's the essential benefit of *NewWave*.

Agents: Beyond Super Macros

The second innovation in *NewWave* is what Hewlett-Packard calls agents. Fundamentally, agents are a way to record keystrokes so that the user can automate a series of repetitive

(continues)

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Release 3's 3D design opens up all kinds of new possibilities to improve the efficiency of your work.

In business, more than ever before, power is a function of information. And nothing can help you exploit the power of data like the new Lotus® 1-2-3®: Release 3 and Release 2.2.

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In fact, *InfoWorld* recently was moved to say "...with this new release, 1-2-3 has instantly regained its long-standing position as the sheet to beat."[1]

Much of the credit belongs to Release 3's revolutionary, true three dimensional design, which lets you view and work with up to 256 worksheets and files simultaneously. And its sophisticated file linking capabilities are unparalleled, because you can link worksheets and files in memory, on disk or on a network.

But the advantages of 3D aren't limited to spreadsheets. It also allows you to use the new relational data management capabilities to analyze information from multiple data tables. Release 3's database is simply the most powerful available in a spreadsheet.

[1]*InfoWorld* July 17, 1989. • In Canada call 1-800-668-1509. Ask for Department 24. © 1989 Lotus Development Corporation. Lotus and 1-2-3 are registered trademarks of Lotus Development
Hard disk and 1 Mb system memory required in DOS, 3 Mb in OS/2. Lotus certified compatible PC AT with 80286/80386

behind a desk has power on top of it.

You can even bring data from external databases, like dBase III,® directly into your spreadsheet. Without ever leaving 1-2-3.

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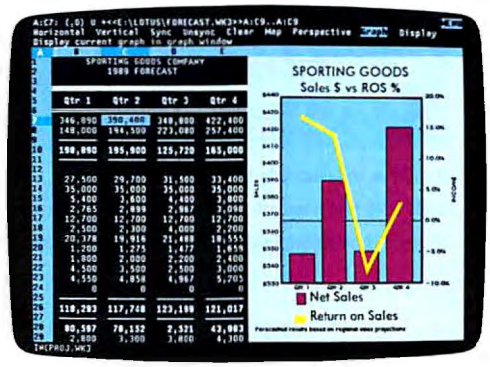

Release 3's HotView graph window dynamically links your worksheet and related graph.

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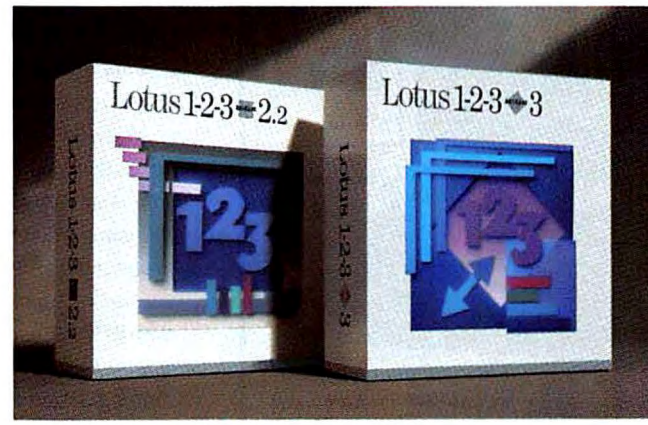

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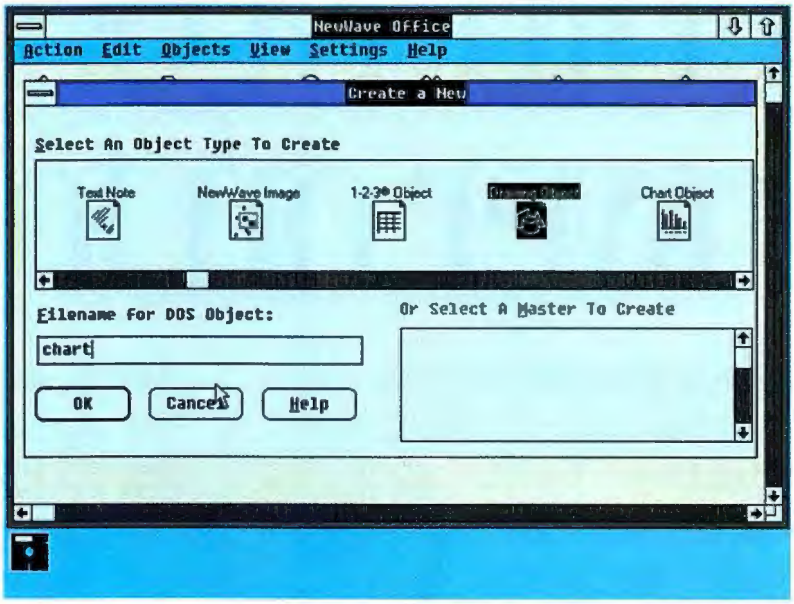

NewWave tremendously expands Windows' power with compound documents. For example, one file could hold text from one program, bar charts from another, and spreadsheet data from a third. Each element is an object linked to its source program and can be edited interactively.

tasks. At first, it's easy to dismiss this capability as a better way of programming the keyboard, a kind of super macro editor. But there's more to agents than meets the eye. Because the system is designed as an object-oriented environment with well-defined relationships between objects, agents can automate tasks that span many different applications.

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Stewart Alsop is editor and publisher of P.C. Letter *and a contributing editor for* PC World.

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"I've got to get
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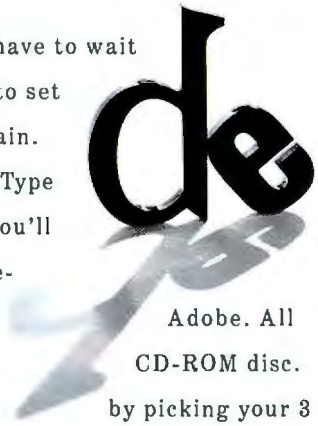

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Edited by ERIC BENDER

Who Sets PostScript Standards?

Microsoft, IBM Writing PostScript Alternative

Building OS/2 "Imaging Model"

Adobe president Charles Geschke says PostScript is the only imaging model you'll ever need for display and printer.

JOHN HARDING

At Adobe Systems, PostScript's most remarkable output is cash. Embodied in more than half a million laser printers, the page description language and its spin-offs are logging more than $100 million in sales annually, and more than a quarter of that goes straight into the bank account of its Mountain View, California, creator.

Small wonder that three formidable groups want slices of that pie: PostScript clone hardware is arriving; Adobe's closest ally, Apple, has filed for divorce; and the Microsoft/IBM team is prepping Presentation Manager for a coup.

Like Apple, which is writing an alternative to PostScript, Microsoft and IBM are drafting a blueprint for fancy graphics-intensive applications and high-quality output. The goal: to give users fast, easy, and sophisticated ways to manipulate text and graphics on screen and printer. The means: a "single imaging model" that displays fonts and graphics and prints them *exactly* the same way, offering true WYSIWYG for the first time.

No, the Macintosh doesn't do that. Steve Jobs' famous Next machine comes closest; it employs Display PostScript (Adobe's PostScript-based imaging model) so a file drives the screen and the printer in identical fashion. "Wherever an image goes, it's a PostScript image," explains Adobe president Charles Geschke. "That reduces the risk of unpleasant surprises." That approach also permits Next to offer a laser printer sans controller.

"A common imaging model is a key factor for future operating platforms," agrees Peter Neupert, Microsoft's senior general manager of OS/2. "We want to make Presentation Manager the richest imaging model." Microsoft need not invent or even own every piece of the technology, he says, "but it's important that we can control the direction."

"For Microsoft, PostScript and Display PostScript are a real threat—almost like somebody else going into operating systems," comments Rob Friedman, president of Bitstream in Cambridge, Massachusetts.

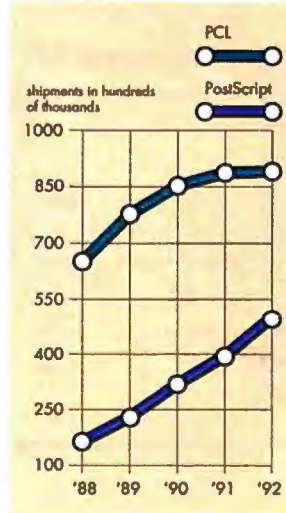
The next step for PM's imaging model (dubbed Graphical Programming Interface, or GPI) is state-of-the-art scalable text fonts. Microsoft and IBM are studying offerings from Bitstream, Compugraphic, and others. Outsiders expect scalable fonts to appear, at the earliest, in OS/2 2.0 in mid-1990.

Microsoft and IBM are encouraging manufacturers to build GPI printers, although GPI lacks suitable printer controls. So Microsoft, QMS, and Epson are taking different slants on GPI devices—helping to ensure customer confusion, comments Jim Upham, director for electronic printers service at Dataquest in San Jose.

PM and Apple's system software will still talk to PostScript printers, says Paul Grayson, president of Micrografx in Richardson, Texas. "Both environments always will provide a generic PostScript driver, and, over time, we would expect it to offer very high quality."

Naturally, Microsoft must work with Adobe to make all this happen. That cooperation is just *(see Microsoft, IBM, p. 70)*

PostScript's Progress



U.S. sales of PostScript-compatible page printers will show steady growth, predicts CAP International, while sales of LaserJets and other printers tailored for Hewlett-Packard's PCL language will plateau in the early 1990s.

Microsoft, IBM

(continued from p. 69)

one thread in a Byzantine web of PostScript alliances between computer vendors, system software suppliers, printer manufacturers, font makers, and application houses.

But only PostScript files work without conversion on diverse personal computers, workstations, printers, and typesetting equipment. "People are accustomed to the connectivity PostScript offers, which will be lost if compatibility is lost," Geschke maintains. Neupert downplays this concern: "PostScript is a vehicle for connectivity, but probably not the best vehicle." But with Microsoft, Apple, and others tooling up, a better vehicle won't arrive soon.

The ability to jump from PC to Mac to printer leaves PostScript "more of a standard than ever," declares Rob Auster, group director for electronic printers at CAP International in Norwood, Massachusetts. "Billions of dollars are invested in PostScript," he points out. "The ball is rolling, and it's so big and so fast that you'd have to invest a tremendous amount of marketing effort to stop it."

But is it still Adobe's ball? Adobe shrewdly emphasizes its standards role, pointing to the difficulties that PostScript clones suffer with Adobe fonts (the clones work fine with fonts from other vendors). Even so, Auster insists PostScript's endless upgrades make Adobe "incompatible with itself."

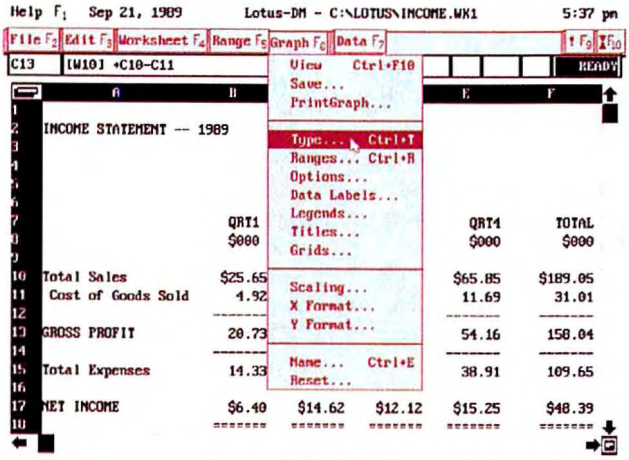
"We're at least as compatible with the PostScript standard as any Adobe [licensee]," claims Bob Downs, vice president for peripherals at Phoenix Technologies in Norwood, Massachusetts. Phoenix, one of a handful of credible PostScript-compatible suppliers, ran 7000 test cases. Downs says the standard is not Adobe's latest version but rather the millions of existing PostScript customer files, which any offering must accept.

Heightened competition already pays off for customers: Adobe has softened its licensing terms, and the clone makers charge still less, slowly helping to depress PostScript printer costs.

But Geschke says that Adobe, which counts more than 30 licensees, won't change its course. The major players in type fonts support PostScript. Adobe is rapidly expanding its font libraries. Display PostScript has attracted broad backing in the UNIX world. And Geschke predicts that technical progress will leave PostScript with the final word. Among advances, Adobe is expected to mute the most common user criticism early next year with a big boost in throughput. —*E. B.*

DeskMate Packages Arrive

Tandy's Interface Gains Backers



Tandy's DeskMate environment is attracting big names.

The first *1-2-3* modified for a graphic user interface will arrive this month or next. But instead of *Windows* or OS/2 Presentation Manager, it's tailored for Tandy's *DeskMate*.

Tandy has shipped well over a million copies of its low-end graphic environment and expects 50 *DeskMate* titles by year-end. *Lotus Spreadsheet for DeskMate* heads the list of recent endorsees, which also includes Symantec's *Q&A Write*.

DeskMate packages can run on 8088-based PCs with 640K of memory or less, and they aim straight at Tandy's core market of cost-sensitive home and small-business users. "This is the highest-growth segment in our market," notes Lotus president Jim Manzi. Symantec president Gordon Eubanks adds that these customers want *DeskMate*'s ease of use and consistency between applications.

Developing *DeskMate* applications "is not that difficult," says Jill Groginsky, product manager for *First Publisher* at Software Publishing. "We did the whole project, start to finish, in six months."

With 7000 outlets, "Tandy is the leading retailer of computers in this country," Eubanks points out. But Tandy's distribution system appears to have two drawbacks. First, Radio Shack stores have never pushed software effectively. "There's usually one person in the store who knows software," says Groginsky. "If he or she is on the floor, they sell software. If not, they sell hardware." Groginsky and Eubanks agree that Tandy is making progress here, but only a handful of *DeskMate* packages can expect attention from Radio Shack staff. And second, while a few independent resellers offer *DeskMate*, sales have been negligible to date. —*E. B.*

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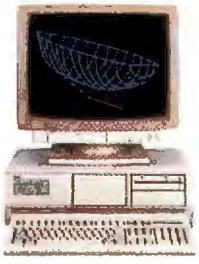

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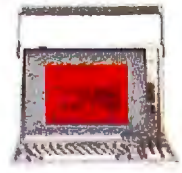

PowerMate Portable SX

As you can see, NEC has certainly done a lot with these machines (you might expect that from a $24 billion world leader in computers and communications). But it doesn't compare to what you'll do with them.

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Ashton-Tate Staggers

Financial Reserves Remain Strong

President Ed Esber ponders Ashton-Tate's challenge from the plaza where he announced a 250-worker layoff.

DARRYL ESTRINE

Battered by criticism, and bleeding red ink, Ashton-Tate is lurching through the second half of 1989. Stung by the market's rejection of *dBASE IV*, the company has been forced to split its data base flagship into two versions—one that simply fixes version 1.0 bugs and one that exploits extended memory and connects to *SQL Server*.

This isn't the first test of Ashton-Tate—nor of company chair Ed Esber, who was hired five years ago under similar circumstances. But it is unquestionably the darkest hour for both.

Last summer, soon after Ashton-Tate posted a $19.8 million second-quarter loss that prompted the resignation of president Luther Nussbaum, Esber revealed yet another delay in attempts to resuscitate *dBASE IV*. He couldn't offer ship dates for version 1.1; beta testers say the standard release could ship by year-end, with the *SQL Server* edition following three months later. But Esber allowed that the third-quarter loss will deepen.

After a grueling early-morning session with press and analysts on August 15, Esber gathered workers in the central courtyard of the company's Torrance, California, headquarters. Visibly shaken, he told them that more than 250 of the company's 1700-plus work force would be laid off. He describes the experience as "the hardest thing I've ever had to do."

The announcement was the first intimation of mortality for a company that has sometimes stumbled but in general has dominated its market and maintained remarkable growth in revenues and profits.

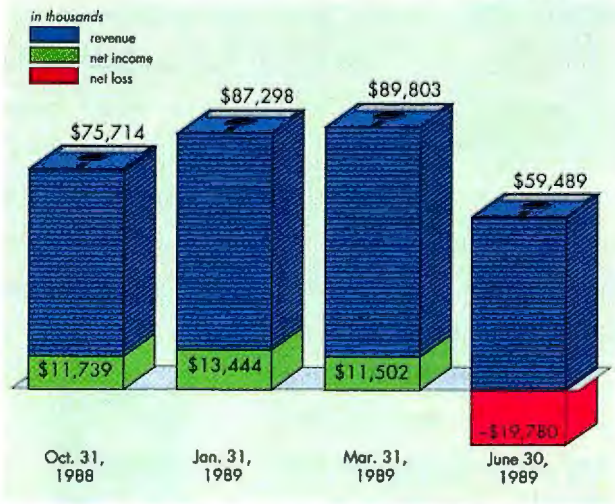
During the past year, Esber has gotten nothing but heat over what he admits was the premature shipment of *dBASE IV* in October 1988. Before that he attracted just as much criticism for *not* shipping the product. The continuing miscues have severely undercut the company's credibility and thrown a cloud over the dBASE language standard. The uncertainty has stalled many corporate development projects and angered add-on developers and consultants who rely on the *dBASE* aftermarket.

Many have deserted the language for one of the so-called *dBASE* add-ons. "I haven't been able to earn a living with *dBASE* for a number of years," reports Tom Rettig, principal in Tom Rettig Associates of Beverly Hills, California, and a member of Ashton-Tate's dBASE Language Advisory Board. "Serious developers must have a copy of *dBASE*, but they use [Fox Software's] *FoxBase* or [Nantucket's] *Clipper* to do their development."

Pat Adams, owner of New York City's DB Unlimited and a founding member of the International Dbase Users Group (I-DBUG), agrees. But she adds that this trend has been nearly invisible; her corporate end-users usually don't know which tool she used to build their applications. Those companies won't desert the dBASE standard, she says. "They have too much invested in the training of thousands of end users, custom soft-

(see Ashton-Tate, p. 74)

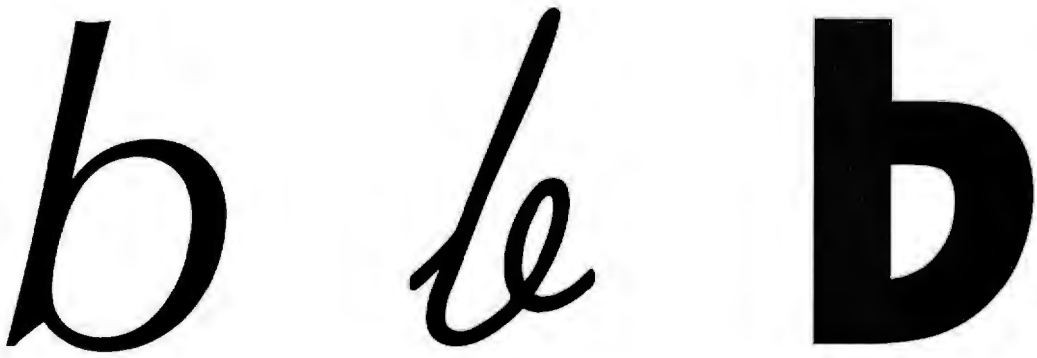
Ashton-Tate Hit With Red Ink



Unable to ship a working version of dBASE IV following its October 1988 debut, Ashton-Tate suffered a loss in the second quarter ended June 30, and worse is expected for the third quarter.

Whether you write Books, Bible studies, or Baseball cards, your face will match your ideas.

B is for Battle or Ballet or Bargain-hunting. Type can be Bubbly or Belligerent, depending on your mood.



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B is for Bauble and Bengal tigers and Basketball. The right face supports your concept and strengthens your communications.

The typefaces from left to right: Optima oblique, Kaufmann, Revue, ITC American Typewriter medium, Brush Script, Bodoni bold, Palatino roman, Cooper black and ITC New Baskerville bold italic.

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Ashton-Tate

(continued from p. 72)

ware applications, and live .DBF files to move."

But Ashton-Tate's dealings with developers have never been worse. Unable to deliver on last year's promises of more frequent updates and a better working relationship, Esber indefinitely postponed this year's developers' conference. He isn't sure when the compiler he unveiled last year will ship.

But the focus of developer anger is *dBASE IV*. Esber acknowledges that it was a mistake to wrap all user-requested features into a single product for a 640K machine. The standard edition of *1.1* will be a networkable product that will run in 640K of memory but won't talk to a dedicated data base server. The second release will include *SQL Server* hooks by using Rational Systems' DOS extender technology and will require a 286 machine or better. Anyone buying *dBASE IV 1.0* can step up to either upgrade for free or get both for a nominal fee.

If the strategy works, all will be forgiven and forgotten, says Rettig, because consultants and corporate developers alike would like nothing better than a strong standard. But, cautions Adams, "success or failure depends upon their getting out a good, solid product."

Ashton-Tate has the time to get it right, adds Bahar Gidwani, vice president at Kidder, Peabody & Co. He notes that the firm is sitting on a $90 million cushion—enough to allow it to lose money at its current rate for six quarters and still have cash on the balance sheet. "Their position is actually quite good," Gidwani observes. "They have a dominant share of a large market, a strong balance sheet, and enough cash to weather any problems. There is virtually no chance of their going bankrupt."

While a hostile takeover can't be ruled out, Wall Street looks favorably on Esber's assumption of day-to-day control and his cost-cutting measures. Moreover, Ashton-Tate still faces no serious contenders for its data base crown; its trials are the equivalent of heavyweight champion Mike Tyson's beating himself up. "The good news," says David Bayer, a vice president with Montgomery Securities, "is that the solution to [Ashton-Tate's] problems is in its own hands." *—Mike Hogan*

Private Eye Adds a New Focus

Tiny Display Is Equivalent to a 12-Inch Screen

TONY CARLSON

The Private Eye provides computer users on the go with the equivalent of a 12-inch screen that fits in a pocket.

Imagine a high-quality PC screen so small you can easily slip it into your vest pocket. Allen Becker imagined one, and then came up with the Private Eye—a tiny "virtual display" that provides the equivalent of a 12-inch screen in a package about half the size of a cigarette pack and weighs a tad over 2 ounces.

You hold it up to your eye, and a screen slightly smaller than a postage stamp shows a clear, bright red image. While the Private Eye isn't meant for prolonged work, its image is very readable—with or without glasses. You can focus the image so it appears to be within 9 inches or on the horizon. You can mount the device on a headset so it sits slightly below your eye and then use it like a bifocal.

Inside the Private Eye, light from an LED bar travels through a magnifying lens, hits a vibrating mirror, and is reflected out to the viewer. This ingenious scheme gives 720 by 268 resolution; VGA resolution will be next. The device will cost manufacturers as little as $100 apiece (in volume) early next year. Becker's start-up, Reflection Technology of Waltham, Massachusetts, shoots for a five-year goal of a full-color, 1000 by 1000 display—"a high-definition TV in a matchbox."

The Private Eye will be used with diagnostic equipment, video games, and paperless fax machines. It's ideal for pint-size PCs because it doesn't depend on ambient light and draws less than half a watt. But while the concept is intriguing, the Private Eye may not fit in everywhere. Observes Mark Eppley, chair of Traveling Software, "Can you picture a business executive sitting in business class on an international flight, wearing a headband with a Private Eye hanging from it?" *—E. B.* ●

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Tell ya what, Jack, run it up the flagpole and see who salutes.
What?
You heard me; give 'em the whole ball of wax.
What??
Do I hafta spell it out? Sell 'em the whistle off the factory. You know, give 'em a set of left-handed screw drivers
What???
Listen, Jack, don't mess this up. I want this deal tighter than a two-dollar face-lift.
OH! You mean tighter than an eight-day week!
No, not really, Jack. More like tighter than bark on a tree.
Ohhh! I got ya. I got ya. Yeh, yeh, now I got ya!
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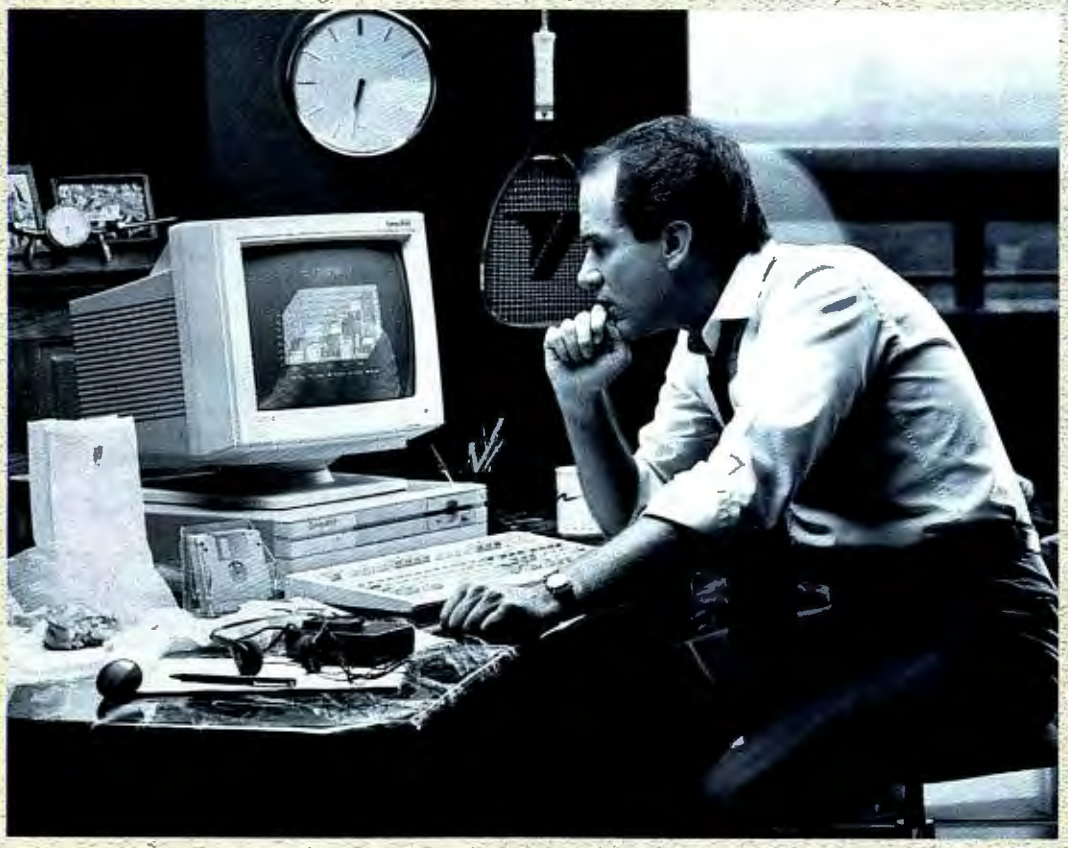

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The Fox Turns Pro

More than a speedy dBASE clone, FoxPro adds a windowing environment and a slick report writer —and it's faster than ever.

Alan Schwartz

After releasing the *dBASE*-compatible *Foxbase+ 2.1* two years ago, Fox Software began playing around with the Macintosh to develop ideas for a Presentation Manager data manager. The result was *Foxbase+ Mac*, which deftly wed windows with the dBASE language.

Rather than move up to Presentation Manager, Fox has returned to DOS, delivering Mac benefits in its new *FoxPro* data manager. *FoxPro* sparkles with a character-based windowing interface designed for use with a mouse. A spiffy band-oriented report writer, an advanced text editor, and an animated debugger head the list of added features designed to please developers and casual users alike.

FoxPro's character-based windowing system is faster and easier to use than graphics-based windows. Here, a virtual-join browse and a report-writing session share the screen with a command window. In the background, the View window displays relationships.

FoxPro also boosts the speed and retains the *dBASE* compatibility that earned *Foxbase+* a *PC World* Best Buy (see "Five Against IV," *PCW*, May 1989). But don't expect a bargain: Like *dBASE IV*, *FoxPro* costs $795—twice the price of *Foxbase*.

FoxPro's initial release won't win a features face-off with Ashton-Tate's *dBASE IV*—it lacks SQL and query by example (QBE), and its screen generator is a step behind. Yet *FoxPro* provides enough advances to rank with the heavyweights. It may be the easiest programmable data manager around—and probably the fastest.

Mousing Around

Fox has chosen to emulate a *Windows*–style graphic interface with a speedier character-based environment. Optimally, you'll use a mouse to open *FoxPro*'s pulldown menus, but you can take <Alt>- and <Ctrl>-*key* shortcuts. The menus call up well-designed pop-up windows and dialog boxes. Alternatively, purists can open a window to enter commands directly.

FoxPro lets you open up to 50 windows at once and resize and move them

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.

at will. For example, you can open up to nine browse views while building a report in another window, or type a memo in one window while browsing data in another.

Unlike with *Windows*, you don't have to squint at pixels to grab the edges of windows; it's easy to find the handles on character-based icons. You can expand, scroll, and close the *Windows*-like hot corners at top speed. Color options are extensive, and you can invoke such built-in desktop accessories as a calculator, a file manager, and a calendar/scheduler.

With its View window, *FoxPro* almost matches *dBASE IV*'s Control Center. Here you can manage data files, work areas, indexes, and relationships. A helpful, integrated Browse/Edit window lets you create virtual joins from linked files. You can even specify validating user-defined functions (UDFs) and calculations.

Like *dBASE IV*'s, *FoxPro*'s relational talents are a cut below those of Borland's *Paradox*. Unlike with *Paradox*, users wrestling with complex one-to-many or many-to-many relationships must write procedural code.

Like *dBASE IV*, *FoxPro* has a superb band-oriented report writer, which separates related elements into on-screen rectangles—and *FoxPro*'s menus are more intuitive. *FoxPro*'s report writer doesn't generate code, but it lets you embed UDFs, and it gives an almost instant page preview. In many cases it circumvents the need for QBE. Unfortunately, the FoxView screen painter is unchanged from *Foxbase+*.

Sharper Tools

FoxPro's development tools don't quite match *dBASE IV*'s, but they're easier to use and far more powerful than *FoxBase*'s. The biggest draw is *FoxPro*'s debugger, which takes full advantage of windowing. You can watch variables during command file execution in a debug window, while a trace window highlights the code and lets you point and click at breakpoints.

FoxPro's text editor is a vast improvement over *Foxbase*'s. With clipboard cut and paste, search and replace, and other features, it's even suitable for basic word processing.

Fox has lifted its restrictions on UDFs—you can even include them in reports. And *FoxPro* matches *Clipper* in support for long text strings. In addition, the precompiler creates object code files automatically when you run the source code.

The main programming drawback is the application generator. Tied to the screen generator, it's a step behind the times. A simple code generator, it's faster than *dBASE IV*'s but not nearly as powerful.

Still a Rocket

Although final benchmarks await a shipping product, *FoxPro* appears to be stunningly fast. Informal beta tests tend to support Fox's claim that *FoxPro* is three times as fast as *Foxbase+* and six to ten times zippier than *dBASE IV*.

Unlike *dBASE IV 1.0*, *FoxPro* provides full EMS support, though you don't need expanded memory to enjoy swift performance. While *dBASE IV* sweats bullets to squeeze into 640K, *FoxPro* can run in 512K, aiding network use. Currently, Fox plans no 386-specific version, claiming the performance boost would not be significant.

Fox boasts 100 percent syntax compatibility with *dBASE IV*, but support for the new .MDX multiple indexing awaits a future release. You're still limited to a total of 22 open indexes, but the limitation of 7 open indexes per file has been lifted to 22. Commands can run to 1024 characters, and records to 1024 fields.

Looking ahead, an interim release will upgrade the screen and application generators and provide .MDX indexing. Early next year, version 2.0 should offer an .EXE compiler and a SQL front-end for the upcoming *FoxServer* server (a superset of Novell's *NetWare SQL*). *FoxPro 2.0* will offer a full mixture of SQL and *dBASE* commands.

Unlike *dBASE IV*, *FoxPro 1.0* doesn't try to be all things to all people, but it hits the high points. More important, it successfully eases the inherent difficulty of data management—and it runs faster than ever. Despite *FoxPro*'s steep price, users awaiting a bug-free *dBASE IV 1.1* may find it's time to switch. ●

Alan Schwartz is an independent application development specialist in San Francisco.

SNAPSHOT

FoxPro 1.0

Fox steps out from Ashton-Tate's shadow with a racy character-based windowing interface and a basket of new features.

KEY FEATURES

- **Faster than Foxbase+**
- **Mouse-controlled windowing interface**
- **Band-oriented report writer with speedy page preview**
- **EMS support, but still runs on 512K**
- **Full dBASE IV syntax compatibility**

AVAILABILITY

Scheduled for September

PRICING

$795

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VGA modes shown at 320 x 200

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Circle 312 on reader service card

HP Cuts Cost of Laser Printing

The 4-ppm LaserJet IIP brings laser printing within reach of a new audience—with optional PostScript support.

Michael Goodwin

The Hewlett-Packard LaserJet IIP costs about $1000 less than the LaserJet Series II, but all you forfeit is speed (you get 4 pages per minute rather than 8). The small-footprint IIP offers a large 4.5MB memory capacity for full-page graphics and multiple fonts.

PAUL FRANZ-MOORE

Quite a few people who want a LaserJet but balk at spending more than $1000 are about to get a very nice surprise. With the release of the LaserJet IIP—a low-cost, 4-page-per-minute printer based on the Canon P110 engine—Hewlett-Packard has single-handedly reinvented the laser marketplace.

This LaserJet II compatible lists for a deliciously low $1495 (which probably translates to around $1000 on the street, little more than the price of a high-end dot matrix printer). Additionally, it weighs only 25 pounds, puts out a standard 300 dots per inch, and supports an optional PostScript cartridge with scalable typefaces.

While the IIP's 4 pages per minute is only half the rated speed of the popular LaserJet II, in most real-life printing situations you may never notice the difference. You *will* notice the printer's modular design that lets you buy a low-priced entry-level machine and then upgrade at your own speed. The basic unit comes with 512K of RAM, 14 internal fonts, and a 50-sheet paper tray that adjusts for letter- and legal-size paper and four sizes of envelopes. Whenever you're ready, you can add goodies like a 250-page paper cassette, one font cartridge, and up to 4.5MB of memory.

Early in 1990 you'll be able to add a $995 PostScript cartridge with 35 scalable Adobe typefaces. Although this cartridge will require at least 2MB of extra memory, the full PostScript setup (with printer, cartridge, and extra memory) will probably sell on the street for under $3000—far less than any PostScript printer available today.

The IIP is fully backward compatible with the LaserJet line. It takes standard toner cartridges, font cartridges, and downloadable fonts and supports HP's PCL printer language. The IIP is even a little quieter than earlier LaserJets, topping out at 47db rather than 50db.

While a number of low-end HP-compatible laser printers have come onto the market in the last year, none of them approaches the IIP's price and feature set. If this printer comes as a nice surprise for price-conscious laser printer shoppers, it seems likely to prove a very nasty one for HP's competitors. ●

Michael Goodwin is an associate editor for PC World.

SNAPSHOT

LaserJet IIP

Hewlett-Packard's 4-page-per-minute, 300-dpi laser printer will probably sell for $1000 or less on the street.

KEY FEATURES

- **Weighs only 25 pounds**
- **Optional Adobe PostScript cartridge**

AVAILABILITY

Immediate

PRICING

$1495

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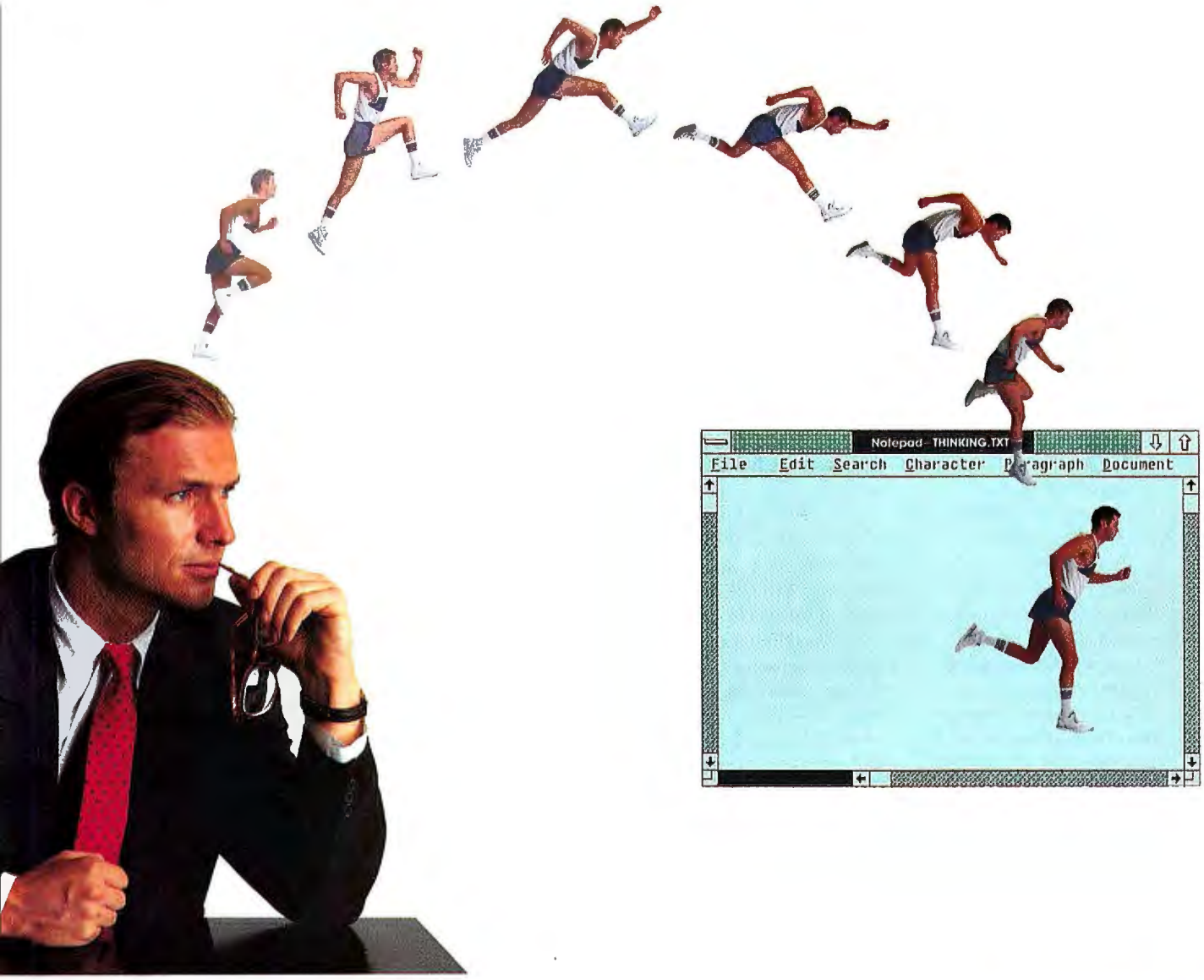

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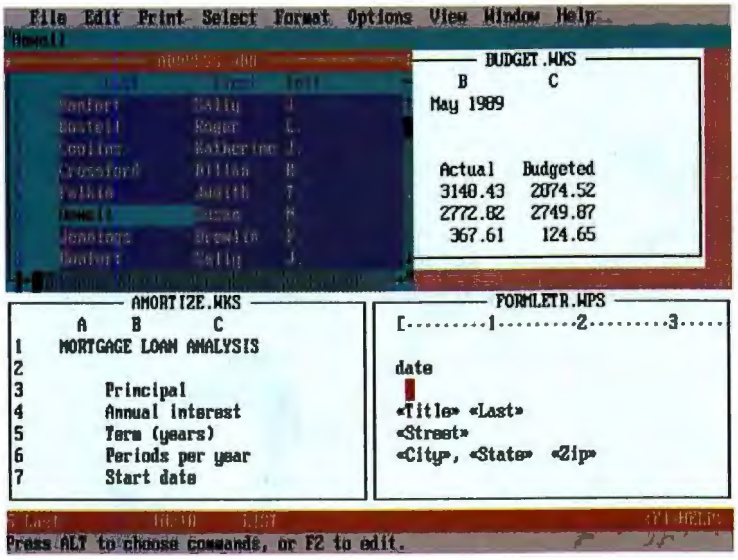
Circle 164 on reader service card

Improvements in the Works

Microsoft's low-end integrated package gains a host of small enhancements.

William Rodarmor



Thanks to Microsoft Works 2.0's new windowing capacity, you can see and work with multiple files on screen.

Upgrading its popular $149 integrated package, Microsoft has given *Works* more power while adding *Windows*-like touches to a fast character-based application.

Microsoft Works is a prime example of well-designed integration. Version 1.0 offered a first-class spreadsheet backed by word processing and data base and communications modules, all run by a consistent set of pulldown menus and dialog boxes (as noted in *PC World*'s April 1989 review). Version 2.0 incorporates multiple windows, WYSIWYG character formatting, print preview, a 300,000-synonym thesaurus, and EMS support.

The upgrade also smooths a few of *Works*' remaining rough spots. For instance, the utility that converts *Works* word processing files is now built in, as is the macro program. Microsoft has also managed to shrink the manual from a mammoth 700 pages to 400.

Version 2.0 scores big gains in convenience. The package can display up to eight files in side-by-side or overlapping windows and zoom each window to fill the screen. And you can split the screen into two or four panes to see different parts of a file without scrolling. *Works 2.0* lets you copy and rename files, copy disks, create and remove directories, and format and copy disks without exiting to DOS. And thanks to a new applications launcher, you can run your most commonly used programs without leaving *Works*.

The print preview can't zoom or show facing pages, but it displays business graphics, character formatting, and type styles on screen. (Note, however, that you still can't see charts embedded in a worksheet or a word processor document until printout.) *Works 2.0* even includes a pop-up calculator, an alarm clock (with a snooze feature), and an auto-dialer.

Individual modules have picked up a few niceties. Besides the thesaurus, the word processor has gained footnotes and bookmarks. In the spreadsheet, users can fill series and sort rows, and the speed-charting business graphics function is much easier to access.

The data base has put on the most muscle. Need to design a form or fill out a preprinted one? You can print both field names and values, field values alone for preprinted forms, or just field names to create a blank form. Finally, statistical summaries can be copied directly to a word processor document or to a worksheet.

Works 1 was criticized for using proprietary file formats in its word processing and data base modules, and the upgrade ignores that objection. But overall, *Works 2.0* works—quickly and elegantly. ●

William Rodarmor is an associate editor for PC World.

SNAPSHOT

Microsoft Works 2.0

The low-end integrated package smoothly blends word processor, data base, spreadsheet, graphics, and telecommunications modules.

KEY FEATURES

- **Multiple windows, WYSIWYG display**
- **Data base forms generation, better reporting**

AVAILABILITY

Immediate

PRICING

$149, upgrade $50

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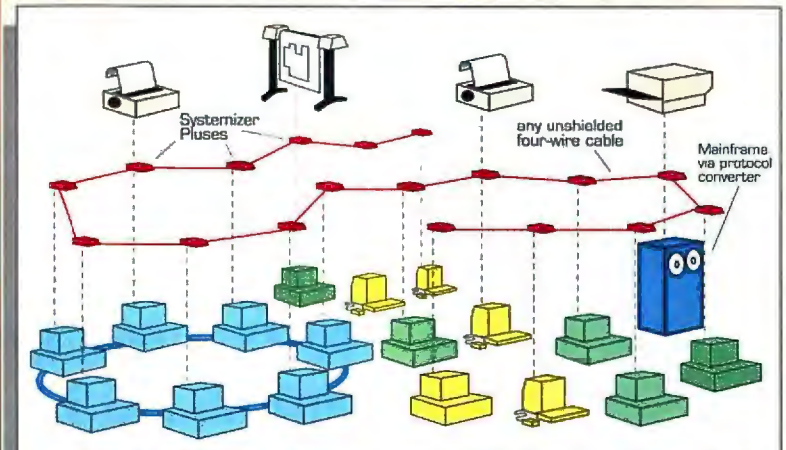

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PRODUCT OUTLOOK

INSIDE PRODUCT OUTLOOK

89 **Dynabook 286**
Modular design makes this laptop a versatile companion on the road and in the office.

89 **Mitac MPS2386**
A more-for-your-money machine might persuade you to take the Micro Channel plunge.

92 **Saros FileShare**
Simplify file sharing on OS/2 networks without sacrificing security.

92 **Kraft Trackball**
Recover lost desk space with Kraft's easy-to-use mouse substitute.

96 **QMS ColorScript 100 Model 10**
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100 **dBASE STATS**
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104 **Cornerstone XL**
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104 **PageLaser6**
Toshiba's LaserJet alternative is smaller, lighter, and less expensive—and HP compatible.

UPDATE

108 **Quicken 3**
Intuit's check-register package broadens its appeal with new money-management features.

108 **Microsoft Mouse 400 Series**
Get more action with less effort from Microsoft's high-resolution mouse.

112 **Corel Draw 1.1**
The *Windows*-based illustration package adds a typeface-conversion program.

112 **Objectworks for Smalltalk-80**
The object-oriented development environment generates code that's portable across major hardware platforms.

112 **Lattice C 6.0**
Lattice C's completely revamped compiler helps applications execute 10 to 30 percent faster.

The ultra-slim Dynabook 286's modular design lets you take along only as much portable as you need—just snap display and battery modules onto its 16-MHz 80C286-based CPU.

Dynabook 286

Mix-and-Match Modules for Building a Portable PC

It takes engineering sleight of hand to squeeze the functionality of a PC into a laptop. No one has yet mastered the trick completely, but portable makers like Dynabook Technologies come close.

The Dynabook 286 combines a one-wait-state 16-MHz 80C286 processor with a modular design that breaks down into four elements—CPU, display, battery, and docking module. All are encased in glossy black magnesium, ready to mix and match with each other or with full-size peripherals.

At center stage is the CPU module, which is truly laptop size—11 by 13½ inches and only 1½ inches thick. There's still room for a hard disk and an internal 2400-bps modem, and you can expand the standard 1MB of system memory to 8MB on the motherboard. The VGA-quality monochrome LCD is, likewise, razor thin. But if you want to drive this beauty with a battery, keep the health club membership. Its 2-to-4-hour, 5.4-pound battery pack brings the total weight of the system to just over 14 pounds.

On the other hand, if you'll have a screen and an AC outlet at your destination, you need only carry along the CPU and its AC adapter. In addition to two serial ports and a parallel port, the Dynabook's narrow backplate has an external VGA monitor port backed up by a VGA adapter on the motherboard. Since laptops usually log most of their miles on the home-office shuttle, you can leave your full-size monitor and keyboard and your printer plugged into a Dynabook docking module at home, at the office, or both. The docking module's ports neatly match those on the back of the CPU and include a connector for a future AT bus expansion chassis.

The $3695 Dynabook 286/1A comes with a 3½-inch 1.44MB floppy, DOS 4.01, setup software, and an AC adapter. The LCD display adds another $1000, a docking module is $299, and you can choose a 28ms 20MB hard drive for $500 or a 28ms 40MB hard drive for $1100. Dynabook Technologies Corp., 6150 Stoneridge Mall Rd. #225, Pleasanton, CA 94566; 800/535-4849. *—Mark Henricks*

Reader service no. 675

Mitac MPS2386

This True MCA Compatible Has Real SX Appeal

A 16-MHz 386SX-equipped clone of IBM's Model 55 SX, Mitac's MPS2386 gives you three more slots and two more storage bays for a smaller price.

If you haven't swum the Micro Channel yet because you see more breadth and depth in Industry Standard Architecture machines, it may be time to grab your swimsuit. A new 386SX-based Micro Channel compatible from Mitac gives you more computer for less money than IBM's PS/2 Model 55 SX.

The Mitac MPS2386 is built around the same 16-MHz 386SX chip as the Model 55 SX but improves on the 55 SX in several ways. You'll find six expansion slots—compared with the 55 SX's three—in a 14½-by-16½-by-6½ case. (The hard-drive controller will take one slot.) The Mitac system board carries 800 by 600 enhanced VGA graphics; serial, parallel, and mouse ports; and a controller for its 3½-inch 1.44MB floppy.

The suggested list on IBM's 55 SX with 2MB of memory and a 39ms, 30MB hard drive is $3895. Mitac sells the six-slot MPS2386 with 1MB of memory, room for two more 5¼-inch drives than the 55 SX, and DOS 4.01 for $2695. Add $650 for a 28ms, 45MB NEC hard drive and controller and another $320 for an extra megabyte of memory, and the MPS2386 is still $230 below IBM's price tag. American Mitac Corp., 410 E. Plumeria Dr., San Jose, CA 95134; 800/648-02287, 408/432-1160. *—Mike Hogan*

Reader service no. 677

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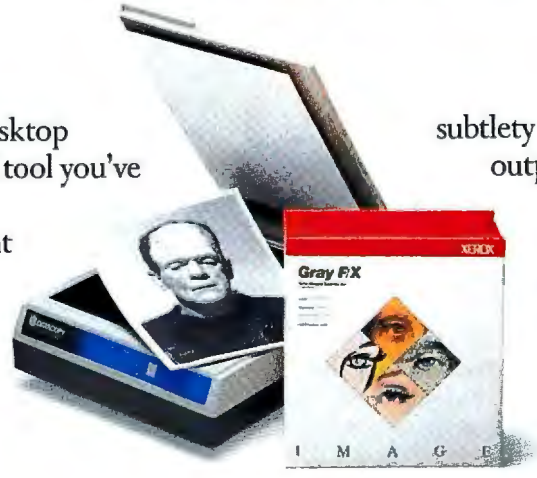

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Circle 283 on reader service card

Saros FileShare

The No-Pain Server Searcher

Once your work group joins hands on a local area network, PC proficiency isn't enough—you also must learn to navigate the maze of network servers and subdirectories. But *Saros FileShare* makes sharing files on an OS/2 *LAN Manager* network as easy as cruising the subdirectories of your own PC, by providing a standard way to distribute files all across the network.

That scheme means you don't have to specify server location and path and file names every time you store or retrieve a document. And if you blank out on the file name, you can still find the document with a quick search by author, subject, date, or other attribute.

During *FileShare*'s installation, the network administrator determines how data files should be distributed across the network's servers for quickest access. Once that's done, when you add a file to *FileShare*, the software automatically stores it in the proper location (for instance, it might route your work group's regular files to a server in your department).

To aid file tracking, *FileShare* draws up a profile for each file on the network. This profile can combine up to 26 file attributes that the system tags automatically (such as user name and date) with up to 20 customized attributes that the user can enter (such as work order number).

FileShare's *Windows* interface makes it easy to combine these attributes and initiate searches. It represents files as index cards so you can skim through a group of related files. The package also lets you save search patterns (such as search by date) for reuse.

You can prevent user access to a given file or specify read-only or read/write access. Other security measures include file-version tracking and automatic storage or trashing of older versions of files.

FileShare works with *Windows*-equipped DOS workstations and requires a LAN operating system that supports OS/2's Named Pipes interprocess communications, such as Microsoft's *LAN Manager*, IBM's *LAN Server*, 3Com's *3+Open*, or Ungermann-Bass's *Net/One*. Prices start at $425 for each 25 concurrent users. Saros Corp., 10900 N.E. 8th St., 205 Plaza Center Bldg., Bellevue, WA 98004; 206/646-1066.

—Mark Henricks

Reader service no. 676

Kraft Trackball

Pedal Ball May Put Your Mouse Out to Pasture

Say goodbye to awkward clicking and dragging. Kraft Systems' three-button Trackball saves your arm by letting you use your middle finger to rotate the ball and move the cursor around the screen. The unit also supports an optional foot pedal, which you click instead of the left button.

Mice are nice, but they nibble away at your desk space. Trackballs seem the best alternative to the little cheese burners, since a trackball sits in one place on your desk, and you move a rollerball instead of your arm. The trouble is that clicking and dragging requires an awkward combination of stationary fingers and rolling palm—advanced digital yoga, in short.

Serious trackball users have mastered those moves, but now Kraft Systems introduces the three-button Trackball that attacks the problem in two ways. First, the unit measures 5 by 7 inches—large enough for your thumb and pinky to rest comfortably on the buttons, with your middle finger perfectly positioned to rotate the ball. Second, the unit supports a foot pedal (think of it as one-on-the-floor) that you click instead of the left button.

Installation is simple. The Trackball connects easily to any spare serial port and comes with a pop-up Speed Window utility that lets you adjust resolution from 10 dpi to 1150 dpi or anything in between. You can save your favorite speed setting as a default. The unit works perfectly even if there's a Microsoft bus mouse installed, although the Trackball driver will disable the mouse until the system is rebooted.

The Kraft Trackball, which is Microsoft Mouse–compatible and works with classic PCs or Micro Channel–equipped PS/2s, costs $119.95 without the foot pedal, $129.95 with the pedal. Kraft Systems Inc., 450 W. California Ave., Vista, CA 92083; 619/724-7146.

—Michael Goodwin

Reader service no. 679

QUALITY BY DESIGN

GV286/120

- 80286 running at 12 MHz zero wait state.
- Proprietary, 32KB on-board RAM cache circuit using high speed (35ns) static RAM.
- 640KB RAM, expandable to 1MB on motherboard.
- Socketed for 8MHz 80287 math coprocessor.
- 5.25" 1.2MB or 3.5" 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- Enhanced 101-key keyboard.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 200-watt power supply.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in the U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

PC MAGAZINE EDITORS' CHOICE

OPTIONS

- RAM upgrades.
- Intel 80287 math coprocessor.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
44MB, 23ms, ST506	$2,149	$2,499
71MB, 27ms, ST506	$2,409	$2,769
155MB, 18ms, ESDI	$3,299	$3,599
320MB, 18ms, ESDI	$4,099	$4,399

GV286/20

- Choice of slimline or Baby "AT" desktop, space-saving footprints available.
- Top performance at lower cost.
- VLSI technology for increased reliability.
- 80286 running at 20 MHz zero wait state.
- Paged-interleave Memory Architecture.
- 1MB RAM standard, expandable to 2MB or 4MB configurations on motherboard.
- Socketed for 10MHz 80287 math coprocessor.
- 5.25" 1.2MB or 3.5" 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- Enhanced 101-key keyboard.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 200-watt power supply.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diganostics.
- Motherboard designed and manufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrades.
- Intel 80287 math coprocessor.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
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90MB, 18ms, ESDI	$3,395	$3,795
155MB, 18ms, ESDI	$3,995	$4,395

GV386/20 PLUS

- 80386 running at 20 MHz zero wait state.
- 1MB RAM on motherboard.
- System is capable of expanding to 16 MB of 32-bit RAM.
- Proprietary, 64KB on-board RAM cache circuit using high speed (35ns) static RAM.
- Socketed for 20MHz Intel 80387, or 20MHz Weitek 3167 math coprocessors.
- 5.25" 1.2MB or 3.5" 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- 2, 8-bit, 4, 16-bit and 2, 32-bit memory expansion slots.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrade to 3 MB add $725-to 5 MB add $955.
- 20MHz Intel 80387 and 20MHz Weitek 3167 math coprocessors.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
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71MB, 27ms, ST506	$3,659	$3,959
155MB, 18ms, ESDI	$4,399	$4,799
320MB, 18ms, ESDI	$5,199	$5,599

GV386SX

- Run 32-bit operating systems, applications software, or Windows 386 at a lower cost.
- Slim-line, space-saving desktop configuration.
- 80386SX running at 16 MHz zero wait state.
- 2MB RAM standard, 4MB capacity on motherboard.
- Socketed for 16MHz Intel 80387SX, math coprocessor.
- 3.5" 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- VLSI technology for increased reliability.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrade to 4MB add $390.
- 16 MHz Intel 80387SX math coprocessors.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
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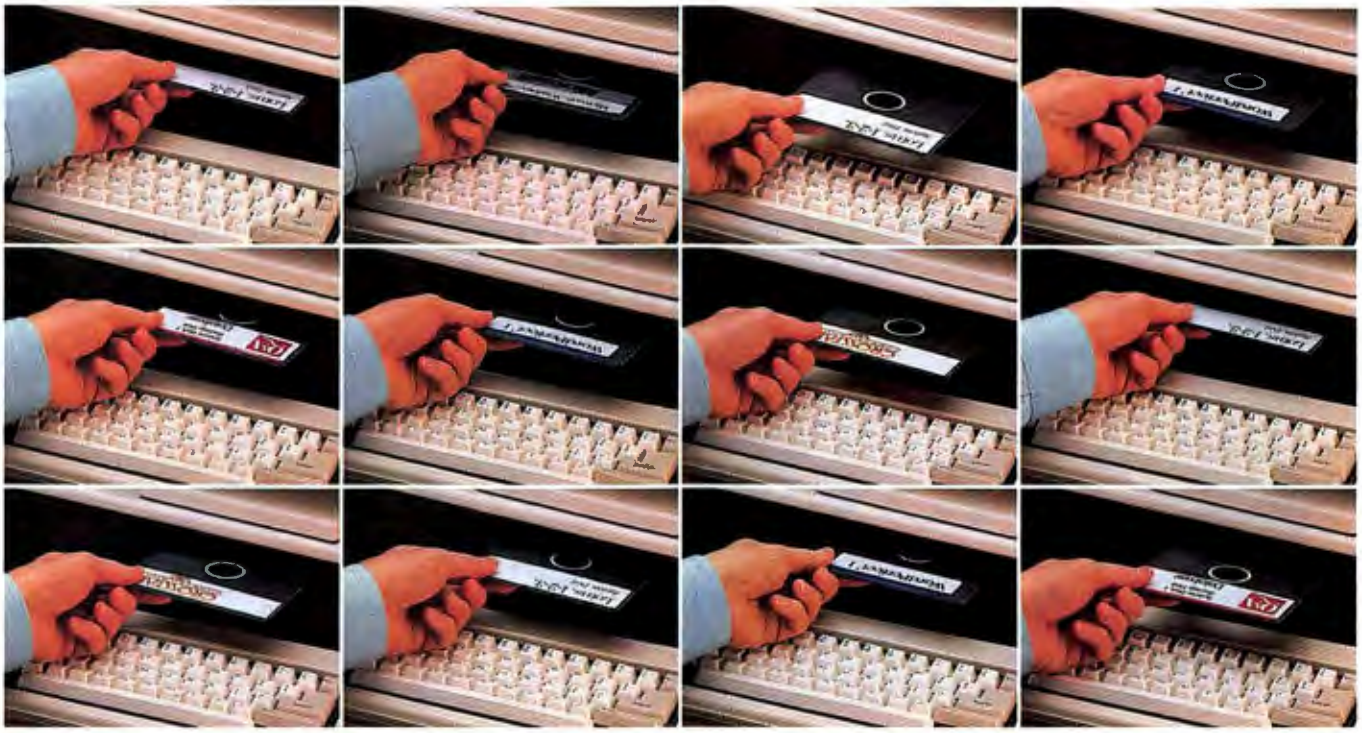

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MFS™ BY ACTION TECHNOLOGIES

QMS ColorScript 100 Model 10

Color PostScript in a Smaller Box for a Smaller Price

QMS puts color and PostScript together in the ColorScript 100 Model 10, a downsized printer with a $10,000 price tag.

QMS was the first to pack color and the PostScript page description language into one box, but the original price for its ColorScript 100 Model 30 was $25,000. Now comes the one-third–smaller ColorScript 100 Model 10, which ships with less memory and prints smaller pages—and sports a price tag of a "mere" $10,000.

The ColorScript 100 Model 10 is equipped with a Mitsubishi G370 300-dpi thermal transfer print engine that can use monochrome (black), three-color (cyan, magenta, and yellow), or four-color (cyan, magenta, yellow, and black) film. With four colors, you get more than 16 million shades. QMS claims that it delivers an 8½-by-11-inch monochrome image in 15 seconds, three-pass color in less than 60 seconds, and four colors in 85 seconds. That's due to a 16-MHz Motorola 68020-based controller, which comes standard with 4MB RAM and 1MB ROM. The controller features Adobe PostScript version 50.3 and 35 resident Adobe typefaces.

While the Model 10 can print on both plain paper and transparencies, QMS recommends coated paper for the best-looking output. An adjustable letter/legal-size paper cassette holds up to 100 cut sheets of paper or transparency film, and the output tray handles 50 sheets, face up. Other standard features include serial, parallel, and AppleTalk ports as well as an external SCSI interface for a hard disk drive. The printer ships with a collection of utilities that simplify printer start-up and testing.

The Model 10 has enough memory to handle a letter-size page of PostScript text and graphics. An optional 1MB board enables you to image text and graphics on legal- or A4-size paper. Beefing up memory with a 4MB option adds the headroom for soft fonts. However, choose memory options wisely; you scrap the 1MB board when you jump to the 4MB version.

The QMS ColorScript 100 Model 10 lists for $9995, the 1MB memory board for $595, and the 4MB board for $1495. QMS Inc., One Magnum Pass, Mobile, AL 36618; 800/631-2692, 205/633-4300. *—Wes Nihei*

Reader service no. 678

Hicard Micro Channel Memory Board

A Memory Mixer for IBM PS/2s

If you own a 286-based Micro Channel system and yearn to realize IBM's vision of multitasking under OS/2—or simply want to run the new *1-2-3* release 3 or *dBASE IV*—you'll probably want more extended memory. And then there are those memory-hungry DOS applications, memory-resident utilities, and possibly even that network software that send you shopping for more expanded memory. RYBS Electronics lets you keep your options open.

The Hicard Micro Channel Memory Board is a full-length 16-bit board that packs PS/2 Models 50 and 60 and compatibles with up to 8MB of RAM. You can configure the Hicard as true EMS 4.0 expanded memory, extended memory, or both, without flipping a single switch. At the same time, the board can extend DOS's domain beyond 640K by mapping memory into free areas between 640K and the video buffer. Tucking LAN software and other memory-resident utilities in that upper memory leaves more user RAM free so you can run larger programs on your network server or workstation.

Hicard installs without switches or jumpers. Just snap in the right number of "standard" 256K and/or 1MB SIMMs (not available from RYBS), and let the board's installation software determine what memory spaces are available and give you access to them.

With 512K (two 256K SIMMs preinstalled), the Hicard costs $850; you can upgrade it to 6.5MB. You must replace the 256K SIMMs with 1MB SIMMs to reach the 8MB total. RYBS Electronics, 2590 Central Ave., Boulder, CO 80301; 303/444-6073. *—Wes Nihei*

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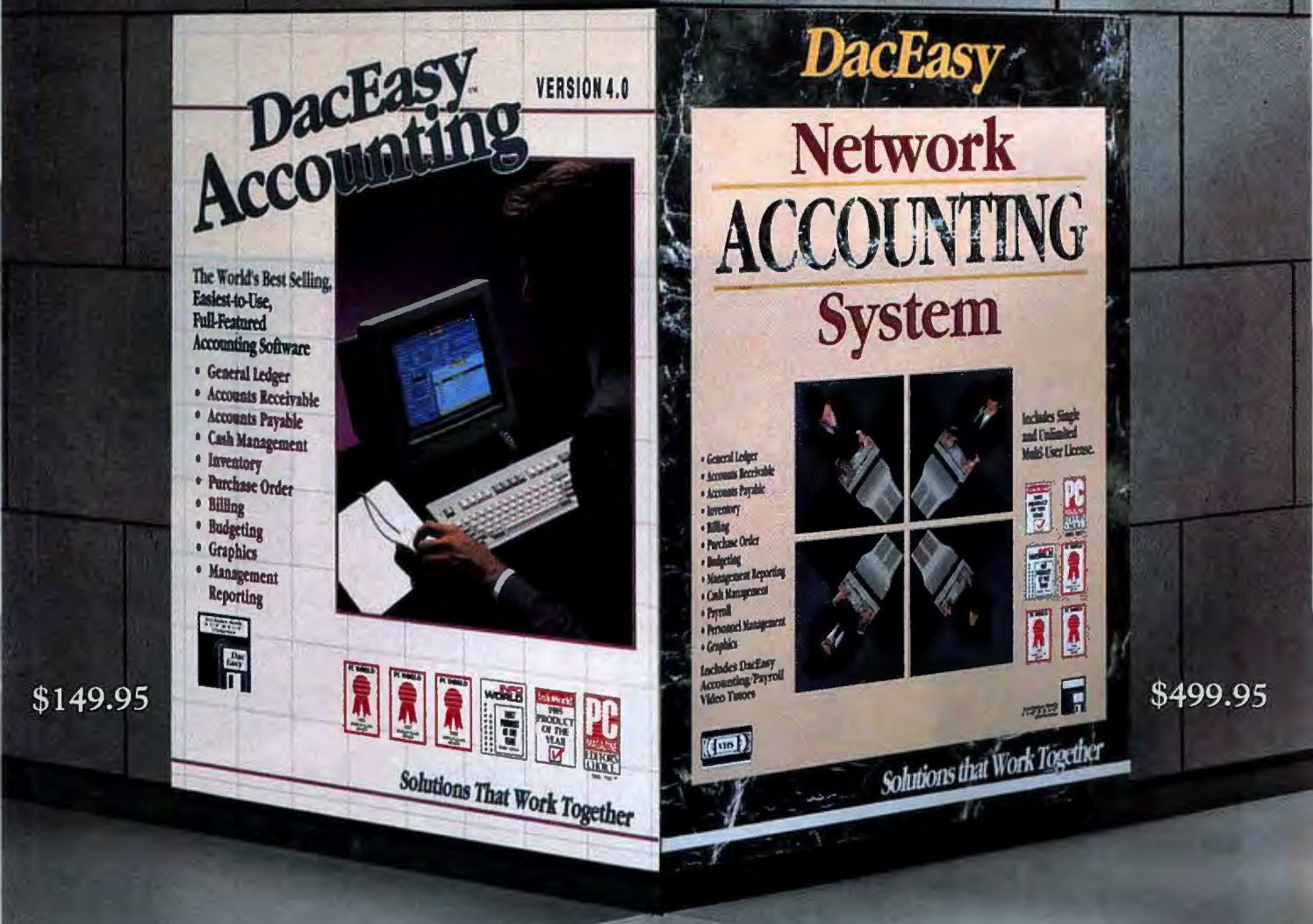

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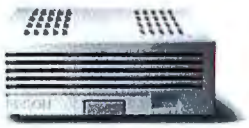

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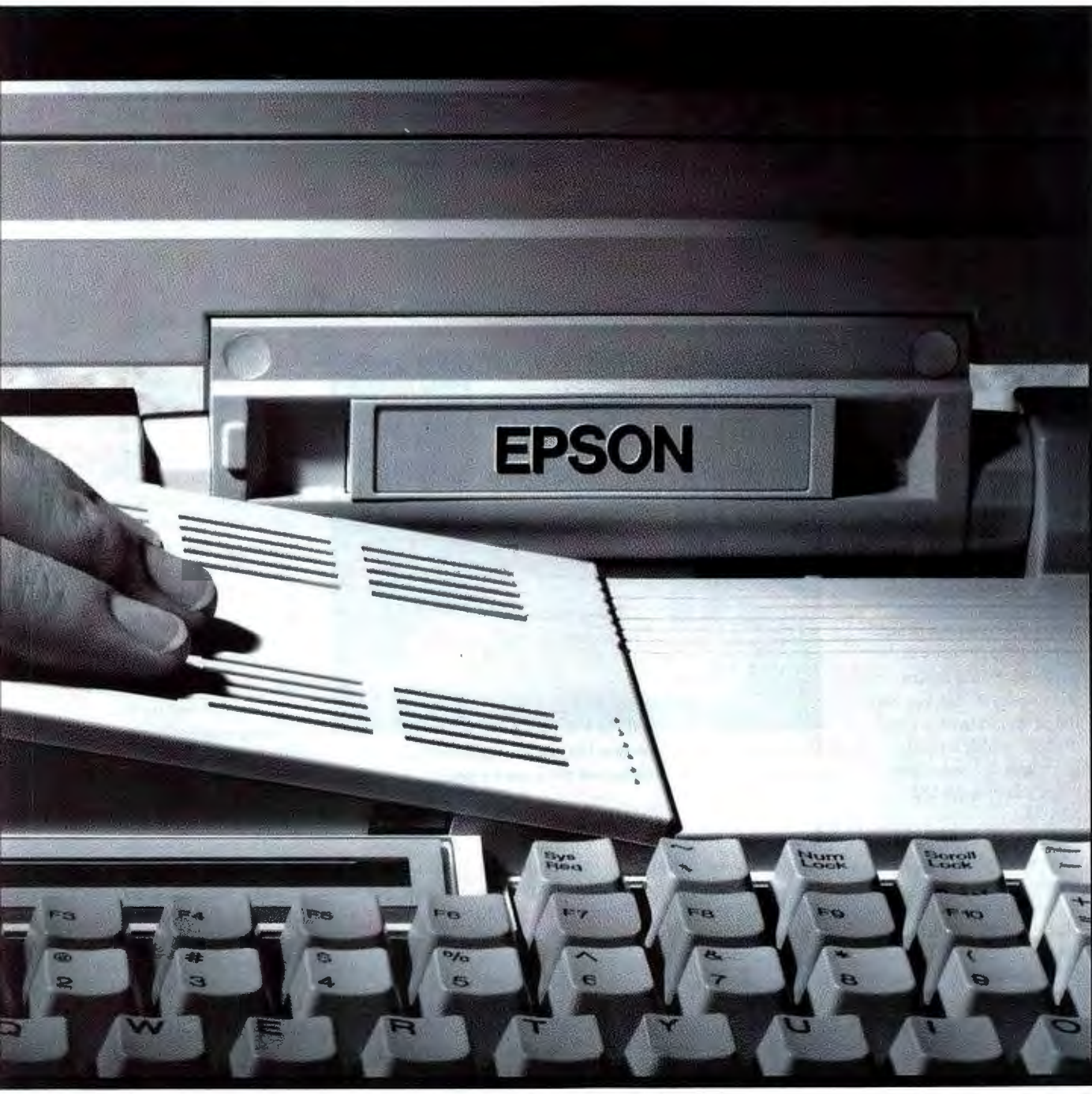

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dBASE STATS

Taking the Right Cut at Your Data

You have data, reams of it, routinely collected on the mainframe or in your PC data base manager. But making sense of it is another matter.

In the past, many users pulled that data into *1-2-3* for analysis. But now Ashton-Tate has teamed up with statistical analysis software maker SPSS to introduce a package that lets you manipulate and analyze information from the company data base more directly.

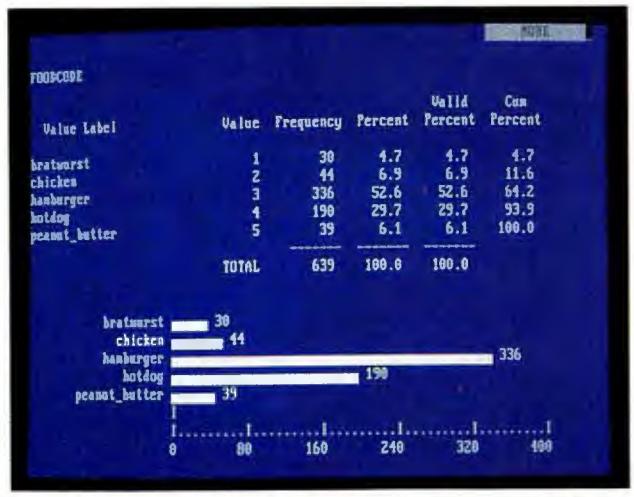
As the name implies, *dBASE STATS* is an add-on for Ashton-Tate's popular data base, reading *dBASE* files directly and applying the 12 most common statistical functions.

For example, you might use regression analysis to determine environmental factors impacting worker productivity or curve-fitting techniques to extrapolate tomorrow's sales from yesterday's.

dBASE STATS employs a *dBASE IV*–style control center interface with pulldown menus and pop-up dialog boxes to parse your data before you import it. You can call the program from within *dBASE*, which unloads automatically, reloading when you exit *dBASE STATS*.

The real beauty of the program, though, is that it enables you to get regular updates of data for analysis without having to export a file. And *dBASE STATS* reads Lotus .WKS and .WK1 as well as SYLK and .DBF files.

You can export your findings directly to Ashton-Tate's graphics programs, *Chart-Master* and *Draw Applause*. *dBASE STATS*, which retails for $400, requires DOS 2.1 or a later version, 512K of memory, and a hard drive. A math coprocessor is recommended. Ashton-Tate, 20101 Hamilton Ave., Torrance CA 90502-1319; 213/329-8000.
—Mike Hogan
Reader service no. 682



No need to type reams of data into a spreadsheet for analysis: dBASE STATS reads .DBF files directly and lets you apply the 12 most widely used statistical analysis functions to as many cuts of the data as you wish.

Amdek System/286N

LAN Problem Solver Plugs Leaks, Cuts Costs

The Amdek System/286N enhances LAN data security and reduces maintenonce because it's diskless and has no moving parts.

Local area networks are one solution to multiuser needs, but they present their own worries—namely, data security and the cost of buying and maintaining new workstations.

Amdek offers its System/286N diskless workstation as a cost-effective solution to both problems. Taking the disks out of LAN nodes plugs at least one potential data leak. And not only is a diskless workstation less expensive than a stand-alone system, the absence of moving parts such as fan, floppy disk, and hard disk increases long-term reliability and reduces maintenance costs.

The 286N has a built-in tilt-and-swivel monitor and a footprint a mere 13 inches square. It houses a 12.5-MHz 80286 CPU running at one wait state, 1MB of 100ns memory, and two 8/16-bit slots—one for a network card and one for the Amdek 132 VGA card that comes standard with the system. The Spartan feature list includes a socket for an 80287 math coprocessor, two serial ports, one parallel port, a 101-key keyboard, and a glare-fighting, 14-inch, flat-screen monochrome monitor.

The Amdek System/286N retails for $1999. Amdek Corp., 3471 N. First St., San Jose, CA 95134; 800/722-6335.
—Wes Nihei
Reader service no. 681

Don't Let the Desktop Programming Revolution Start Without You.

Presenting Matrix Layout 2.0

The Desktop Programming revolution has begun. More and more people are maximizing the productivity of their desktop computers without learning to write a line of code. It began with Matrix Layout. And continues with Layout 2.0.

More Power to the People

Matrix invented Desktop Programming to let you create your own programs right on your own PC. Now, Layout 2.0 makes it even easier to create your own powerful, professional-quality applications.

Start with Layout's tools window. Everything you'll need to build your program can be accessed by mouse or keystroke.

Next, use Layout's graphics and text tools to build a flowchart model of your program. Create your own windows, icons, and buttons. Cut and paste functions from other Layout programs. Or use the BlackBox Manager to add a BlackBox—a pre-built capability such as telecommunications or dBase support—to your Layout program. All, without writing a line of code.

Layout 2.0 is also a hypertext tool, allowing you to build Hypercard®-like cards, with text and graphics, and link them to related cards in any file. Use it to create cards for your flowcharts or to create hypertext applications that will run on any IBM-compatible PC.

Power to the Professional

Once your program is complete, Layout 2.0 can automatically create a ready-to-run .EXE file for use by any IBM PC. Or have Layout 2.0 write it in Turbo C, Lattice C, Microsoft C, Turbo Pascal or QuickBASIC. The result: you've got a professional, stand-alone program that does exactly what you want it to. Use it, share it, modify it. You've got the power.

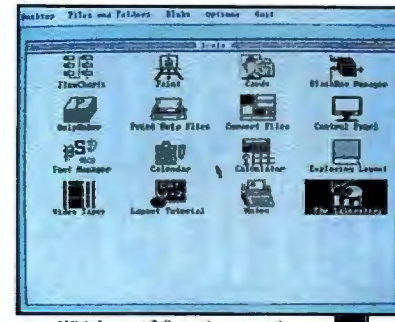
And a Powerful Bargain

For just $199.95 you get the entire Layout 2.0 package, including free technical support, and more programming power than you've ever had on your desktop. For more information, the location of your nearest Matrix dealer, or a copy of the Matrix Layout 2.0 VHS demonstration video (just $9.95 for shipping & handling), call today.

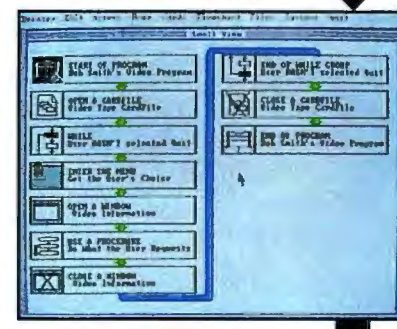
1-800-533-5644
(in Massachusetts, 617-567-0037)

Join the Desktop Programming revolution. Order Matrix Layout 2.0, today!

MATRIX
MATRIX SOFTWARE TECHNOLOGY

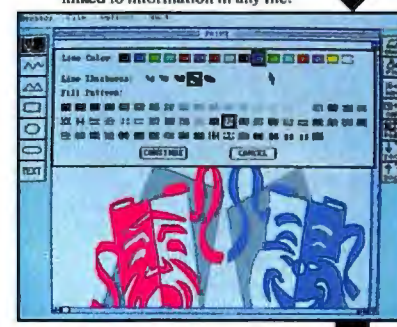


With Layout 2.0, getting started is as easy as choosing a tool.

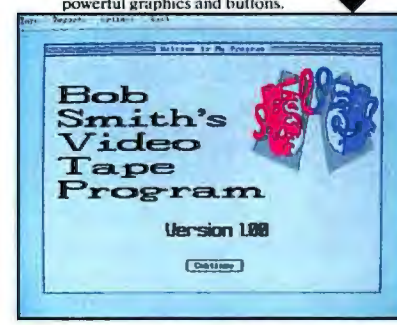


Design and build your programs by using a simple flowchart.

Create Hypercard®-like cards, linked to information in any file.



Use the Paint tool to create powerful graphics and buttons.



Layout creates finished, stand-alone programs for any IBM PC.

Matrix Software Technology Corporation • One Massachusetts Technology Center • Harborside Drive • Boston, MA 02128 • (617) 567-0037
Matrix Software/UK • Matrix House, Derriford Business Park • Derriford, Plymouth • Devon PL6 5QZ, England • 0752-796-363.
Matrix Software/Europe • Geldenaaksebaan 476 • 3030 Leuven, Belgium • 016202064
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PCW 89/11

Circle 147 on reader service card

Introducing the first laser printer to let you do all this right out of the box.

Imagine being able to produce the kind of graphics and type fonts pictured here on your PC.

You probably can't.

Because even with today's advanced word processing programs, no other comparably priced laser printer can print sophisticated graphics or page layouts without additional options or add-ons that can end up costing you thousands of dollars more.

Which is why we designed our LBP-8 Mark III Series Printers to perform right out of the box.

With features like scalable fonts that let you create type in any size or rotation. Standard.

Enough memory to print a full page of text and graphics. Standard.

Plus an enhanced vector graphics command set that creates smooth lines and curves, eliminating the jagged edges you get with some laser printouts. Also standard.

And the Mark III is built around the reliable Canon SX engine and replaceable EP-S cartridge for quiet, dependable operation.

For professional-looking documents, reports, presentations, or whatever you need to print, no other printer does so much to improve your image.

For more information, call toll-free 1-800-453-3307.

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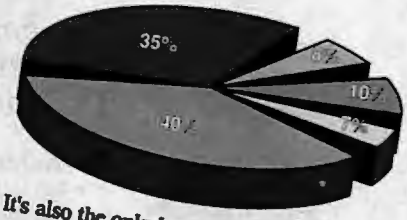
Canon

LASER BEAM PRINTERS



With Canon's LBP-8 Mark III Series Laser Beam Printers, you get all the enhanced graphics capabilities you need to work with advanced software programs like Word Perfect 5.0, Wordstar 5.5, Microsoft Word 5.0, Microsoft Windows, Lotus 1-2-3 and Digital Research GEM.

It's also the only laser printer to feature a National Semiconductor 32-bit microprocessor. So you can print even sophisticated graphics faster than ever before.

For versatility, three models are available offering additional features like automatic double-sided printing and dual paper cassettes that together can hold up to 400 sheets. And memory that can be expanded from the standard 1.5MB all the way to 4.5MB of RAM.

SCALABLE FONTS

With the Canon Printer System Language Controller (CaPSL), you can choose from nine scalable fonts that can be printed in almost any size you need, plus eight bit-mapped fonts, all standard.

AAAAAAAAAAAAAA

VECTOR GRAPHICS

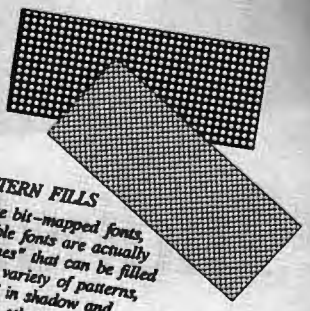
An enhanced vector graphic command set eliminates the jagged edges on large type and graphics you find with ordinary laser printouts.

128 FONTS
128 FONTS
128 FONTS
128 FONTS
128 FONTS

*128 FONTS **

A wide range of additional fonts is available on easy-to-install IC cards, including: Avant Garde, Bookman, Zapf Chancery, Century Schoolbook and more. 128 fonts in all.

* 128 per page



PATTERN FILLS

Unlike bit-mapped fonts, scalable fonts are actually "outlines" that can be filled with a variety of patterns, printed in shadow and various other graphic effects.

Canon LBP-8 mark III Series
LASER BEAM PRINTER

Working to improve your image.™

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Circle 55 on reader service card

Cornerstone XL

Seeing the Whole Elephant

Remember the parable about the seven blind men who try to picture an elephant by touching a leg or the trunk? Visualizing a complex page layout when you're using a standard monitor poses similar difficulties. But the Cornerstone XL subsystem gives you the big picture with a 15-inch full-page, high-resolution display.

Bundled with controller and software drivers, the portrait-style display is noninterlaced, so it doesn't suffer the flicker associated with interlaced displays like IBM's 8514. The key to performance is a full-page controller with 74-MHz throughput. The speed advantage shows up in the Cornerstone XL's flicker-reducing 70-Hz refresh rate. The monitor supports up to four levels of gray at 768 by 1080 resolution.

Designed for desktop publishing and engineering, the monitor is bundled with drivers for *WordPerfect*, *WordStar*, *PageMaker*, and *Ventura Publisher* as well as for several popular spreadsheet and CAD programs. You also get four proprietary *TrueFonts*, including Times Roman, Helvetica, Symbol, and Courier. Cornerstone employs gray-scale anti-aliasing techniques to eliminate ragged edges on the letters.

The portrait-style Cornerstone XL monitor, bundled with controller and software drivers, is a big new window on your desktop publishing and engineering projects.

The Cornerstone XL, which requires DOS 3.0 or a later version, supports *Windows/386 2.1*, *Windows/286*, and *GEM*. A monochrome version costs $1295. The four-shade gray-scale model runs $1495. Cornerstone Technology Inc., 1883 Ringwood Ave., San Jose, CA 95131; 408/453-9800. *—Mark Henricks*

Reader service no. 683

PageLaser6

Low-Cost Workhorse Fits Into the LaserJet's Traces

The PageLaser6, a work-group printer that uses HP LaserJet Series II fonts, is 35 percent smaller and, at 6 ppm, only a little slower than the LaserJet.

The wildly popular Hewlett-Packard LaserJet Series II has spawned many imitators. Toshiba America makes no bones about it—its PageLaser6 is a LaserJet compatible meant to work side by side in your office with the popular HP workhorse. The 35-percent smaller and lighter Toshiba offers you interchangeable fonts and slightly less speed at a slightly lower price.

The PageLaser6 is built around TEC's own 6-ppm engine (compared to the 8-ppm throughput of the Series II's Canon engine). It provides up to 300-dpi resolution and has a useful life of 300,000 pages, given a 4000-page-per-month duty cycle.

Like the Series II, the PageLaser6 targets general office applications. Weighing only 35 pounds, the printer measures just over 16 by 15 by 8 inches. It ships with 512K of memory and accepts a single 1MB, 2MB, or 4MB expansion board. The input and the output trays have a capacity of 150 sheets each (instead of HP's 200), adjustable from envelopes through legal-size paper.

Resident typefaces include Courier, Courier Bold, Prestige Elite, and Line Printer in both portrait and landscape orientations. The PageLaser6 can use HP font cartridges and soft fonts. The printer has both serial and parallel interfaces and two HP-compatible cartridge slots. It retails for $2000. Toshiba America Information Systems, Computer Systems Division, 9740 Irvine Blvd., Irvine, CA 92718; 714/583-3000. *—Mike Hogan*

Reader service no. 684

Of course, these are just a few opinions, but we'd say there's a definite trend here.

We'd like to thank the thousands of PC World Magazine readers who voted TurboTax the best Tax Planning and Preparation program for four years in a row.

TurboTax may be so popular because we designed it to be incredibly fast and powerful, yet extremely easy to use.

Or perhaps it's the enhancements we add each year. Exciting new features this year include pull-down menus, an expanded Auto Interview Worksheet, a printable reminder system, full mouse support, enhanced graphics, even a Tax Trivia game.

TurboTax includes more than 60 IRS forms and worksheets — each displayed on your screen, so filling out even complex returns is extremely easy.

If you need advice, on-line, item-sensitive IRS help screens and our own cross-referenced Help System indicate what type of information to enter for each item. We can even refer you to a professional tax preparer who can finish your taxes using your TurboTax data.

Quick-Look Tax Window • 1990 Tax Planning included free • Pop-up Calculator • Data Examiner to help pinpoint omissions in your return • Dot matrix 1040 • 1040 A short form • Free copy of the *Price Waterhouse Personal Tax Advisor* • Fully integrated programs for 41 state returns also available.

When you're through calculating your taxes — in under 10 seconds — you can print everything, including the IRS-approved dot matrix 1040, on plain paper with most dot matrix printers.

No wonder over 2,000,000 returns were prepared last year with America's number-one tax preparation software. TurboTax.

See your local dealer or purchase direct by calling 1-800-782-1120, or 619-453-8722 in California.

Suggested Retail prices — Federal: $75.00, Updates: $37.50, Each State: $40.00, Updates: $25.00. California residents include sales tax. TurboTax requires 384K.

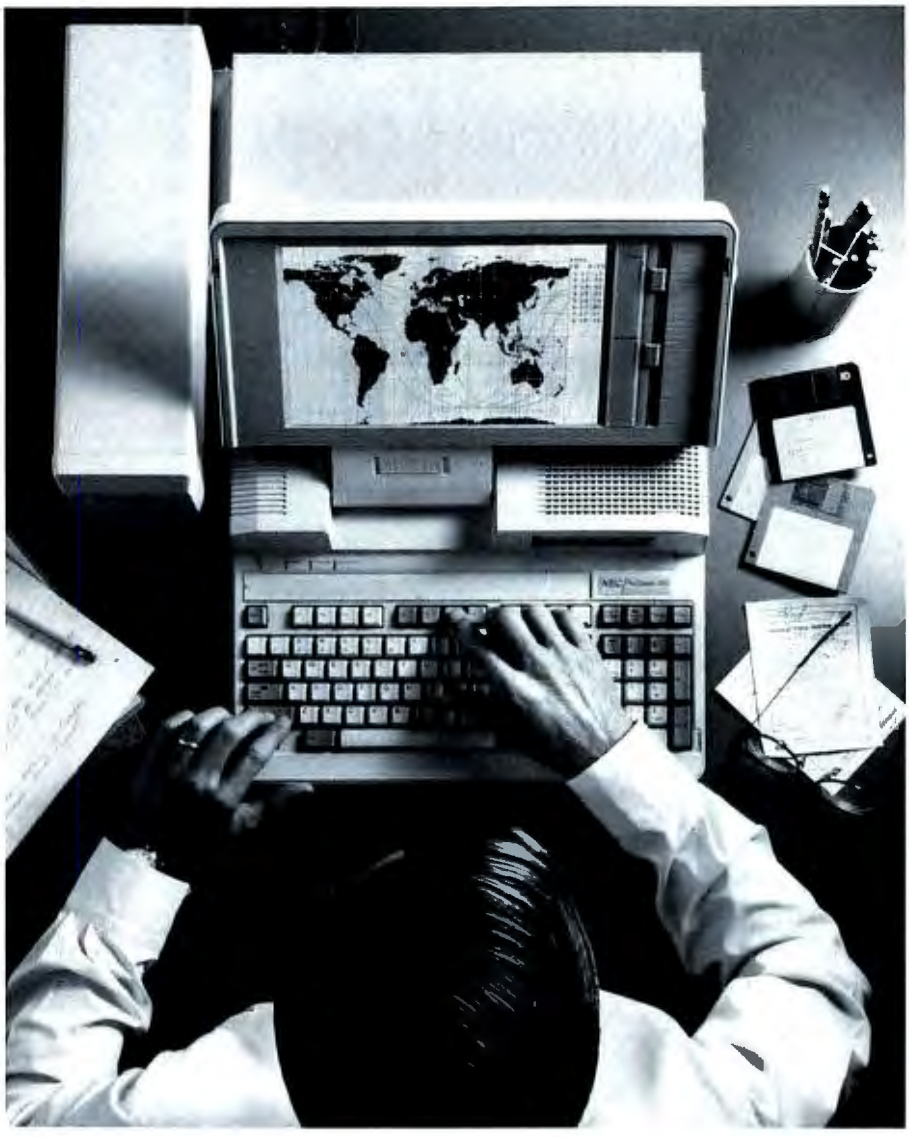
ChipSoft, Inc.

5045 Shoreham Place
San Diego, CA 92122

Circle 262 on reader service card

The ProSpeed™ 386 desktop PC.

To understand its massive power,



In the past, people who were serious about their computers have had a serious dilemma.

They could either buy a powerful desktop and give up any thoughts of portability. Or get a laptop, and forget about expansion and connectivity capabilities.

But never could they find a computer flexible enough to give them both.

Until now. With the ProSpeed 386 from NEC.

As you'd expect from a powerful 386 desktop, it runs at a swift 16MHz, has seven expansion slots and up to four drives. So it can handle anything you throw its way.

And when you want to take it on the road, it's still a high-powered computer. The laptop unit is available with either a 40 or 100MB hard disk. It's also battery operated and has up to 10 megabytes of memory. There's even a paper-white Monograph screen with VGA text/EGA graphics resolution that pro-

C&C Computers and Communications

you have to take it apart.

©1989 NEC Home Electronics (USA) Inc. ProSpeed and Docking Station are trademarks of NEC Home Electronics, Ltd.

vides the readability and graphics capabilities of a full-sized CRT.

All this and total connectivity capability, too. When you want to turn it back into a desktop, you merely slide the computer into a unique Docking Station™ that never leaves your desk. It contains two standard drive bays as well as the capacity for four full-sized cards. So in a matter of seconds, you're fully integrated back into your office.

No manual reconfiguring. No phone lines to connect. No cable hookups.

What's more, for a computer with this kind of flexibility, the price isn't a hassle either.

So if you'd like us to continue taking the ProSpeed 386 apart, call NEC Home Electronics (USA) Inc. at 1-800-FONE-NEC.

Or, if you'd like to dissect it yourself, call for product literature at 1-800-826-2255.

In Canada, call 1-800-268-3997.

NEC

Circle 182 on reader service card

UPDATE

Quicken 3

Keeping Expenses in Check

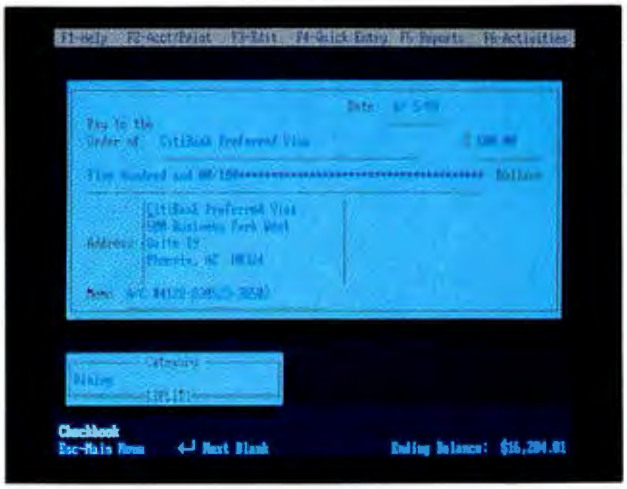
When Intuit first set out to create a check-register package, its goal was pretty basic: to make a program that was faster to use than doing the math by hand. The result was a convenient tool to balance checkbooks, print checks, and do limited financial reporting.

Version 3 of *Quicken* cements its links to the small-business community by adding muscle to asset handling and reporting while retaining its intuitive interface. *Quicken 3* now tracks multiple cash and credit card accounts; makes transfers between multiple accounts and produces reports from them; and includes report templates for tax summaries, account balances, profit and loss, and asset and liability management. Like *Andrew Tobias' Managing Your Money 6.0*, *Quicken 3* has a tie-in with CheckFree, an electronic payment service in Columbus, Ohio (see *Product Outlook*, *PCW*, October 1989).

Aimed at spenders as well as scrooges, the $59.95 program now tracks income and expense categories for amounts up to $10 million. Its instant reports consolidate information from multiple savings, checking, and credit card accounts and provide loan amortization and capital equipment depreciation data. As with version 2, you can break the figures down by account or general category, making year-end tax calculations a lot faster. But *Quicken 3*'s new spreadsheetlike display makes it easier to compare the profitability of various properties, projects, or jobs.

Other additions include ASCII and *1-2-3* export capabilities, a pop-up calculator, two levels of password protection, and more check styles (including laser voucher and wallet-size checks). *Quicken* won't help you get rich, but it will quickly tell you where the money is—or was.

Quicken 3 sells for $59.95. Upgrades are $29.95, or $8 if you bought version 2.0 after May 7, 1989. Intuit, Inc., 540 University Ave. #50, Palo Alto, CA 94301; 800/624-8742, 415/322-0573.
—William Rodarmor
Reader service no. 687



Intuit's new version of Quicken keeps the intuitive interface, but it now can track and write checks for multiple cash, credit card, and checking accounts.

Microsoft Mouse 400 Series

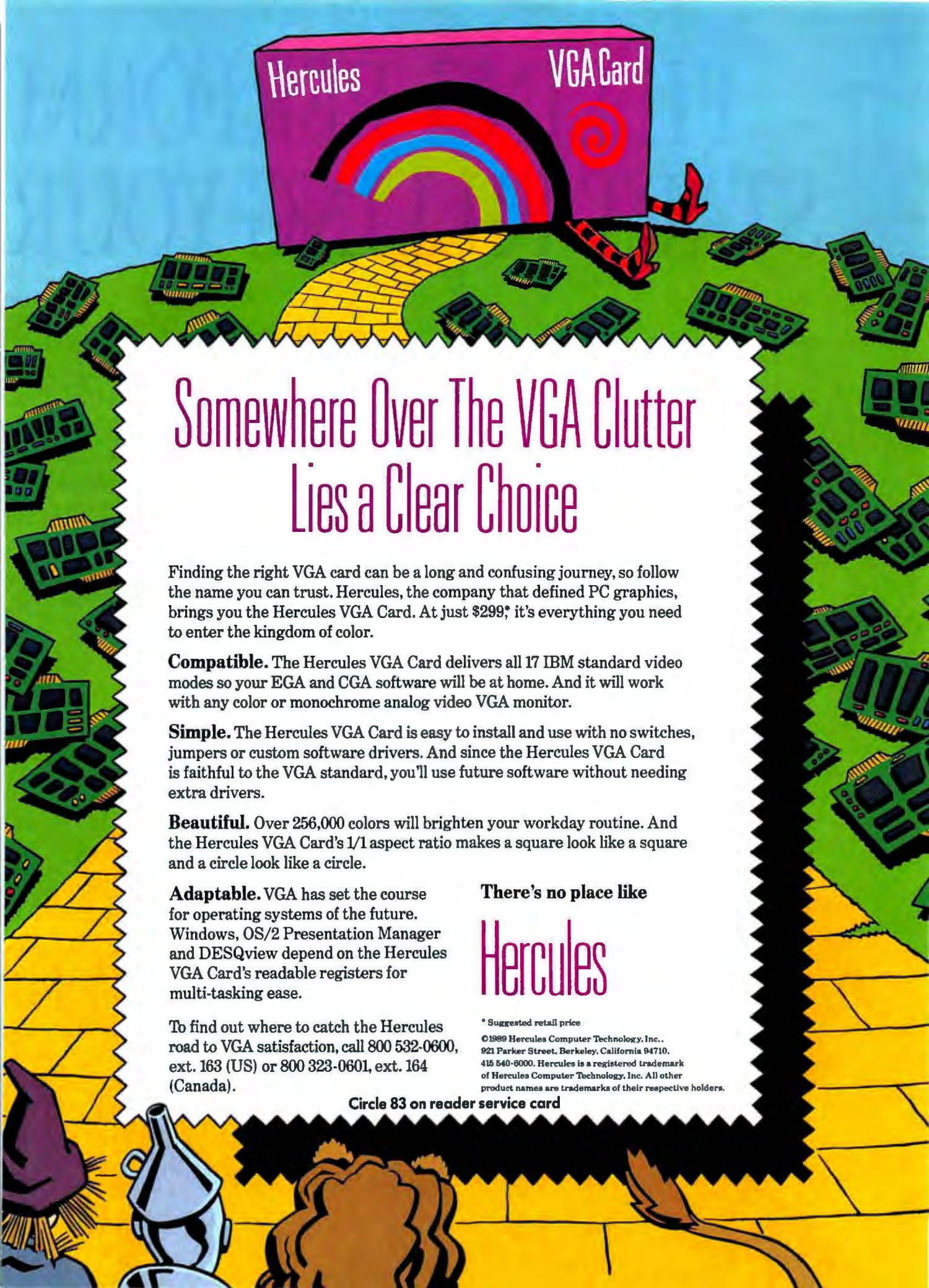
Less Squeak, Fleeter Feet

At 400 ppi, Microsoft's new mouse has twice the resolution and faster on-screen movement than previous versions.

Microsoft has bred a new mouse that doubles resolution to 400 pixels per inch for faster on-screen cursor movement with less motion required of your arm.

Microsoft Mouse 400 Series offers the same ergonomics as its predecessor, but higher on-screen resolution combined with an accelerator algorithm lets you set the ballistics of the mouse's movement so that you can use less desk space, less elbow grease, and more wrist to move the cursor across the screen as quickly as you wish.

Microsoft Mouse 400 Series comes in two varieties: One is for serial and PS/2-compatible mouse ports; the other plugs into an included expansion card for the PC bus. Both also include an OS/2 driver and either an update of *Microsoft Paintbrush* with a character-based graphic user interface ($150) or *Windows/286*, which includes *Paintbrush for Windows* ($200). A Business Five-Pack (five mice and drivers, but no bundled applications) is available for $600. Microsoft Corp., 16011 N.E. 36th Way, Redmond, WA 98073-9717; 206/882-8080.
—Mike Hogan
Reader service no. 688



Somewhere Over The VGA Clutter Lies a Clear Choice

Finding the right VGA card can be a long and confusing journey, so follow the name you can trust. Hercules, the company that defined PC graphics, brings you the Hercules VGA Card. At just $299,* it's everything you need to enter the kingdom of color.

Compatible. The Hercules VGA Card delivers all 17 IBM standard video modes so your EGA and CGA software will be at home. And it will work with any color or monochrome analog video VGA monitor.

Simple. The Hercules VGA Card is easy to install and use with no switches, jumpers or custom software drivers. And since the Hercules VGA Card is faithful to the VGA standard, you'll use future software without needing extra drivers.

Beautiful. Over 256,000 colors will brighten your workday routine. And the Hercules VGA Card's 1/1 aspect ratio makes a square look like a square and a circle look like a circle.

Adaptable. VGA has set the course for operating systems of the future. Windows, OS/2 Presentation Manager and DESQview depend on the Hercules VGA Card's readable registers for multi-tasking ease.

There's no place like

Hercules

To find out where to catch the Hercules road to VGA satisfaction, call 800 532-0600, ext. 163 (US) or 800 323-0601, ext. 164 (Canada).

* Suggested retail price

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Circle 83 on reader service card

FILLING PERFORM™ START FILLING YOUR

By enabling you to design, warehouse and fill custom forms on your IBM PC or compatible, Delrina Technology's PerFORM has translated the benefits of "just in time" production to make most paper forms obsolete.

PerFORM starts with the logic of the best desktop publishing software. Gives you the same near-typeset resolution. Merges it with the best of data entry software. And goes far beyond both to save money and time.

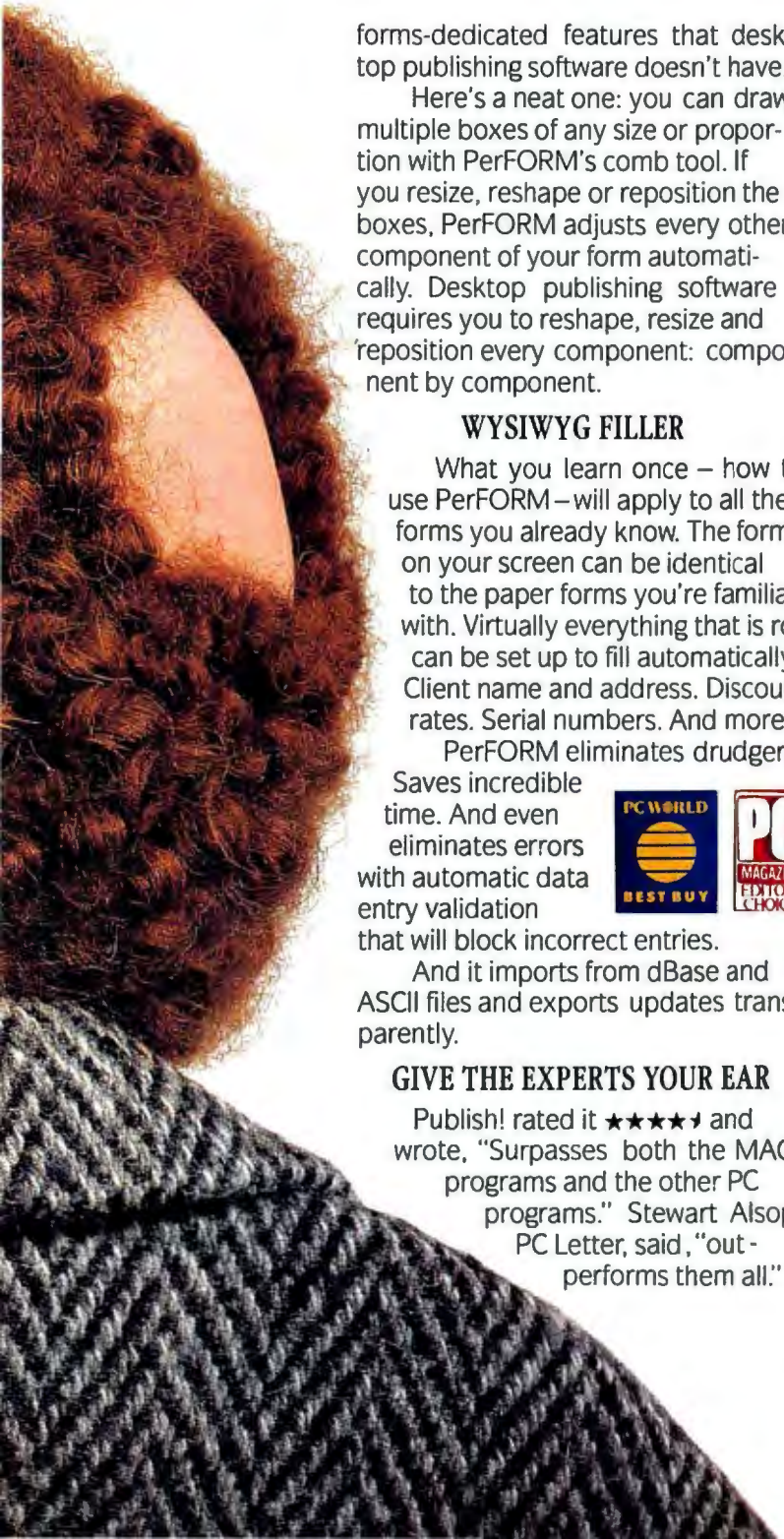
DESIGNERS DESIGN, FILLERS FILL

By splitting the functions into separate Designer & Filler software, PerFORM lets you maintain control of Design while you distribute Filler to every workstation that needs it. Even better with our specialized LAN Filler software.

WYSIWYG PLUS

PerFORM Designer & Filler are graphic-based. You see on-screen exactly what your form will be when you print it. PerFORM has mouse-driven creation tools that no other forms processing software has. And

FORMS WILL HEAD WITH IDEAS.



forms-dedicated features that desktop publishing software doesn't have.

Here's a neat one: you can draw multiple boxes of any size or proportion with PerFORM's comb tool. If you resize, reshape or reposition the boxes, PerFORM adjusts every other component of your form automatically. Desktop publishing software requires you to reshape, resize and reposition every component: component by component.

WYSIWYG FILLER

What you learn once – how to use PerFORM – will apply to all the forms you already know. The forms on your screen can be identical to the paper forms you're familiar with. Virtually everything that is rote can be set up to fill automatically. Client name and address. Discount rates. Serial numbers. And more.

PerFORM eliminates drudgery. Saves incredible time. And even eliminates errors with automatic data entry validation that will block incorrect entries.

PC WORLD BEST BUY

PC MAGAZINE EDITORS CHOICE

And it imports from dBase and ASCII files and exports updates transparently.

GIVE THE EXPERTS YOUR EAR

Publish! rated it ★★★★½ and wrote, "Surpasses both the MAC programs and the other PC programs." Stewart Alsop, PC Letter, said, "outperforms them all."

IBM GAVE PerFORM ITS VOTE

PerFORM is the form design software in IBM FAWN – Forms Available When Needed. It enables MS DOS PS/2, PC/XT or PC/AT users to obtain and print the most current "just in time" forms from their IBM S/370 mainframe. And an OS/2 version is more than just the glimmer of an idea.

PHONE 1-800-268-6082

PerFORM is so easy and capable, it's practically guaranteed to get you thinking beyond the obvious savings to new ways to use forms. Such as bar coding your inventory by having PerFORM translate part numbers into a bar code as you list your stock.

PerFORM will change the forms in your business. And maybe, the form of your business. Phone Delrina Technology for more information and your nearest PerFORM dealer:
PerFORM Designer & Filler, $294.95*
PerFORM Filler, $129.95*

PerFORM

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DELRINA TECHNOLOGY INC

*Manufacturer's suggested list price

Circle 328 on reader service card

Corel Draw 1.1

Reach Out and Type to Someone

Good news for desktop publishers—the latest version of Windows-based Corel Draw lets you import typeface outlines to supplement the 102 that ship with the product.

The latest version of Corel Systems' *Windows*-based illustration program makes life easier for desktop publishers. In addition to the typefaces bundled with it, *Corel Draw 1.1* includes a conversion program that lets you import from several manufacturers' typeface outlines—including all Adobe's font outlines (rather than bit map approximations). Corel has thrown in 45 new typeface outlines from 14 type families for a package total of 102.

Once in the draw program, you can reshape the font, adding special effects such as graduated fills or even curving the text. Then you can send your creation to any *Windows*-compatible device, including PostScript printers and the HP LaserJet Series II. Also in the package are 300 images from the libraries of 12 major clip-art vendors; up to 20,000 other images are available from those suppliers.

Finally, *Corel Draw* supports *Windows*' dynamic data exchange, which means you can move live data between the program and other *Windows* applications. *Corel Draw 1.1* sells for $595; upgrades are available for $99. Corel Systems Corp., 1600 Carling Ave., Ottawa, Ontario K1Z 8R7, Canada; 613/728-8200. *—Mike Hogan*

Reader service no. 689

Objectworks for Smalltalk-80

Portable Objects of Desire

Version 2.5 of ParcPlace Systems' Smalltalk-80, an object-oriented development environment, offers greater portability across major hardware platforms.

Now called Objectworks for Smalltalk-80, the latest version gives applications complete binary compatibility, without recompilation, across DOS, Macintosh, and UNIX platforms. You can design your own uniform interface, making it resemble the Mac's or another graphic standard.

Previous versions of the Smalltalk-80 language required you to port source code, then redesign the I/O and debug. Version 2.5 includes a run-time kit that lets you make executable applications and distribute them under a licensing agreement to users who need not have a copy of the full product.

Objectworks for Smalltalk-80, which retails for $595, includes the Smalltalk-80 language, the development environment, a reusable library of more than 300 object classes with more than 5600 methods for modifying objects, and 1200 pages of documentation, including an object-oriented programming tutorial. It requires a 386 machine, EGA or better graphics, 3MB of memory, and at least 5MB of storage. A run-time license starts at $149 for one. ParcPlace Systems, 1550 Plymouth St., Mountain View, CA 94043; 415/691-6700. *—Mike Hogan*

Reader service no. 690

Lattice C 6.0

A Tighter Weave

In *Lattice C* version 6.0, the compiler has been completely reworked. Its new global optimizer reduces the size of the .EXE files it generates, enabling those applications to execute 10 to 30 percent faster.

Lattice C 6.0 requires no run-time royalties and lets you speed application development with more than 750 routines in such categories as communications, graphics, and *dBASE*-compatible data base libraries.

The 100-percent ANSI-compatible compiler now includes an enhanced overlay linker to help keep the size of your applications manageable. Its CodeProbe debugger can debug multithreaded OS/2 as well as DOS applications. Utilities previously sold separately—among them a text management/search utility—are now bundled in.

Lattice C version 6.0 requires either DOS 2.1 or a later version, 512K of memory, and a hard drive, or OS/2 1.0 or a later version and appropriate hardware. It sells for $250, down $200 from version 3.4. Lattice Inc., 2500 S. Highland Ave., Lombard, IL 60148; 800/444-4309, 312/916-1600. *—Mike Hogan*

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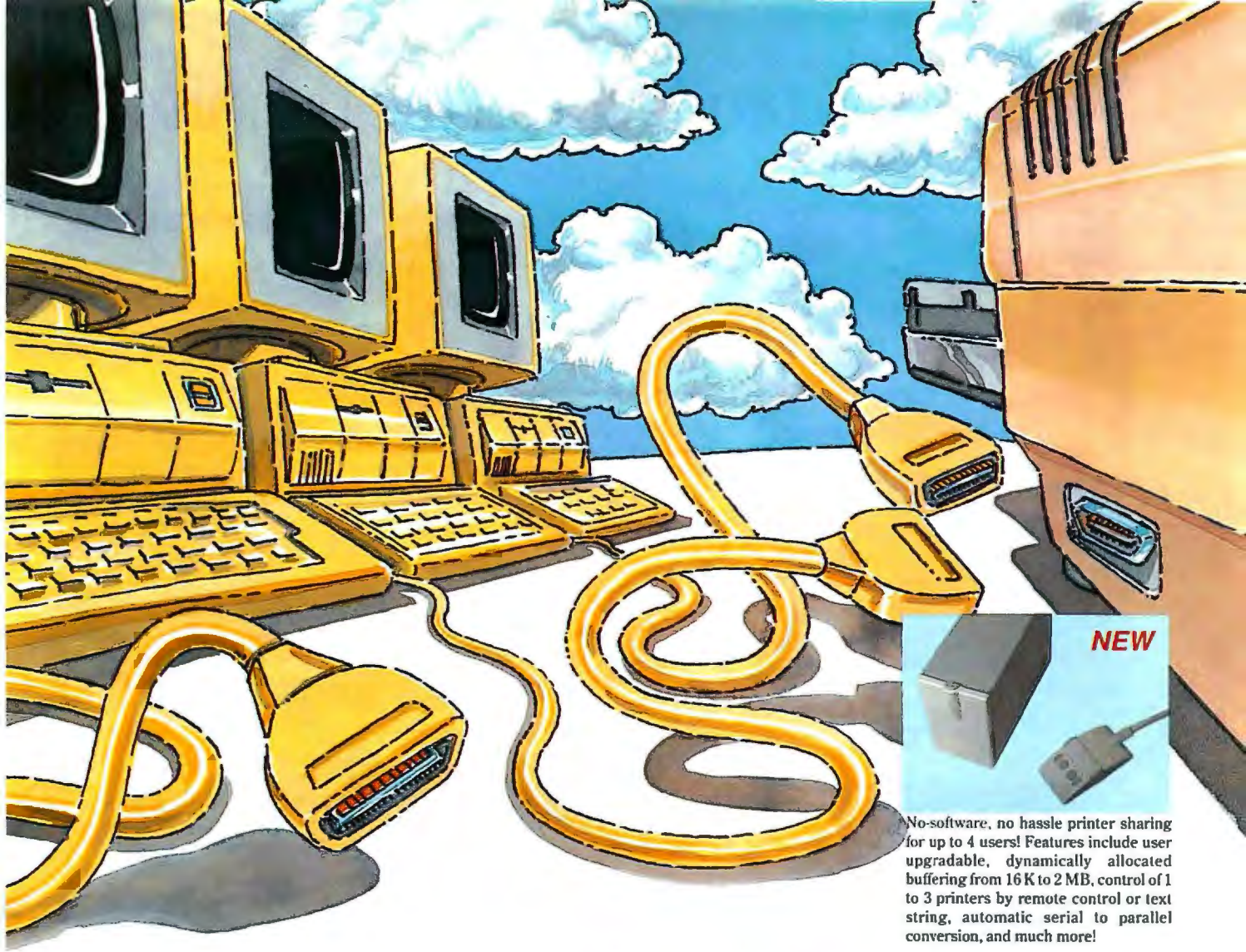
For more information about any product, contact the manufacturer or circle the number on the reader service card. ●



No-software, no hassle printer sharing for up to 4 users! Features include user upgradable, dynamically allocated buffering from 16 K to 2 MB, control of 1 to 3 printers by remote control or text string, automatic serial to parallel conversion, and much more!

Looking For a Better Connection?

What good is it having more than one computer if you can only print from one at a time? Maybe you have different types of printers, and you'd like to use them all without having to constantly disconnect and switch cables.

Don't you think that all your equipment should work interchangeably or simultaneously as needed, without any downtime at any one station? Isn't that the reason you purchased all that high-tech hardware?

Kansai has a better connection for a better solution to your problems. Quality buffers, sharing systems and interface converters; economical but vital peripherals that can save you more time and money than you probably realize.

Why not really complete your system? Get the Kansai connection.

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Get the Connection.
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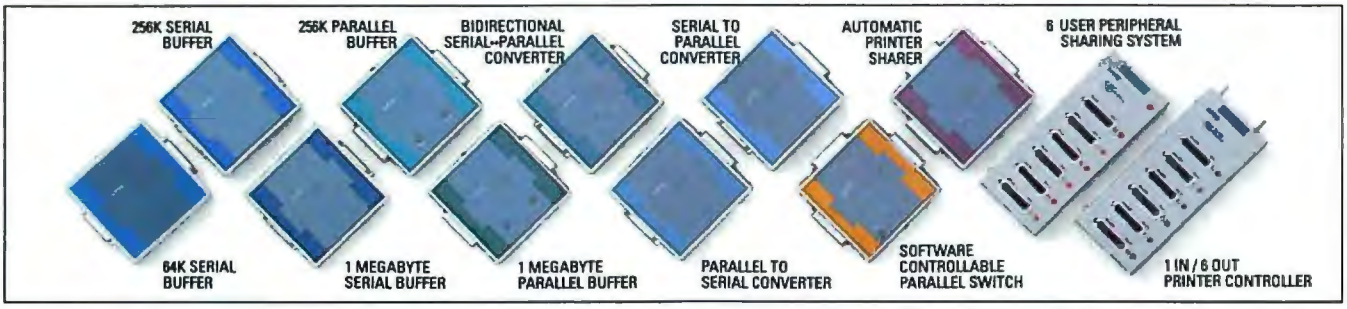


Kansai International, Inc.: 3555 Voyager Street, Suite 201, Torrance, California 90503 / Phone: (213) 542-7626 • 1(800) 733-3374 • Fax: (213) 542-8702

Circle 149 on reader service card

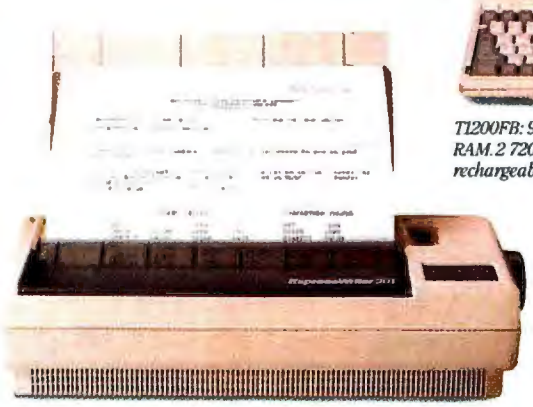
We develop products on the premise that

Page Laser12: 12 ppm, up to 3 paper bins, 750 sheet capability, Toshiba/Qume, Diablo, IBM & HP emulations.

T1000: 6.4 lbs, 4.77MHz 80C88, 512KB RAM expandable to 1.2MB. MS-DOS in ROM, 720KB 3½" diskette drive. Built-in RGB, parallel, serial and external drive ports.

P341SL: Wide carriage (up to 270CPL), 216/72 cps, advanced paper handling, 4 part forms.

T1200FB: 9.8 pounds, 9.54MHz 80C86, 1MB RAM. 2 720KB 3½" floppy drives, removable/ rechargeable battery pack.



ExpressWriter 301: 4 lbs, letter-quality 24-dot print head, 60 cps, Toshiba/Qume and Epson LQ emulations, 5 resident fonts.

T3100e: 12MHz 80286, internal IBM slot, 20MB hard disk, gas plasma display, 1MB RAM expands to 5MB, 1.44MB 3½" diskette drive.

T5100: 16MHz 80386 microprocessor, 40 or 100MB hard disk, 2MB RAM expandable to 4MB. 14.6 lbs. Built-in EGA display with high resolution gas plasma screen.

P351SX: 360/120 cps, 24-pin letter quality, color option, Toshiba/Qume and IBM emulations standard, Epson & Diablo emulations optional.

great minds don't think alike.

T1600: 11.6 lbs, Battery-powered 12MHz 286, 20MB hard disk, 1.44MB floppy. 1MB RAM expands to 5MB, backlit EGA LCD, removable/rechargeable battery packs.

T5200: 20MHz 80386 processor, 2 internal IBM compatible expansion slots, 40 or 100MB hard disk, VGA display with external VGA monitor port, 2MB RAM expandable to 8MB.

T3200: 12MHz 286, 2 IBM compatible slots. 40MB hard disk, 1.44MB floppy, 1MB RAM expands to 4MB, EGA screen.

Carrying cases: available in leather or fabric, make our portable PCs even more portable.

ExpressWriter 311: 24-pin dot matrix, 180 cps draft/60 cps letter quality, 3 resident emulations (Toshiba/Qume, Epson LQ, IBM Proprinter), 16K buffer, 5 resident fonts plus card slots, 11 lbs.

Numeric Keypad: full function, 15 or 17 keys, for many of our portable PCs.

T1200HB: 10.8 lbs, 9.54MHz 80C86, 20MB hard disk, 1MB RAM, includes 384KB LIM-EMS. Removable/rechargeable battery pack.

P321SL/SLC (color): 216/72 cps, 24-pin letter quality, up to 360x360 DPI graphics. Toshiba/Qume and IBM emulations standard, Epson and Diablo emulations optional, 32KB print buffer, front panel controls, advanced paper handling.

People have their own quirky ways of doing things. Some think fast. Some slow. Some are deliberate. Some intuitive. Some work from 9 to 5. Others never stop.

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Circle 285 on reader service card

Polished Presentations

With the right tool, you can turn humdrum data into informative and convincing visuals, without jumping through hoops.

Seven business graphics programs help you practice the art of persuasion.

Richard Jantz and Michael Smith-Heimer

With solid graphics in spreadsheets like *Excel*, *Quattro*, *SuperCalc*, and *1-2-3* release 3, you may wonder if you really need a graphics package. If your brush with graphics consists of creating a quick black-and-white chart and slipping it into a report, stick with your spreadsheet. But if your job regularly requires standing up in front of a group and delivering your best shot, you need high-quality visuals, and that means using presentation graphics software.

Each of the seven popular products reviewed here enables you to do much more than crank out charts from data sets. *35mm Express*, *Draw Applause*, *Freelance Plus*, *GEM Presentation Team*, *Graph Plus*, *Harvard Graphics*, and *Xerox Presents* can all satisfy your business graphics presentation needs. Uniformly priced at $495, they deliver word charting, drawing tools, clip-art libraries, PostScript and 35mm-slide support, and even monitor-based slide shows.

Three of these packages offer the convenience of icon-based graphic interfaces and a WYSIWYG work area, courtesy of *Windows* and *GEM*. Ironically, the two winning entries, *Freelance Plus* and *Harvard Graphics*, use old-fashioned, full-screen input forms for building charts and make you switch modes to preview final output. Clearly, there's more to power and ease of use than pulldown menus.

From Ideas to Images

Effective presentations don't happen by accident. They begin with careful selection of data (including words) and depend on proper timing and execution. A good package should cover every step in the process—including entering data, choosing and modifying chart formats, picking fonts, adding art, and selecting the order of images—without making you jump through hoops.

FRED STIMSON

Data Import Most graphics users also use spreadsheets, and those who don't soon discover that the data has to come from somewhere. Charting often involves last-minute variations in the same data, which must be updated, massaged in a spreadsheet, and then imported into the graphics package.

Hot linking is the ultimate in tying worksheets to charts. Once you specify the worksheet file name (and in better programs, the cell range) for a chart, any change made to the worksheet updates the chart automatically. For people who habitually use graphics for desktop data analysis, *Harvard Graphics* and *Graph Plus* offer their own built-in spreadsheetlike functions.

Even if graphics programs lack such functions, they hold data for charting in their own type of spreadsheet. To give you the flexibility you need, a package should be able to plot at least a half-dozen data sets (equivalent to columns) and 24 data points (equivalent to rows). Only *Xerox Presents* falls short of this minimum standard.

Chart Selection *Harvard Graphics*, *Graph Plus*, and *Freelance Plus* provide the richest set of charts in the roundup. Along with the usual assortment of bar, pie, and line charts, these packages supply mixed charts (such as bar/line); scatterplots (to show the correlation between two distributions); charts with dual vertical axes (to reveal the relationship between two trends); and high/low/close charts (for securities analysis).

Most of the packages include templates for every chart type. Each template makes the decision for you about fonts, colors, line styles, patterns, and so forth. Look for a program that enables you to tailor these templates to your own requirements so you can use them again and again. However, not even

Those who have neither the time nor the talent for drawing can avoid it entirely with clip art.

the most complete set of templates can accommodate all your presentation needs, and it's here that you'll appreciate a solid set of chart editing tools.

Chart Editing A few simple editing features can save you chronic headaches. For example, beginners quickly discover that the more data sets they have, the more likely labels along the horizontal axis are to overwrite each other. A good charting application lets you skip labels (dropping 1985 from between 1984 and 1986, for instance); better packages let you rotate labels by degrees.

Automatic scaling conveniently rounds off axis values and displays a label, such as "In Thousands," in the margin. However, not all packages let you decide how many zeros appear before rounding occurs. Similarly, most packages have handy predesignated positions for the legend, but only a few let you move the legend without considerable trouble.

Business graphics is an art of persuasion, and experienced chart makers know that lengthening the scale for profits, for example, can make a bad month look like a slight dip. Only *Xerox Presents* doesn't let you manually adjust scales on the axes; overall, *Freelance Plus*, *Harvard Graphics*, and *Graph Plus* have the best selection of chart-editing features.

Enhancements The first enhancement feature to look for is a wide array of high-quality fonts. After all, an estimated 70 percent of all charts are word charts, and attractive type styles give a chart a polished look. Every package reviewed offers a PostScript driver, but not every user has a PostScript printer. The LaserJet is the common denominator for laser printers, and if a package includes (or is compatible with) Bitstream fonts, you'll have LaserJet type of excellent quality.

When most people think of artistic enhancements, they think of drawing. But those who have neither the time nor the talent for drawing can avoid it entirely with clip art. Choosing a symbol from a library and dropping it in a chart is one of the easiest ways to add life. For maximum impact, you can place a scanned photograph of a company product or an ideal customer alongside a chart instead of a generic symbol.

Freelance Plus and *Graph Plus* deliver more drawing power than any of the other programs reviewed. One of their crucial features is curve smoothing of freehand lines. Smoothed, vector-based curves are far easier to manipulate than simple splines, especially for forming complex objects.

A top-notch program should also let you pick polygons, circles, arcs, ellipses, and other shapes from readily accessible menus and dynamically size objects at will. When you can select all or a subset of objects and flip, rotate, or zoom in on them with ease, the drawing process hums.

Output Most graphics packages drive a slew of devices, but you usually have only two practical choices of output. For high-powered, professional presentations, color slides are a necessity. For reports, in-house meetings, and other less momentous occasions, you'll want black-and-white handouts or overhead transparencies printed on a laser printer—dot matrix output is suitable for previews only. A lucky few can justify the cost of a plotter or a color ink jet printer for color transparencies.

Put together a string of charts for a slide presentation, and any package reviewed here can generate output files that one or more commercial slide services can turn into slides. The resolution and color quality these services offer are a magnitude better than those of a desktop slide camera; in addition to expressing the slides overnight, many offer extras, such as special fonts or graduated background shading missing from the originating graphics program. Packages with built-in telecommunications, such as *35mm Express* or *Draw Applause*, make the process smoothest.

If you want to print chart handouts to go with your slide show, only *Harvard Graphics*, *Freelance Plus*, and *35mm Express* automatically convert solid colors to black-and-white patterns. With the remaining programs (except for *Draw Applause*, which offers no patterns at all), the only way to "automatically" produce a black-and-white pattern is to use color patterns for slides.

You can run a monitor-based slide show with any of the packages, but the quality varies. The best programs provide control over how fast each slide appears and how

long it remains on screen, along with such transitions as fades, wipes, and dissolves. With *Freelance Plus*, you can even produce a disk-based slide show that runs on other PCs without requiring the program.

35mm Express 4.1

Until *Draw Applause*, *35mm Express* was the program to beat if you wanted slides. It offers excellent color control, handy default formats, and a built-in communications module for sending output to slide services. But file handling and the user interface are cumbersome, and while the drawing features are strong, other programs provide more charts and drawing tools.

35mm Express is the only package reviewed that makes you generate a chart in *1-2-3* before you import the worksheet data. Worse, the outdated method of file management (which requires fixed-capacity "folders" and "cabinets") is needlessly restrictive.

Except for the missing bar/line option, the program supplies an adequate selection of charts, but the number of data points is a bit low. The program has two high-quality, built-in typefaces, but it can't use Bitstream fonts.

The menus sometimes group related features on different menus, leading to needless mousing around. And although the options for freehand drawing and object manipulation top those of *Draw Applause*, they're a notch below the ones in *Freelance Plus* or *Graph Plus*. You won't find rulers, grids, or snap-to-grid functions, for example, and there's no support for scanned images. However, the clip-art library, along with separately available additions, may provide all the images you need.

35mm Express still glitters when it comes to color. You get up to 64 colors per chart, and cycling through an intelligent array of default color combinations—including color-coordinated 3-D effects—can produce quick results. Drop shadows supply the finishing touches, while a summary screen for colors speeds last-minute changes. The program also offers the best slide camera support.

For proofing or handouts, the program automatically converts colors to fill patterns. However, because some of the patterns are quite similar, you may need to change colors to produce readable hard copy. *35mm Express* also prints speaker's notes and offers a basic slide-show feature.

Superb color capabilities make *35mm Express* a smart choice for users willing to stick with good default formats and a basic set of charts. And the drawing features are quite good. Only *Draw Applause*'s special effects and slightly better charting edge *35mm Express* out of first place for slides.

EXECUTIVE SUMMARY

35mm Express 4.1

Business graphics program

A solid choice for quality slide presentations, *35mm Express* offers excellent color control and strong device support. But the user interface could stand some work, and *Draw Applause* has better effects.

	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import			●	
Enhancement				●
Output				●
Overall value				●

Reader service no. 665

Draw Applause 1.1

Sometimes, even if a product is weak in key areas, its unique features make it irresistible. That's *Draw Applause* all over. In version 1.1 (due to be upgraded), a graceless user interface, restricted data entry, and a lack of fill patterns add up to a weak general-purpose graphics package. Use it for slides, though, and the special effects will convince you that you can't live without it.

Want to apply shading to any object, including text? No problem. Expend more effort, and you can take two copies of a logo—one small, one large—and produce shaded, overlapping duplicates in between to create a sense of motion and depth; you can even twist the duplicates into a spiral. *Draw Applause* is the only package reviewed that in-

Use Draw Applause for slides, and the special effects will convince you that you can't live without it.

FEATURES EVALUATION

Presentation Graphics: Three Standouts

Thanks to rich charting and chart-editing functions, Freelance Plus, Harvard Graphics, and Graph Plus can help you produce professional-looking presentations without making you bend over backwards. (Note: We've given credit for charting features only when you don't have to enter a separate draw module.)

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

	35mm Express 4.1	Draw Applause 1.1	Freelance Plus 3.01	GEM Presentation Team 1.1	Graph Plus 1.3	Harvard Graphics 2.12	Xerox Presents 1.0
Charting							
Bar graphs							
Vertical/horizontal bars	●	●	●	●	●	●	●
Maximum data sets per chart	12	10	8	12	△	8	4
Maximum data points per set	60	150	140	50	△	240	20
Overlapping bars	○	○	○	○	●	●	○
Bar/line graphs	◒[1]	●	●	●	●	●	○
Pie charts							
Maximum slices per pie	12	16	16	20	△	12	20
Maximum exploded slices	12	16	16	20	△	12	0
Two- or four-pie charts	◒[1]	◒[1]	●	◒[1]	◒[1]	●	◒[1]
Line graphs							
Scatter plots	○	○	●	●	●	●	●
Maximum line styles	1	2	7	1	5	4	1
Maximum line markers	0	0	8	6	10[2]	13	16
Maximum data points per line	60	150	500	101	△	240	20
Maximum data sets per line graph	12	10	8	12	△	8	4
Area graphs	●	●	●	●	●	●	●
Chart editing							
Manual setting of minimum/maximum	●	●	●	●	●	●	○
Colors per chart	64	64	12	8	16.8 mil[3]	16	256
Fill patterns per chart	64	0	14	18	40	12	16
Freeform legend location	○	●	●	●	●	○	○
Other charting features							
High/low/close	○	○	●	○	●	●	○
Full data manipulation	○	○	○	○	●	●	○
Dual y-axes	○	●	●	○	●	●	○
Skips labels	●	●	●	●	●	●	○
Vertical/horizontal axis labels	○	○	●	○	●	◒[4]	○
Automatic scaling	○	○	●	●	●	●	○
Saves customized templates	●	◒[5]	●	◒[5]	●	●	●
Auto color–to–black-and-white conversion	●	○	●	○	○	●	○
Enhancement							
Text							
Built-in typefaces	2	3	3	3	3[6]	6	7[6]
Supports Bitstream fonts	○	○	●	●	●	○	●
Drop-shadowed text	●	●	●	○	○	●	○
Ability to rotate text	○	●	●	○	●	○	○

Enhancement (continued)	35mm Express 4.1	Draw Applause 1.1	Freelance Plus 3.01	GEM Presentation Team 1.1	Graph Plus 1.3	Harvard Graphics 2.12	Xerox Presents 1.0
Clip art							
Clip-art images included	250+	125	900+	250+	500+	300+	30+
Additional images available	●	○	●	●	●	●	●
Chart background							
Color selection	●	●	●	◒[7]	●	●	●
Displays graduated shading	○	●	○	○	◒[8]	○	●
Drawing							
Line types/widths	1/8	2/7	6/5	4/8	5/unlimited	4/99	5/5
Fill patterns	64	0	14	37	40	16	16
Freehand drawing	●	○	●	●	●	○	●
Curve smoothing	●	●	●	○	●	●	○
Zoom feature	●	●	●	●	●	○	●
Undo command	●	○	◒[9]	◒[9]	●	◒[9]	●
Select object subset	●	●	●	●	●	○	○
Flip objects	●	●	●	●	●	○	○
Rotate objects	●	●	●	●	●	○	○
On-screen ruler	○	○	○	●	●	○	●
Grid	○	●	●	●	●	●	●
Snap-to-grid	○	●	●	●	●	●	●
Output							
Desktop slide shows							
Number of images permitted	32	99	100	36	△	90	90
Transition options	1	1	14	1	14	11	14
Creates run-time shows	○	○	●	○	○	◒[10]	○
Device support							
HP LaserJet/Plus	●	●	●	●	●	●	●
PostScript driver	●	◒[11]	●	●	●	●	●
HP HPGL-compatible plotters	●	●	●	◒[12]	●	●	○
Communications module within program	●	●	○	○	○	●	●
Data import							
.WKS	◒[13]	○	●	●	●	●	●
.WK1	◒[13]	●	●	○	●	●	○
ASCII	○	○	●	●	●	●	●
dBASE	○	○	●	○	○	○	○
Metafile (CGM)	○	●	●	○	●	●	●
TIFF	○	○	◒[14]	○	●	○	●

[1] Requires separate merge procedure.
[2] Also enables you to select any keyboard character as a marker.
[3] Available through Windows.
[4] Letters still print in horizontal format.
[5] Word charts only.
[6] Includes Windows fonts.
[7] Color can be changed only by using a filled box for entire frame.
[8] Ten shaded clip-art backgrounds only.
[9] Undelete only.
[10] Program for generating run-time shows sold separately.
[11] Driver is free but must be sent for separately.
[12] Driver available at extra charge.
[13] Graph must be created in 1-2-3 before data can be imported.
[14] Non-gray-scale files only.

An incredible breadth of features makes Freelance Plus 3.01 the best package in the roundup.

cludes a color reference card for its (64-color) palette. The card enables you to compose slides using the actual colors that will appear instead of on-screen approximations.

Draw Applause provides excellent templates for word charts, but the selection of graph types is basic. However, you get a larger capacity for data points than with *35mm Express*, and the option of dual *y*-axes. The program imports data files only in .DIF or .WK1 formats.

Unlike *35mm Express*, *Draw Applause* doesn't offer freehand drawing, and the drawing tools overall are a cut below those offered by *Freelance Plus* and *Graph Plus*. Incredibly, the program offers no fill patterns whatsoever; the only way to get them is through Ashton-Tate's slide service, for which a communications module is provided.

Draw Applause is the only program that makes you send away for its PostScript driver (although it's free), and it doesn't support Bitstream fonts. For rehearsals, you can display a timed series of full-screen charts but with no fancy transitions.

Rumor has it that a forthcoming upgrade will answer most of the major criticisms leveled at the current version, with changes ranging from a revamped user interface to a complete set of patterns. But even without these enhancements, *Draw Applause*'s effects still make it top banana for slides.

EXECUTIVE SUMMARY

Draw Applause 1.1

Business graphics program

Draw Applause's gorgeous color graphics and unique special effects make slides sing. Weak data importing features, however, limit its usefulness as a general-purpose package.

	POOR	FAIR	GOOD	EXCELLENT
Charting			●	
Data import		●		
Enhancement			●	
Output			●	
Overall value			●	

Reader service no. 666

EXECUTIVE SUMMARY

Freelance Plus 3.01

Business graphics program

BEST BUY

Experience the one-two punch of superior charting and extensive artistic control, and you'll agree that Freelance Plus can't be beat. Unsurpassed support for Lotus spreadsheets makes it the perfect graphics companion to 1-2-3.

	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import				●
Enhancement				●
Output				●
Overall value				●

Reader service no. 667

Freelance Plus 3.01

Lotus's *Freelance Plus 3.0* took a quantum leap beyond earlier versions, and version 3.01 adds two small but significant improvements: Memory requirements have shrunk from 640K to 508K (so you can run it on a networked PC), and the program now supports slide services. Couple these extras with an already incredible breadth of features, and *Freelance Plus 3.01* emerges as the best package in this roundup.

Though less intuitive than *Graph Plus*'s *Windows* interface, *Freelance Plus*'s two-line menu bar should be second nature to *1-2-3* users. Moreover, the hot links to *1-2-3* (including release 3.0) are unsurpassed. You can actually view an entire worksheet from inside the program and automatically display the named ranges. With such close *1-2-3* ties, *Freelance Plus*'s lack of data manipulation is no great loss.

Freelance Plus 2.0 was weak on charting, but with such options as area, bar/line, and high/low/close charts, version 3.0 introduced a chart selection that virtually matches that of *Harvard Graphics*. The program also offers high-quality fonts (with access to a

wealth of Bitstream typefaces), along with automatic text boxes and drop shadows.

The robust editing and drawing features are tops. You can slant or rotate text, control the depth of 3-D effects, and move legends wherever you like. Drawing tools include curve smoothing, a complete array of easy-to-manipulate geometric shapes, and the most versatile object-selection features available. The clip-art library is enormous, and if that's not enough, you can import scanned images (though not gray-scale ones).

Like *Harvard Graphics*, *Freelance Plus* converts color into black-and-white patterns painlessly, and it does its rival one better by providing a black-and-white preview mode. The support for output devices is exceptional, and a slide-show function provides plenty of transitions and even generates run-time shows. A new file management module enables you to prepare and print an outline of your presentation.

For slides, you can do better than *Freelance Plus:* It's limited to 12 colors per chart, it lacks a communications module, and it doesn't offer shaded backgrounds (though slide services can add them). But for presenters who need both slides and black-and-white hard copy, no other program offers as much punch across the board, from charting, to drawing, to high-quality fonts, to output options. It's the best all-around solution and the perfect companion for *1-2-3*.

GEM Presentation Team 1.1

GEM Presentation Team is three programs in one, all of which run under the graphic *GEM* environment. *GEM WordChart* delivers the best word charting around, but the combined strengths of *GEM Graph* and *GEM Draw Plus* don't approach the power of *Freelance Plus* or *Graph Plus*. And the *GEM* trio is conspicuously lacking in advanced presentation features.

Like the *Windows* programs reviewed, *GEM Presentation Team* cultivates an interactive working style. Instead of filling in blanks on a separate screen to select charting or drawing options, you pull down a menu or pop up a dialog box while a WYSIWYG work area stays in view. Unfortunately, *GEM Presentation Team* doesn't offer the integration of any of the *Windows*-based presentation graphics programs.

Freelance Plus fits hand in glove with 1-2-3. You can hotlink charts, specify ranges for several data types, and even view a 1-2-3 worksheet.

Word charting doesn't get much easier than with *GEM WordChart*. You pick a style, enter text, and click on an icon to change such attributes as style, size, and alignment; a full selection of templates makes things easy. The bundled Bitstream starter kit ensures high-quality fonts on a laser printer, but you can install only two at a time.

GEM Graph offers basic charting, with high/low/close charts and dual *y*-axes notably lacking. It's particularly unfortunate that the

EXECUTIVE SUMMARY

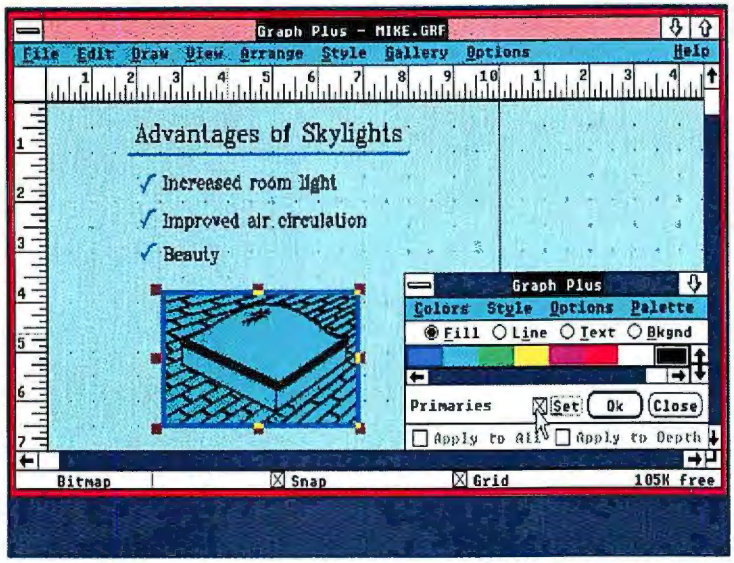
GEM Presentation Team 1.1

Business graphics program

GEM Presentation Team's point-and-click word charting is its best feature. However, the charting, data importing, and enhancement capabilities are for people with minimal requirements who prize ease of use above all.

	POOR	FAIR	GOOD	EXCELLENT
Charting			●	
Data import			●	
Enhancement				●
Output				●
Overall value				●

Reader service no. 668



Graph Plus couples a fine clip-art library with a rich set of drawing tools. The WYSIWYG work area gives you an ongoing preview of the final output.

package imports .WKS—but not .WK1—files. On the plus side, *GEM Graph* is the only program reviewed to offer pictographs, which liven up bar charts by substituting clip art for bars.

You can up the color ante to 16 in the draw program and employ one of 37 fill patterns. But if you want curve smoothing, lots of clip art, or support for scanned images, you won't find it in *GEM Draw Plus*. And once you enhance a chart in *GEM Draw Plus*, you can't reload it in *WordChart* or *Graph*.

GEM Presentation Team supports a sparse selection of printers, though you can buy additional device drivers from the company at nominal cost. Colors print as grays on black-and-white output devices, and the slide-show feature, like *Draw Applause*'s, is better for rehearsals than for desktop presentations.

For those who create word charts exclusively, *GEM Presentation Team* is worth considering, especially if you've already adopted other *GEM* applications. But for complex charting, sophisticated enhancements, or flexible data import, look elsewhere.

Graph Plus 1.3

Micrografx's *Graph Plus* is the third-best package in this roundup, coming in behind *Freelance Plus* and *Harvard Graphics* by a nose. It's the only program with data manipulation comparable to *Harvard Graphics*', and its enhancement features give *Freelance* a run for its money. Only data import and font support fall short.

Thanks to *Windows*, you can change the values in *Graph Plus*'s spreadsheetlike data input window and watch the graph change dynamically in the WYSIWYG work area. Unlike *Harvard Graphics* or *Freelance*, however, *Graph Plus* makes you strip the formulas from a *1-2-3* worksheet before you import the data, so hot linking is impossible. You can, however, hot link to *Excel* worksheets.

A large capacity for data, support for dual *y*-axes, and both log-log and semi-log scales will lure number crunchers, while the overall selection of graphs rivals the best. In addition, the program has a full set of arithmetic and logarithmic functions, including linear, exponential, and logarithmic regressions.

Graph Plus falters when it comes to word charts. You can use one of ten sample word charts as a model and overwrite the text or create word charts from scratch, but both methods require more work than using an empty predesigned template does.

The program combines excellent drawing tools with one of the highest-quality clip-art libraries available. You can apply up to 192 ready-made colors to a single chart, with additional color options available through *Windows*. And like *Xerox Presents*, *Graph Plus*

EXECUTIVE SUMMARY

Graph Plus 1.3

Business graphics program

With Windows-based ease of use, *Graph Plus* fosters superb customized graphics, thanks to extensive color control and excellent enhancement tools. Only LaserJet font support and data import fall short.

	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import			●	
Enhancement				●
Output			●	
Overall value				●

Reader service no. 669

Our Swans make waves.

You're looking at a flock of Swans that are making waves in the computer industry. Waves that have many competitors running for safer ground. Don't let their low price fool you. Compatibility, reliability, performance and unsurpassed customer satisfaction have made Swan a bird of prey. No wonder. Just look at what Swan has to offer:

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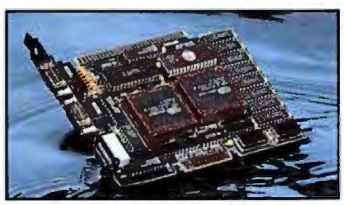
** includes Bit Com v 3.5 software*



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Different people have different uses for their PC's ... from everyday uses like word processing and spreadsheets to today's more demanding applications, such as desktop publishing and presentation graphics. A Swan video card can help you better meet your needs today ... or help you ride the wave of technology into tomorrow.

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386/20D	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14" Flat Mono	VGA Mono	VGA Color
w/48MB (28ms) & 1:1 Interleave	$2399	$2448	$2598	$2898
w/80MB (28ms) & 1:1 Interleave	$2749	$2798	$2948	$3248
w/150MB (18ms) ESDI w/1:1 Interleave	$3394	$3443	$3593	$3893

$Call for Upgrade to 2MB

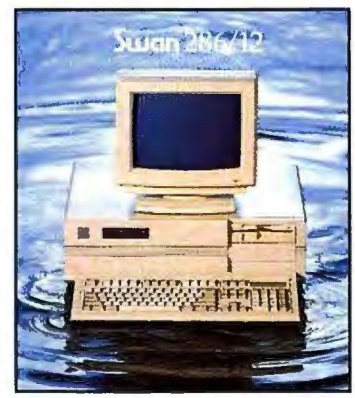
$1399

Base System with Single Floppy, No Video

386SX	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14" Flat Mono	VGA Mono	VGA Color
w/32MB (40ms) & 1:1 Interleave	$1799	$1848	$1998	$2298
w/48MB (28ms) & 1:1 Interleave	$1899	$2048	$2198	$2498
w/80MB (28ms) & 1:1 Interleave	$2249	$2298	$2448	$2748
w/168MB (15ms) ESDI w/1:1 Interleave	$2894	$2943	$3093	$3393

$Call for Upgrade to 2 MB

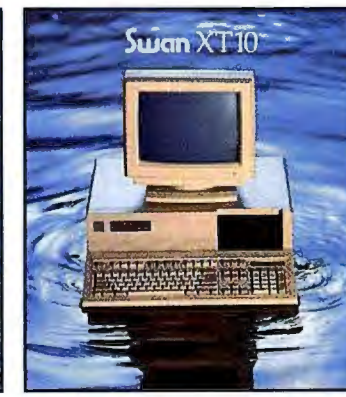
Standard Features	XT10	286/12	386SX	386/20D
CPU	8088-1	80286	80386SX	80386
Speed (MHz)	10/4.77	12.5/6.25	16/8	20/8
BIOS	Phoenix	Phoenix	Phoenix	Phoenix
Norton SI Rating v 4.0	2.1	12.3	17.6	22.0
Standard Memory	640K	512K	1MB	1MB
Shadow BIOS	—	Yes	Yes	384K
Memory Upgrades	—	640K/1/2/3/5MB	2/3/5/6/8MB	2/4/8/10/16MB
Coprocessor Support	8087	80287	80387SX	80287 or 80387
Expansion Slots: 32-bit	—	—	—	1
Expansion Slots: 16-bit	—	6	6	4
Expansion Slots: 8-bit	8	2	2	3
Dual HD/FD Controller	w/HD systems	Yes	Yes	Yes
Device Bays (Exposed/Internal)	2 Exp./2 Int.	3 Exp./2 Int.	3 Exp./1 Int.	3 Exp./2 Int.
Serial Ports	1	1	1	2
Additional I/O Ports	1 Par/1 Game	1 Parallel	1 Parallel	1 Parallel
Power Supply	150W	200W	200W	200W
Keyboard (Touch & Click or Silent)	101 Key	101 Key	101 Key	101 Key
Additional Features	Clock Calendar w/Battery Backup and Setup/Utilities Disk			
3.5" Floppy Drive	Optional	Your choice	Your choice	Your choice
MS-DOS & GW BASIC add $89				



$899

Base System with Single Floppy, No Video

286/12	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14" Flat Mono	EGA	VGA
w/32MB (40ms) & 1:1 Interleave	$1299	$1348	$1698	$1798
w/48MB (28ms) & 1:1 Interleave	$1399	$1448	$1798	$1898
w/80MB (28ms) & 1:1 Interleave	$1749	$1798	$2148	$2248



$549

Base System with Single Floppy, No Video

XT10	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	CGA	EGA	VGA
Single Floppy	$699	$869	$1098	$1198
Dual Floppies	$779	$949	$1178	$1278
*w/32MB (40ms) Hard Drive	$979	$1149	$1378	$1478

*Includes Single 360K Floppy Drive
†Upgrade from 12" to 14" Flat Screen, add $49

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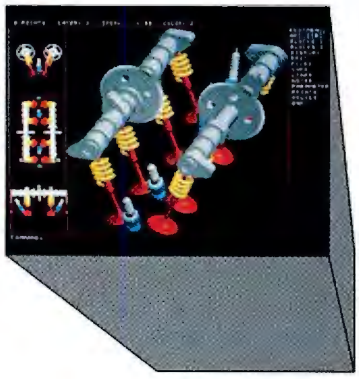
S=PWK1

Circle 207 on reader service card

Aw . . . What the Heck!

EXTREMELY POWERFUL

DesignCAD 3-D version 2.0 is as powerful as most CAD systems costing $5000 - $10,000! Features like: Complex Extrusions-linear, scaler, and circular, Blending of Surfaces, Shading, Cross Sectioning, Complex Sweeps and Translations, and Boolean operations make DesignCAD 3-D one of the most powerful 3-D CAD systems available . . . at any price! Engineers, Architects and Consultants constantly tell us that they use CAD systems costing thousands of dollars which are not as powerful as DesignCAD 3-D.



VERY EASY TO USE

Just because DesignCAD 3-D is powerful doesn't mean it is difficult to use. Single keystroke commands and side-bar menus which give short directions on how to proceed make DesignCAD 3-D a snap to use! While not required, DesignCAD 3-D supports all popular digitizers and mice.

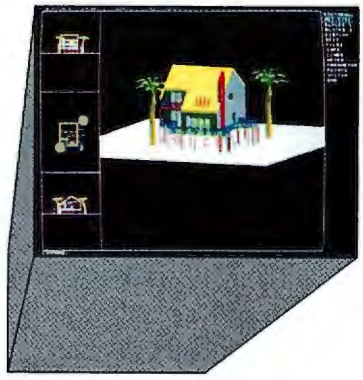
Many of the older, more cumbersome CAD systems require weeks of training before a user can be productive. DesignCAD 3-D users find they can be producing useful drawings in a matter of minutes! In a recent CAD contest only one contestant was able to match our drawing time. The package sold for $3000.00. The other CAD packages took up to twice as long to perform the same drawing and cost up to $5000.00!

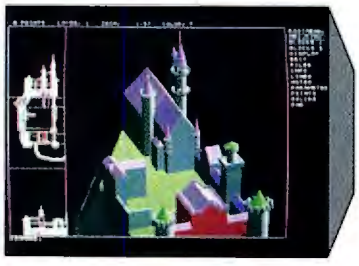
Still don't believe us? The goblet pictured below required only 16 keystrokes and 3 commands to create! The top, front, side, and isometric views were created simultaneously . . . in less than one minute!

DesignCAD 3-D only $399!

VERY LOW PRICED

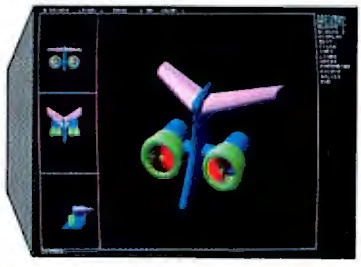
The first question asked by many people is, "Why is DesignCAD 3-D priced so low?" The answer? After developing DesignCAD 3-D version 2.0, we were unable to decide how the product should be priced. We consulted experts. We used the finest spreadsheets on the market. We took employee polls. Finally, in the great American Tradition, we said, *"Aw . . . What the Heck! Let's see the other guys beat this price!"* DesignCAD 3-D version 2.0 sells for $399.





WHY BUY THIS ONE?

There is a very important reason to buy DesignCAD 3-D. PERFORMANCE. No other CAD system can match our price/performance ratio. Many people make the serious mistake of thinking that it is necessary to spend thousands of dollars to obtain "a good 3-D CAD system." This is not true! We talk to people everyday that are sadly disappointed with their "expensive" CAD systems. Don't be one of them! Call us and we will send you a complete set of literature and a free slide show demo disk. Once you compare DesignCAD 3-D version 2.0 with other CAD systems we know you will choose DesignCAD 3-D.



DON'T TAKE OUR WORD FOR IT

Here is what other people have to say about DesignCAD 3-D:

"After you've worked with DesignCAD, the single keystroke commands are simple to remember and it becomes easy to "flick one key" to execute a command. An extremely ergonomically designed program."

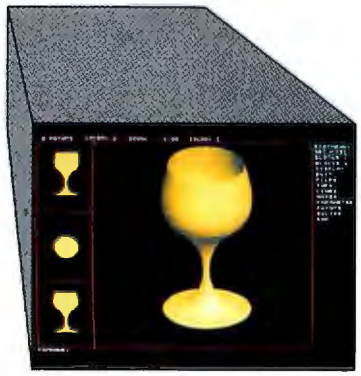
HENRY LEVET, Levet & Daigle Architects - New Orleans, LA
Designed a 65,000 sq. ft. nursing home using DesignCAD

"Recently I worked with a firm that builds decks. They purchased your product on my recommendation. I sat down with them and in two hours they were very proficient in DesignCAD. Now they are more effective; and we can communicate . . . it's wonderful to be able to do a block repeat 42 times and there are 42 2x4's to make the deck!"

J. TURNER, Architect, TAO Ltd. - The Woodlands, Texas

"Allows scientists and engineers to expend minimum time learning and using CAD software so that their time can be expended on the project at hand. It also allows scientists and engineers to quickly present to management all views of a subject. (3-D)."

DR. STEVENS, NASA Space Scientist/Engineer



HOW DO I GET ONE?

DesignCAD 3-D version 2.0 is available from most retail computer stores, or you may order directly from us. DesignCAD 3-D is available in a number of foreign languages from distributors throughout the world. All you need to run DesignCAD 3-D is an IBM PC Compatible and 640K RAM. DesignCAD 3-D supports most graphics cards, printers, plotters and digitizers. Free information and a demo diskette are available by contacting us at:

American
Small Business Computers, Inc.
327 South Mill Street
Pryor, OK 74361
918/825-4844
FAX: 01-918-825-6359
TELEX: 9102400302

Circle 306 on reader service card

lets you import scanned gray-scale images and preview them on screen.

A run-time version of *Windows* boasts a slew of printer drivers, including one that provides full access to PostScript printer fonts. If you want any Bitstream fonts, however, you have to buy them separately. *Graph Plus*'s capable desktop slide-show feature offers 14 transitions.

A lack of high-quality, built-in fonts and weak word-chart templates mar an otherwise superlative package. But if you use *Excel* (or such Micrografx products as *Designer* or *Draw Plus*), *Graph Plus* is the presentation package for you.

Harvard Graphics 2.12

Harvard Graphics may not have a fancy *Windows* interface, but abundant templates and a commonsense menu structure make it the easiest-to-use charting tool reviewed. At the same time the program offers the most powerful data-manipulation features and the richest array of charts. As a drawing program, however, *Harvard Graphics* leaves a lot to be desired.

When it comes to features like regression analysis, only *Graph Plus* can compete with *Harvard Graphics*. And although *Harvard Graphics* lets you specify named ranges when importing *1-2-3* data, *Freelance Plus* offers better import features. But in some areas, *Harvard Graphics* stands alone. It's the only program with a LAN version, a macro recorder, and a spelling checker (to prevent every presenter's worst nightmare).

Thanks to a nice assortment of templates, you can create attractive word charts easily. Although it offers the greatest number of built-in fonts, the package lacks *Freelance Plus*'s ability to rotate text, and Bitstream fonts are not supported.

Drawing is *Harvard Graphics*' Achilles' heel. It lacks many of the enhancement tools provided by *Freelance Plus* and *Graph Plus*. For example, you can't draw freehand or flip, mirror, or rotate objects. Worse, *Harvard Graphics* is the only program missing a zoom command for touch-up work. The program's clip-art library is less extensive than those offered by *Freelance Plus* or *Graph Plus*, and you can't import scanned images.

Harvard Graphics' device support is legendary, and a built-in communications module makes sending color slides to service bureaus a snap. Converting colors to black-and-white fill patterns is completely automatic, even slightly easier than with *Freelance Plus*. You can print speaker's notes for your presentation, and a fine slide-show feature is provided, but you must buy a separate utility to create run-time slide shows. *Harvard Graphics* offers a fine assortment of optional accessories, including additional templates, specialized clip-art libraries, and so on.

Strong charting, with arithmetic and logarithmic functions, is *Harvard Graphics*' standout feature, but ease of use keeps its users loyal. Those who want to turn out attractive charts quickly could hardly have it easier. But if you think you'll ever outgrow the preformatted approach to charting, *Harvard*'s slim set of enhancement features may send you in search of *Freelance Plus*.

EXECUTIVE SUMMARY

Harvard Graphics 2.12

Business graphics program

Harvard Graphics' abundant templates, powerful number crunching, and slick data import yield excellent charts in a snap, but limited drawing capabilities restrict its versatility.

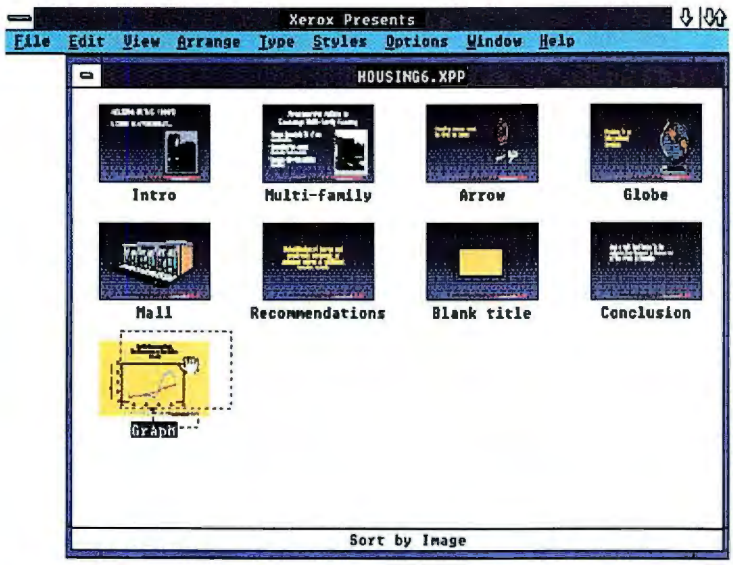
	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import				●
Enhancement			●	
Output				●
Overall value				●

Reader service no. 670

Xerox Presents 1.0

Recently ported from the Macintosh to the *Windows* environment, *Xerox Presents* represents a new class of PC business graphics program. Its unique and useful features focus on controlling slide presentations: arranging the order of images, creating uni-

Start thinking of the presentation as a whole, and you'll quickly see the benefit of Xerox Presents.



With Xerox Presents, you can easily shuffle slides as you develop a presentation, thanks to a special multiple-image preview mode.

form backgrounds, generating handouts, and the like. Unfortunately, *Xerox Presents* is a poor charting package, and it's much slower than any other program reviewed.

A narrow range of chart types handles only four data sets and 20 data points per chart—less than two years' worth of monthly data. Scaling and axis options are especially weak: You can't set minimum/maximum axis values, place the *y*-axis on the chart's right side, or skip axis labels. As with *GEM Presentation Team*, *Xerox Presents*' ability to import *1-2-3* spreadsheets begins and ends with old-fashioned .WKS files.

EXECUTIVE SUMMARY

Xerox Presents 1.0

Business graphics program

A one-of-a-kind program for presentation design, *Xerox Presents*' outstanding color support and unique scripting aids can't offset its sluggish performance and limited charting.

	POOR	FAIR	GOOD	EXCELLENT
Charting	●			
Data import		●		
Enhancement			●	
Output			●	
Overall value		●		

Reader service no. 671

On the plus side, the program furnishes an impressive set of templates, a full-featured text editor, and up to 256 colors per chart. A Bitstream starter kit ensures high-quality fonts on LaserJet-compatible printers.

Xerox Presents joins *Graph Plus* as one of the two programs reviewed that imports scanned gray-scale images. You also get a good selection of line types, geometric shapes, and fill patterns, but you can't smooth curves automatically or flip and rotate objects, and the clip-art library is the smallest in the roundup.

Start thinking of the presentation as a whole, however, and you'll quickly see the benefit of *Xerox Presents*. Each slide has two layers, enabling you to use a uniform background—containing, say, a border, a shaded background, and a logo—while you use the top layer for different charts. Furthermore, a preview mode displays thumbnail sketches of up to 12 slides per screen, enabling you to rearrange images at will. No other package has equivalent features.

Handouts can include notes along with black-and-white renditions of slides, and you can create separate speaker notes with their own black-and-white images. Not surprisingly, the monitor-based slide show features are also innovative, though you can't create run-time presentations.

Because slides, backgrounds, handouts, and speaker notes are linked in the manner of a relational data base, you can shuffle items easily: You can even print handouts on one printer and speaker notes on another and send slides to a slide service using the built-in communications module. Doing so, however, makes printing slower than usual, and even with a black-and-white preview converting colors to patterns is not automatic.

Xerox Presents wouldn't be worth considering without its unique presentation features. The charting and data import features are clearly substandard, and it's probably not worth running on anything less than a 386. If a future revision eliminates current weaknesses, few who make frequent slide presentations will be able to resist it.

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Top Graphics Guns

What separates *Freelance Plus* and *Harvard Graphics*, the two top-rated programs, from the other products reviewed are their superior charting and data-import capabilities—especially their dynamic links to *1-2-3* spreadsheets. Of the two, *Freelance Plus* gives you more control over importing worksheets, more powerful chart editing and enhancement tools, and more slide-show versatility than *Harvard Graphics*.

Graph Plus is the best choice for *Windows* users, thanks to strong charting and drawing. With greater data import flexibility and more built-in fonts, *Graph Plus* could well edge out the competition.

The future of business graphics, however, lies with such special presentation talents as those exhibited by *Xerox Presents*. This package encourages you to think of graphics in a new way—as an endlessly adaptable complement to your spoken message. That's a powerful concept for presenters and one sure to be imitated. ●

Richard Jantz is a contributing editor for PC World. *Mike Smith-Heimer is a freelance writer and financial analyst who lives in Berkeley, California.*

For more information about all products in this article, circle reader service no. 913.

WHERE TO BUY

35mm Express 4.1
Business and Professional Software, Inc.
143 Binney St.
Cambridge, MA 02142
800/342-5277,
617/491-3377
LIST PRICE: $495
REQUIREMENTS: 256K (512K recommended), two disk drives, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited toll-free phone support, M–F 9–5; annual extended support including free upgrades and enhancements $250
OTHER SUPPORT SERVICES: disk-based tutorial $45, newsletter, user group
Reader service no. 665

Draw Applause 1.1
Customer Service Ashton-Tate
20101 Hamilton Ave.
Torrance, CA
90509-9972
800/227-4866,
213/329-8000,
408/268-1711 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: 90-day unlimited support, toll number, M–F 6–4:30; extended support including 15 calls, technical tips booklet, newsletter, CompuServe BBS
OTHER SUPPORT SERVICES: none
Reader service no. 666

Freelance Plus 3.01
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500,
617/253-9150 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K, two disk drives, DOS 2.1 or later version
TECHNICAL SUPPORT: unlimited, toll number, T–Th 8:30–8, M and F 9:30–8; annual extended support including quarterly newsletter, toll-free number $150 (single user)
OTHER SUPPORT SERVICES: Master Kit training course materials $210, 90-day money-back guarantee, quarterly newsletter free to registered graphics users, CompuServe forum (GO LOTUSB)
Reader service no. 667

GEM Presentation Team 1.1
Digital Research, Inc.
P.O. Box DRI
Monterey, CA 93942
800/443-4200,
408/646-6464 (tech support)
LIST PRICE: $495, driver packs $10 each
REQUIREMENTS: 384K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: 90-day unlimited support, toll number, M–F 8:30–5; annual extended support including priority calling, special telephone number, free driver packs $95
OTHER SUPPORT SERVICES: CompuServe GEM forum
Reader service no. 668

Graph Plus 1.3
Micrografx, Inc.
1303 Arapaho
Richardson, TX 75081
214/234-1769,
214/234-2694 (tech support)
LIST PRICE: $495, Standard Edition Clip Art Libraries $79.95 each (four available)
REQUIREMENTS: 512K (640K recommended), hard disk (80286 processor recommended), mouse, DOS 3.0 or later version
TECHNICAL SUPPORT: unlimited support, toll number, M–F 7–7, free subscription to newsletter; annual extended technical support including one year technical support, technical newsletter, free upgrades, discounts on new products $150
OTHER SUPPORT SERVICES: none
Reader service no. 669

Harvard Graphics 2.12
Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA
94039-7210
415/962-8910,
415/962-9564 (tech support)
LIST PRICE: $495, Harvard Graphics LAN Pack $1795, Business Symbols $99, Screenshow Utilities $149, U.S. Mapmaker $149, QuickCharts $99, Designer Galleries $99
REQUIREMENTS: 512K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited free support, toll number, M–F 7:30–4:30
OTHER SUPPORT SERVICES: free user newsletter three times a year
Reader service no. 670

Xerox Presents 1.0
Xerox Desktop Software
9745 Businesspark Ave.
San Diego, CA 92131
800/822-8221,
214/436-2616 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K (1MB recommended), hard disk, 80286 processor (80386 recommended), DOS 3.1 or later version
TECHNICAL SUPPORT: 60 days free, toll number, M–F 8–6; subscription to newsletter; annual extended support including toll-free number $100 for single user, $1000 for multiple users
OTHER SUPPORT SERVICES: one-day training workshops
Reader service no. 671

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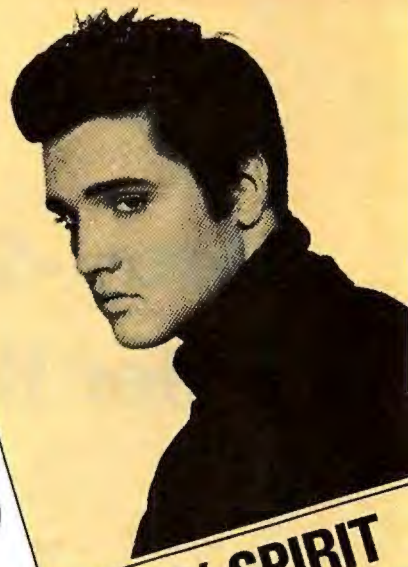
ABOUT FASTBACK PLUS



ELVIS' SPIRIT TRAPPED INS MICROCHIP

Incredible proof of reincarnation

MAN LOSES HAIR WAITING FOR DOS

Anytown, USA—The unidentified victim was apparently among the millions of people who still think that DOS Backup and Copy commands are a safe and convenient way to back up their valuable hard disk data.

It is not known whether the shocking loss was a result of natural aging while DOS made the backup, or whether the victim pulled his hair out in frustration after discovering that a minor disk error had rendered his entire backup set useless.

According to reliable sources, the tragedy could have been averted if the man had been using **FASTBACK PLUS**, the world's fastest and most reliable backup software.

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Public knowledge of these facts could ease the wide-spread stress and trauma that result from using DOS commands to back up hard disk data.

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Gray-Scale Scanners Enter the Mainstream

If you use black-and-white photos in DTP projects, gray-scale scanners provide an affordable alternative to halftones.

Our survey of five scanners turns up some nearly irresistible bargains.

Richard Jantz

If you're a desktop publisher who's tried to spice up a newsletter or brochure with photographs, you've probably discovered that conventional halftoning is time-consuming and innovative effects cost dearly. To gain greater control over your publication and speed up turnaround time, you can switch to a desktop gray-scale scanning system. This way you can scan digital halftones, integrate them into a document using a page-layout program such as *Ventura Publisher* or *PageMaker*, and print them on a high-resolution, PostScript-compatible phototypesetter. The digitized photographs come close to the quality of commercial halftones, and it's often easier—and cheaper—to create special effects. If you use a lot of photos, or if you can also use a scanner for other tasks, the investment will pay off.

This review evaluates five gray-scale scanning systems ranging in price from $1995 to $3995: the Datacopy Model 730GS, the Hewlett-Packard (HP) ScanJet Plus, the IBM PageScanner Model 3119, and the Microtek MSF-300G and MSF-400G. The Datacopy scanner assigns 6 bits of gray-scale data to each pixel, for a total of 64 shades of gray. The 8-bit PageScanner generates 128 grays, and the 8-bit HP and Microtek systems deliver 256 shades. All the scanners record images at a resolution of 300 dots per inch (dpi), and the MSF-400G also records 400 dpi.

All the scanners are flatbed units. Unlike sheet-fed models used for optical character recognition (OCR), which pull the original through the scanner, flatbed scanners let you carefully align the original and can scan material from books. The systems also include *Windows*-based software for controlling the scanning process and editing images. Each system includes an interface card that takes up a standard PC or Micro Channel slot, except for the IBM 3119's adapter, which fits only in a Micro Channel slot. An AT-level system and a VGA display are recommended, and VGA is required for the IBM and Microtek scanners.

The systems scan black-and-white line art and provide optional OCR software, but they're designed primarily for desktop publishers who need to output gray-scale photos on a laser printer or phototypesetter. Accordingly, they're evaluated with this task in mind.

A year ago, 4-bit, 16-gray-level systems were the standard, and today's bargain hunters may find some 4-bit steals. But if image quality is all-important, a 6- or 8-bit system

is the way to go. Compared to a 4-bit scanner, it offers better image quality when printing photos on a 300-dpi laser printer. The differences are even greater between 6- or 8-bit systems and the non-gray-scale scanners used for OCR work, though you won't see a disparity with line art.

It's in the higher resolutions that gray scaling shines. At resolutions higher than 300 dpi, non-gray-scale photos are unacceptable, and 4-bit photos aren't much better. With a 6- or 8-bit scanner, quality improves if you boost your 300-dpi printer's resolution with an enhancement board such as Intel's Visual Edge. You'll enjoy incremental improvements on 400- and 600-dpi laser printers and dramatic differences on 1200-to-2540-dpi typesetters. The gap between 6- and 8-bit quality is slight at 300 dpi, but 8-bit scanners dazzle as resolution increases.

Users interested only in OCR may want to look elsewhere, but desktop publishers and those who need scanners for image data bases or fax input should seriously consider these products. Although the systems are designed for typeset output, graphics professionals should weigh the factors of quality, cost, and versatility before buying. Traditional photochemical halftoning usually offers higher quality at a lower cost, but many graphics professionals will find the convenience and flexibility of creating digital halftones on a gray-scale scanner worth the trade-offs (see the sidebar "Digital Versus Photochemical Halftoning: Which Way to Go?").

Scanner Buying Criteria

Image quality is paramount in evaluating gray-scale scanning systems. *PC World* used default scanning settings to output scanned photos on a variety of printing devices, ranging from 300-dpi laser printers to typesetters. The ultimate challenge was scanning a high-contrast photo with dark gray levels and then printing it on a 2400-dpi Agfa Compugraphic (see **FIGURE 1**). The results generally indicate that the greater the number of gray scales supported, the better the image quality. Other factors also come into play, however, such as the resolution level and the line frequency of the halftone screen (see the sidebar "Secrets of Gray-Scale Image Quality").

The Microtek MSF-300G is the Best Buy of the scanning systems reviewed. Despite its low $2195 price, it delivers superb image quality and sophisticated gray-scale editing features.

Scanning options are next in importance. In addition to scanning at 300 dpi, a system should be able to scan at lower resolutions and with fewer gray scales for proofing. This saves disk space and reduces printing and scanning time. The ability to scale (reduce or enlarge) and frame part of an image while scanning also saves time and disk space. Other features to consider include brightness and contrast controls for improving poorly photographed images, and extras such as image flipping and reversing.

Equally critical for most users are image editing features—software tools for manipulating photos after they've been scanned. Here you see the greatest variations between the systems. HP's *Scanning Gallery Plus* software provides sparse editing tools, and Datacopy's *PC Image* is even more lim-

PIERRE-YVES GOAVEC

FIGURE 1

At High Resolution, Microtek's MSF-300G Grabs the Grays

Datacopy 730 GS (64 grays)

Hewlett-Packard ScanJet Plus (256 grays)

IBM PageScanner Model 3119 (128 grays)

Microtek MSF-300G (256 grays)

Microtek MSF-400G (256 grays)

Commercial photo halftone

These gray-scale (TIFF) images were printed on a 2400-dpi Agfa Compugraphic phototypesetter, using PageMaker to control the halftoning process with a dot screen pattern at a 45-degree angle. All the test photos were screened at 133 lines per inch except for the Datacopy photo, which was set at an optimal 90 lpi (the 133-dpi versions displayed poor shadow detail).

Each image was captured using the scanners' default settings—none of the enhanced (interpolated) resolutions or gray-scale editing tools available were exploited. By experimenting with contrast and brightness controls and by applying gray-scale editing tools, you might improve the quality.

The test challenges the scanning systems with a high-contrast photo halftoned at a high resolution and line frequency. In more informal tests, the differences in quality were less marked when using lower-contrast photos shot at lower resolutions, but the relative rankings in quality were similar.

The Microtek MSF-300G is the Best Buy of the scanning systems reviewed. Despite its low $2195 price, it delivers superb image quality and sophisticated gray-scale editing.

Hewlett-Packard's easy-to-use ScanJet Plus is a good choice for beginners. Image editing tools are limited, but if your photo's right to begin with, you can generate magazine-quality halftones with 256 gray levels.

ited. *Scanning Gallery Plus* lets you cut, copy, paste, and crop a gray-scale image after scanning, and *PC Image* lets you resize, but neither provides tools for retouching photos or creating special effects.

In contrast, Astral Corporation's *Picture Publisher* (bundled with the Microtek scanners) and IBM's *ImagEdit* provide sophisticated gray-scale editing features once available only on the Macintosh. Designed for polishing high-resolution output, both products let you view the actual grays on a VGA display. You can modify brightness and contrast after scanning and manipulate gray levels, either globally or locally. For example, you can lighten darker grays to render more detail, or soften or sharpen the focus by changing the tonal range. The programs offer gray-scale painting tools and allow you to

cut and paste between photos to create composite images. *Picture Publisher* even provides airbrushing and texturing effects.

Less important for the purposes of this review are line-art editing features—fat-bit pixel editors used for cleaning up errant "garbage" around solid-tone line art. Only the HP scanner lacks this feature, but all these systems except the IBM scanner let you save files in .PCX format so you can send line-art images to a paint program such as *PC Paintbrush* for pixel editing.

All the systems support PostScript and PCL (LaserJet-compatible) printers, and all can output files in Tagged Image File Format (TIFF) so that you can send images to page-layout programs. All but the Datacopy scanner support Encapsulated PostScript Format (EPS). With an EPS file, you can use DOS to send your image directly to a PostScript printer or typesetter—you don't need a page layout program. IBM's *ImagEdit* even lets you assign halftone settings within the program and save them in an EPS file so that you can control the typesetter remotely. In contrast, HP and Microtek users must accept the halftoning defaults of the output device or set them in a page layout program.

Speed on all the systems is about the same —slow. And the higher the resolution and number of gray levels, the slower the scan. Ease of use varies between the systems. All the hardware components are easy enough to install and use, but software usability varies. Because gray-scale retouching requires extensive training no matter how intuitive the interface, ease of use is given less weight than in the usual *PC World* review. Still, it can be a factor, and the following reviews evaluate the user interface of each system to help you make your buying decision.

Datacopy Model 730GS

If you usually output your publications on laser printers, Datacopy's $1995 Model 730GS may fill the bill. Because it's a 6-bit system, however, it's not optimal for producing scanned photos on a high-resolution typesetter. Image quality is comparatively poor, and the editing tools are the weakest in the roundup.

Considering that it captures only 64 gray levels, it's no surprise the 730GS was hamstrung by the challenging test photo in **FIGURE 1**. Image quality is poor at the 133-lines-per-inch (lpi) setting used with the other systems; only after dropping down to a coarser 90 lpi was the 730GS image accetable, and even then its quality was inferior to that of its rivals. However, with a fully lit medium- or low-contrast photograph, the 730GS produces acceptable business-quality halftones.

Datacopy's system includes its *PC Image* software, which provides good scanning controls but scant editing features. Its *Windows* interface is relatively easy to use, but there's no on-line help. *PC Image* can't display true gray scales on screen, but dithering options show a crude emulation of halftone styles. (See the sidebar "Secrets of Gray-Scale Image Quality" for more information on dithering and other scanning options.)

Although rated at 300 dpi, the Model 730GS can approximate 450-dpi resolution by using interpolation, a technique that sometimes smoothes transitions between grays. You can also select low-resolution and 4-bit options for quick proofs.

PC Image's biggest drawback is its lack of gray-scale editing tools. It provides a pixel editor for line art, but with photos, you're limited to resizing. *PC Image* supplies a bat-

IBM's ImagEdit lets you assign halftone settings within the program.

EXECUTIVE SUMMARY

Datacopy Model 730GS

Gray-scale scanning system

The Datacopy Model 730GS is a solid value if you print mostly on laser printers, but its 6-bit, 64-gray-level operation limits the quality of high-resolution output, and its editing tools are rudimentary.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing		●		
Printing options			●	
Image quality			●	
Overall value			●	

Reader service no. 656

SECRETS OF GRAY-SCALE IMAGE QUALITY

The quality of a gray-scale photo depends primarily on the resolution of the output device and the scanner's resolution and number of gray levels. Although it's often a matter of taste, the range of groy scales is usually more important than resolution. For most business applications, 300-dpi scanned images coupled with 64 to 256 gray levels will do the job.

Many other factors affect image quality. Most important is the condition of the original photo, including contrast, focus, and range of gray tones. No amount of tinkering can fix a grossly flawed original. Also key are the settings you use to scan the image, the adjustments you make with image-editing tools after scanning, and the halftone screen you select. In turn, the halftone screen should jibe with the texture of paper you'll use. Other variables may be beyond your control: An image can go sour if the typesetting operator lacks the expertise to optimize for digital halftoning.

Here are some factors to keep in mind:

Resolution A scanner's resolution is tied to the number of dots per inch (dpi) the scanner reads. Most scanners are rated at 300 dpi, but a few 400-dpi units are available, and 600 dpi is on the way.

The higher the resolution of a scanned photo and the closer it approaches the resolution of the output device, the better the image quality. For example, the top quality of an image scanned at 400 dpi isn't perceptible when the photo is printed on a 300-dpi laser printer, but it becomes noticeable when printed on a 400- or 600-dpi loser printer and is even more evident on a phototypesetter set at 1200 or 2540 dpi.

Interpolation Some scanners emulate resolutions above 300 dpi using interpolation, o gray-scale averaging technique that adds new values between existing ones during scanning. Though the true resolution is still 300 dpi, interpolation sometimes produces smoother transitions between grays on high-resolution output devices. Interpolation doesn't always match the apparent resolution it attempts to emulate, and with some photos it won't improve the quality at all. Successful use requires experimentation with different resolution levels and other variables.

The tonal quality of a dithered image is often poor, especially beyond 300 dpi.

Dithering The number of grays a scanner captures is determined by how many data bits the scanner assigns to each pixel. Non-gray-scale scanners capture only 1 bit per pixel: on (black) or off (white). You can simulate shades of gray with dithering (fixed halftone patterns of black and white dots), but the tonal quality of a dithered image is often poor, especially beyond 300 dpi. Also, resizing creates interference patterns, rendering the image useless.

Gray Scales Gray-scale scanners, on the other hand, provide greater image quality by using 4, 6, or 8 bits to store different values of gray for each pixel. The halftone pattern isn't applied until after the scan, so you can choose the best screen for the printer's resolution and resize the image without distortion.

On a high-resolution typesetter, an 8-bit image with 256 grays renders the broadest range of continuous tones. A 4-bit image is unacceptable at high resolutions, but an 8-bit image with 128 grays or, to a lesser extent, a 6-bit image with 64 grays can still produce a decent halftone, depending on the photo and screen. Differences between 6- and 8-bit images are pronounced at 1200 and 2540 dpi but slight at 300 dpi.

Halftone Screen Choosing the right combination of halftone screen variables—a halftone pattern, on angle, and a line-screen frequency—is paramount. Usually you'll do this in a page makeup program, such as *PageMaker* or *Ventura*.

The line-screen frequency, expressed in lines per inch (lpi), is usually the key factor. Generally, with a higher lpi, the apparent resolution improves; with a lower lpi, you get more shades of gray. Magazines and books typically use a 120- to 150-lpi screen; newspapers use coarser 65- to 85-lpi screens.

The best-looking images from a 300-dpi laser printer are usually produced at a 50-lpi screen setting. With some laser printers, you can boost both the number of grays and the resolution by installing an enhancement board such os DP-Tek's LaserPort. With a typesetter, you can use on even higher lpi and still obtain a large number of grays.

With all these variables, it's not surprising that perfecting gray-scale images often requires numerous proofs. Still, experience will gradually put you on track. —*R. J.*

tery of dithering options with 7 preset scanning patterns and even more postscanning patterns, but the usefulness of dithering is usually limited to 300-dpi output. Other print options are weak, and it's the only program that can't save a gray-scale image as an EPS file.

Datacopy also sells a Model 830 6-bit system designed for OCR tasks. The $3495 system is not recommended for gray-scale imaging.

All told, the Datacopy 730GS can't match its 8-bit rivals at creating gray-scale halftones. It may do the job for laser printer users, but it's only a fair deal for typeset output.

Hewlett-Packard ScanJet Plus

The easiest system to use in the roundup, Hewlett-Packard's sleek, $2190 ScanJet Plus produces magazine-quality halftones with 256 grays. *Scanning Gallery Plus*'s scanning tools are capable, but its image-editing skills are only slightly better than those of Datacopy's *PC Image*. Still, the ScanJet Plus is a good entry-level system.

The ScanJet Plus provides sharp resolution and contrast, but its default settings produced a slightly darker image than the other 256-gray-level scanners. If you don't mind a softer image, you can adjust the brightness and contrast settings for more shadow detail.

HP's *Scanning Gallery Plus* software is easy to use, and on-line help is excellent. The user guide includes valuable tips for *PageMaker* and *Ventura* users. Separate windows are provided for scanning and image editing, and scanning controls are conveniently clustered in the same dialog box. However, you can't display gray-scale images accurately.

Scanning options are better than most. Using interpolation you can approximate resolutions up to 1500 dpi or choose lower resolutions and a 4-bit mode to output rough drafts quickly. Print options are also good: You can print a selected part of an image and output multiple copies.

Image editing is limited, unfortunately. Unlike *PC Image, Scanning Gallery Plus* lets you cut and crop gray-scale images, and copy and paste sections together to create a crude composite. However, you can't manipulate gray levels after scanning, and you don't have gray-scale paint tools or a line-art pixel editor.

For those who need an easy-to-use scanning system that can output high-quality images, the ScanJet Plus is made to order. If you want advanced tools, you can buy version 1.2 of Astral's $595 *Picture Publisher* (due this fall), which will include a ScanJet

Hewlett-Packard's easy-to-use ScanJet Plus is a good choice for beginners. Image editing tools are limited, but if your photo's right to begin with, you can generate magazine-quality halftones with 256 gray levels.

PIERRE-YVES COMTEC

EXECUTIVE SUMMARY

Hewlett-Packard ScanJet Plus

Gray-scale scanning system

The 8-bit ScanJet Plus delivers with a low price, easy operation, and first-rate output at 256 gray levels. The image editing software is fairly primitive, but the system is a good value for publishing novices.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing			●	
Printing options				●
Image quality				●
Overall value				●

Reader service no. 657

FEATURES EVALUATION

First-Rate Image Editors From IBM and Microtek

The Microtek and IBM scanning systems offer gray-scale image editing features far superior to the HP's or the Datacopy's.

● Yes
○ No

	Datacopy 730S	HP ScanJet Plus	IBM Page Scanner Model 3119	Microtek MSF-300G	Microtek MSF-400G
Scanning options					
Maximum scan size	8.5x11	8.5x11	8.5x11	8.5x14	8.5x14
Gray levels	64	256	128	256	256
Bits per pixel	6/4	8/4	8	8	8
Highest resolution (in dpi)	450[1]	1500[1]	300	300	400
Lowest resolution (in dpi)	60	12	60	3	4
Dithering patterns	7/16[2]	4	4	12	12
Custom resolution	○	●	○	●	●
Scaling during scanning	○	●	●	●	●
Brightness/contrast control	●	●	●	○	○
Gray-scale distribution control	○	○	●	○	○
Flip image	●	●	●	○	○
Reverse image	●	●	○	○	○
Image editing (postscan)					
Displays actual gray scales	○	○	●	●	●
Brightness/contrast controls	○	○	●	●	●
Gray-scale distribution control	○	○	●	●	●
Flip/rotate image	○	○	●	●	●
Cut/copy/paste/crop image	○	●	●	●	●
Cut/paste irregular shapes	○	○	○	●	●
Undo command	○	●	●	●	●
Gray-scale retouching	○	○	●	●	●
Airbrushing	○	○	○	●	●
Pixel editor for line art	●	○	●	●	●
Printing options					
Halftone screen controls	○	○	●	○	○
Scaling for printing	○	○	●	●	●
Print selected area	○	●	○	●	●
Print multiple copies	○	●	●	○	○
TIFF support	●	●	●	●	●
EPSF support	○	●	●	●	●
.PCX support	●	●	○	●	●

[1] Resolution beyond 300 dpi is by interpolation, not true optical resolution.
[2] Seven of the 16 postscan patterns duplicate the 7 prescan patterns.

driver. Or, for $5 more than the ScanJet, you could buy the Microtek MSF-300G, which offers slightly better image quality and gives you *Picture Publisher* for free.

IBM PageScanner Model 3119

The star attraction of IBM's PageScanner is *ImagEdit*, an excellent image editor that lets you set halftone screens within the program. The 8-bit PageScanner reads 256 gray levels but saves only 128 grays. Still, its output almost matches the image quality of 256-gray-level scanners. Unfortunately, the PageScanner is available for Micro Channel systems only, and the price is a steep $3840. Also, because the glass platen moves over the scanning mechanism instead of vice versa, it's difficult to scan thick books, which must be pressed against the glass. Despite these flaws, *ImagEdit* makes the PageScanner a good deal for users of Micro Channel–based systems.

Surprisingly, the PageScanner's output on the 2400-dpi test image came close to the quality of the 256-level ScanJet, though it couldn't match the Microtek scanners. Its default settings produced a softer image with lighter tones, but you could use *ImagEdit* to adjust the gray-level distribution and produce a better image.

Though not quite as powerful as *Picture Publisher*, *ImagEdit* is easier to use, thanks to its excellent on-line help and faithfulness to the *Windows* interface. It accurately displays gray scales on a VGA or an 8514 monitor.

ImagEdit's top-notch scanning options are

EXECUTIVE SUMMARY

IBM PageScanner Model 3119

Gray-scale scanning system

Although IBM's 8-bit PageScanner works only with Micro Channel machines, costs a bundle, and is hamstrung by its moving glass platen, the excellent *ImagEdit* software makes it a good deal.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing			●	
Printing options				●
Image quality			●	
Overall value			●	

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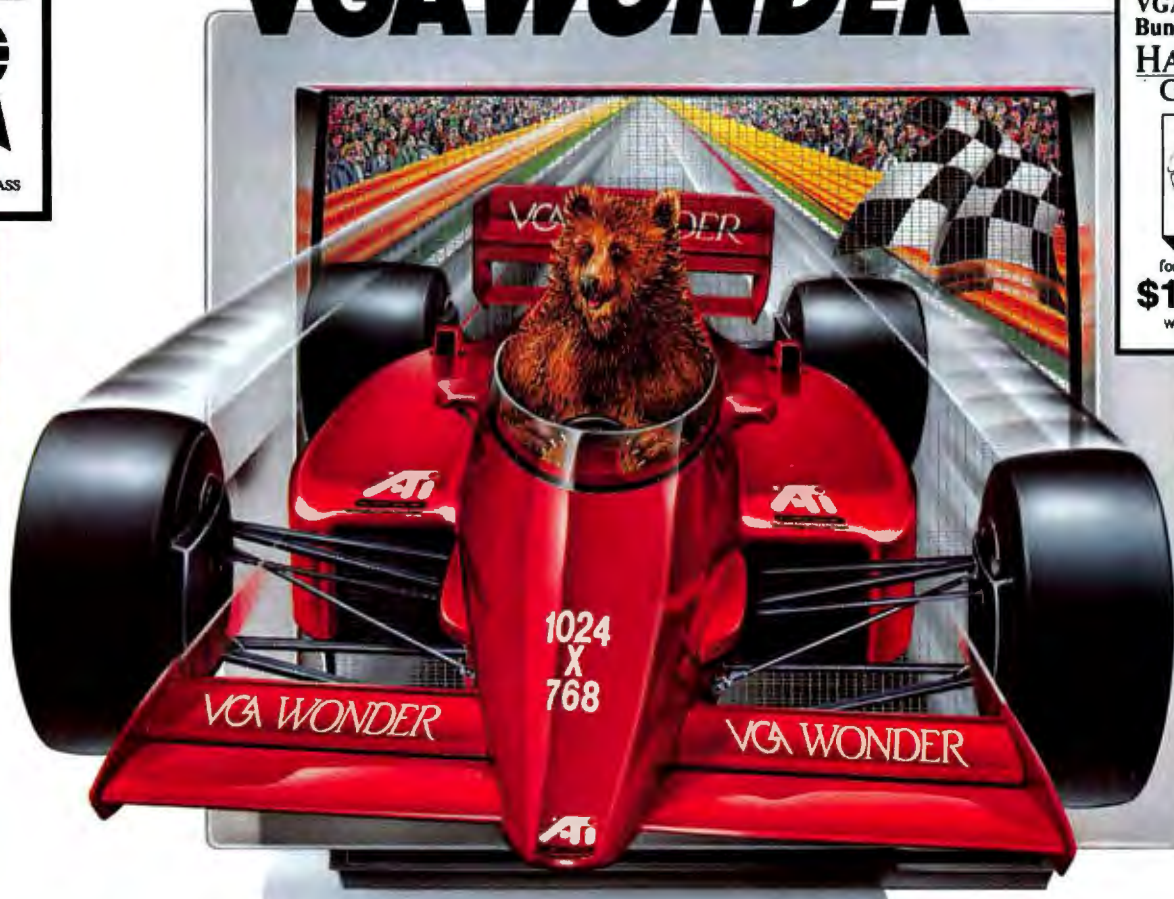

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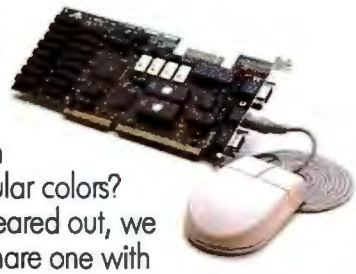

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somewhat better than *Picture Publisher*'s, offering such extras as image flipping. One unique feature even lets you apply a user-defined gray-scale distribution curve during scanning to alter highlights and shadows or create special effects.

Image-editing features are quite advanced but don't match *Picture Publisher*'s. Both include numerous editing and paint tools for altering gray-scale images after scanning. However, *ImagEdit* lacks *Picture Publisher*'s sophisticated airbrushing and texturing tools, and it can't cut and paste irregular shapes. A pixel editor is included for line art.

The PageScanner is the only system reviewed that lets you control the halftone screen. You can pick the screen pattern, angle, and line-screen frequency and send the image directly to a PostScript printer as an EPS file.

IBM's scanning system is a good deal for graphics pros who want to bypass page makeup and transmit digital halftones directly. Despite its high price, many Micro

DIGITAL VERSUS PHOTOCHEMICAL HALFTONING: WHICH WAY TO GO?

Do you really need a gray-scale scanner system? First, consider the alternatives. Two of the most common methods for publishing continuous-tone images are the photoprint and the halftone; both are line-art versions of continuous-tone images. To create them, a photo is rephotographed through a fine mesh or screen that converts photographic tones into a pattern of dots or lines. Our eyes and brain blend the patterns to perceive gray.

With a photoprint positive, you paste the image onto a camera-ready page and rephotograph it along with text and line art to produce the film used to produce the printing plate. A halftone negative, on the other hand, can be stripped directly onto the film, saving you a reproduction step and producing a better-quality image.

Why choose such traditional techniques? Photochemical halftoning usually provides a higher-quality image than digital halftoning with a scanning system. And although it requires a graphic arts camera and photochemical processing, making it prohibitively expensive for most companies to bring in-house, it's generally cheaper than digital halftoning when done through a commercial service.

Most services charge a flat rate of about $30 for each photochemical print, no matter how many proofs they have to run to get it right. In comparison, a digital halftone on the same typesetter costs about $20 per page for final output, and most users will also want a $10 paper positive for proofing. So far, the cost is about the same, but digital halftones rarely come out perfectly the first time. You frequently need to order one or more paper proofs, each at a separate charge, and then an additional final negative. So a digital halftone is likely to cost twice as much as a conventional halftone, and that doesn't include the original cost of the scanning system.

However, digital halftoning offers some striking advantages in convenience, security, and flexibility, and some of these benefits translate into lower costs. With a commercial service, generating and stripping photochemical halftones can take hours or even days. With digital halftoning, on the other hand, you can send a gray-scale image already integrated with text and line art directly to a typesetter. If you use a modem, you can reduce delivery charges. This direct access also keeps confidential documents safe from prying eyes.

Yet the greatest benefit of digital halftoning is the control you gain over image production. If you often require special effects, the cost of training an employee to use gray-scale editing tools can pay off. Instead of paying a photo lab to retouch or alter a photo in the darkroom, the office scanning expert can quickly retouch the photo on a PC, saving time and lab charges. You can also create unusual images—say, the company CEO standing on the moon—that are too difficult or expensive to accomplish in a lab. Collages are especially cost-effective.

If you don't require innovative effects and you don't need a scanner for another purpose, stick with traditional halftones. But if you want more control over image production, digital halftoning is the way to go. —*R. J.*

Channel users will find it's worth the cost. But take note: The other vendors also offer Micro Channel versions.

Microtek MSF-300G and MSF-400G

Microtek's $2195 MSF-300G and top-of-the-line $3995 MSF-400G are the class acts of the roundup. Except for the MSF-400G's higher price and 400-dpi resolution, the systems are identical. Both scanners are 8-bit models that let you scan an image as large as 8½ by 14 inches, and both bundle the superb *Picture Publisher* editing software. Graphics professionals may covet the MSF-400G's resolution, but at $1800 less, the MSF-300G is the roundup's Best Buy.

Surprisingly, the Microtek MSF-300G produced slightly better output than the 400-dpi MSF-400G. It displayed the most easily distinguishable range of grays of the roundup, with good resolution, highlights, and shadow detail. The MSF-400G came in a close second, offering the sharpest resolution of the roundup, but it showed fewer shadow highlights. Still, some will prefer the MSF-400G's sharper image quality, even though the higher resolution creates mammoth disk files.

Picture Publisher improves image quality even further—but don't expect to master it overnight. The program provides two screens, one for scanning, managing, and printing images, and the other for editing. The scanning screen is fairly easy to deal with, drawing on *Windows* conventions, but the editing screen adopts a separate, less intuitive interface. It accurately displays gray levels, but it's hard to use. You pick editing modes from lists and select additional controls via function keys, but the function-key assignments change from mode to mode. And there's no keyboard template or on-line help to assist.

Picture Publisher's scanning controls are good, but they don't equal *ImagEdit*'s. Although you can save frame settings for reuse, you can't control contrast and brightness settings or flip an image until after scanning.

When it comes to image editing, though, *Picture Publisher* has no equal. Whereas *ImagEdit* limits you to rectangular cut and paste, *Picture Publisher* also supports irreg-

EXECUTIVE SUMMARY

Microtek MSF-300G

Gray-scale scanning system

BEST BUY

The 8-bit MSF-300G scanner not only provides the best image quality in the roundup but also tosses in the superb *Picture Publisher* gray-scale editor to polish its images. A bargain price makes it the Best Buy for most desktop publishers.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing				●
Printing options				●
Image quality				●
Overall value				●

Reader service no. 659

MICROTEK'S NEW COLOR SCANNER—ONLY $2595

At press time, Microtek announced the MSF-300Z, a 300-dpi color/gray-scale scanning system. At $2595, it's a bargain compared with similar color/gray-scale scanners such as the $4570 Sharp JX-300 Color Scanner.

The MSF-300Z, which should be available by the time you read this, is almost identical to this roundup's Best Buy, the MSF-300G, and will add a 24-bit color scanning capability that can record 256 colors from a possible 16.8 million–color palette. The price will include an 8-bit 256-gray mode, *Picture Publisher* and *EyeStar Plus* software, and a new color editing package.

Designed for scanning color photos and outputting them on ink jet, color dot matrix, and color laser printers, the scanner will be used primarily to proof color before high-resolution color separations are produced. The MSF-300Z uses three 8-bit scanning passes on each image, collecting 24 bits of color data.

If you're thinking of putting an IBM monitor on your PS/2, you're not seeing the big picture.

When it comes to displays, bigger is better. That's one reason why the Amdek Monitor/432 monochrome VGA has a big edge over IBM's own standard PS/2 monitor.

But it's not the only reason. Because the 432 is, after all, from Amdek. A company with over 12 years experience in the computer monitor business, and the leading independent monochrome supplier.*

The 432's 14" etched-surface, flat screen produces hardly any glare or distortion. And far less eyestrain than Big Blue's PS/2 monitor with its smaller, 12" curved screen.

What's more, IBM's smaller screen also carries a bigger price tag.

So, if you're choosing a monochrome monitor for a PS/2 or any AT compatible, remember the company that hasn't lost sight of the big picture. Amdek. For the dealer nearest you, call 1-800-PC AMDEK.

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Circle 29 on reader service card

When it comes to image editing, Picture Publisher has no equal.

EXECUTIVE SUMMARY

Microtek MSF-400G

Gray-scale scanning system

Graphic arts professionals looking for sharp, high-resolution output will appreciate Microtek's 8-bit MSF-400G, the only 400-dpi scanner in the roundup. The excellent *Picture Publisher* software makes the high price worthwhile.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing				●
Printing options				●
Image quality				●
Overall value				●

Reader service no. 659

ular shapes. Both programs provide a paint tool for removing flaws, but *Picture Publisher* also supplies tools for smoothing, sharpening, and airbrushing parts of an image and applying various textures. A separate *EyeStar Plus* program competently handles line-art pixel editing.

With its low price, superb image quality, and excellent editing tools, the MSF-300G is a winner. The MSF-400G may appeal to some high-end users, but the 300G is the Best Buy.

Gravitating Toward Gray

If you want to produce top-quality halftones on a high-resolution typesetter, invest in a scanner system that captures 256 gray levels and offers versatile scanning and editing tools. The Microtek MSF-300G fits this prescription perfectly and wins a Best Buy.

The higher-resolution Microtek MSF-400G is a good deal for graphics professionals, and HP's ScanJet Plus fills the bill for beginners. IBM's PageScanner has its flaws, but it's still a solid buy. Dropping down a notch, Datacopy's Model 730GS is a good match for laser printers but far less adequate for higher-resolution typesetters.

Only a short time ago, gray-scale scanners were an expensive luxury. Now that image editing tools have achieved sophistication, they're more attractive than ever as an alternative to traditional halftoning. And if you also use them for fax, image retrieval, or OCR tasks, they can really pay off. ●

Contributing Editor Richard Jantz is the author of Ventura Publisher 2.0: Mastering Desktop Publishing *(John Wiley & Sons, New York, 1989).*

For more information about all products in this article, circle reader service no. 912.

WHERE TO BUY

Datacopy Model 730GS
Xerox Imaging Systems, Datacopy Products
1215 Terra Bella Ave.
Mountain View, CA 94043
800/821-2898, 415/965-7900
LIST PRICE: $1995 (scanner $1300; PC Image, PC or Micro Channel adapter, cable $695)
REQUIREMENTS: 640K, DOS 2.1 or later version, Windows-compatible mouse, graphics display; hard disk recommended
ACCESSORIES: OCR Plus $695
TECHNICAL SUPPORT: unlimited, toll-free number, M–F 8–5
OTHER SUPPORT: none
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HP ScanJet Plus
Hewlett-Packard
Customer Information Center
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900
LIST PRICE: $2190 (scanner $1595; Scanning Gallery Plus, PC or Micro Channel adapter, cable $595)
REQUIREMENTS: 640K, hard disk, DOS 2.1 or later version, Windows-compatible mouse, graphics display
ACCESSORIES: TrueScan Model S (OCR) by Calera Recognition Systems $2745, automatic document feeder $595, PS/2 Model 30 adapter kit $68
TECHNICAL SUPPORT: unlimited, toll number, M–F 7–5
OTHER SUPPORT: none
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IBM PageScanner Model 3119
IBM Corp.
Old Orchard Park Rd.
Armonk, NY 10573
800/447-4700, 914/934-4000
LIST PRICE: $3840 (scanner $2395, ImagEdit $495, Micro Channel adapter and cable $950)
REQUIREMENTS: 640K, Micro Channel slot, DOS 3.3 or later version, Windows 2.0 or later version, Windows-compatible mouse, VGA display
ACCESSORIES: TextReader (OCR) $595
TECHNICAL SUPPORT: supplied by dealer (BBS support available for quantity purchases via local IBM branch)
OTHER SUPPORT: none
Reader service no. 658

Microtek MSF-300G, MSF-400G
Microtek Lab, Inc.
16901 S. Western Ave.
Gardena, CA 90247
800/654-4160, 213/321-2121
LIST PRICE: MSF-300G $2195, MSF-400G $3995; Picture Publisher, EyeStar Plus, PC or Micro Channel adapter, cable included with both products
REQUIREMENTS: 640K, DOS 2.0 or later version, Windows-compatible mouse, VGA display; hard disk recommended
ACCESSORIES: ReadRight (OCR) $595
TECHNICAL SUPPORT: unlimited, toll number, M–F 7:30–5:30
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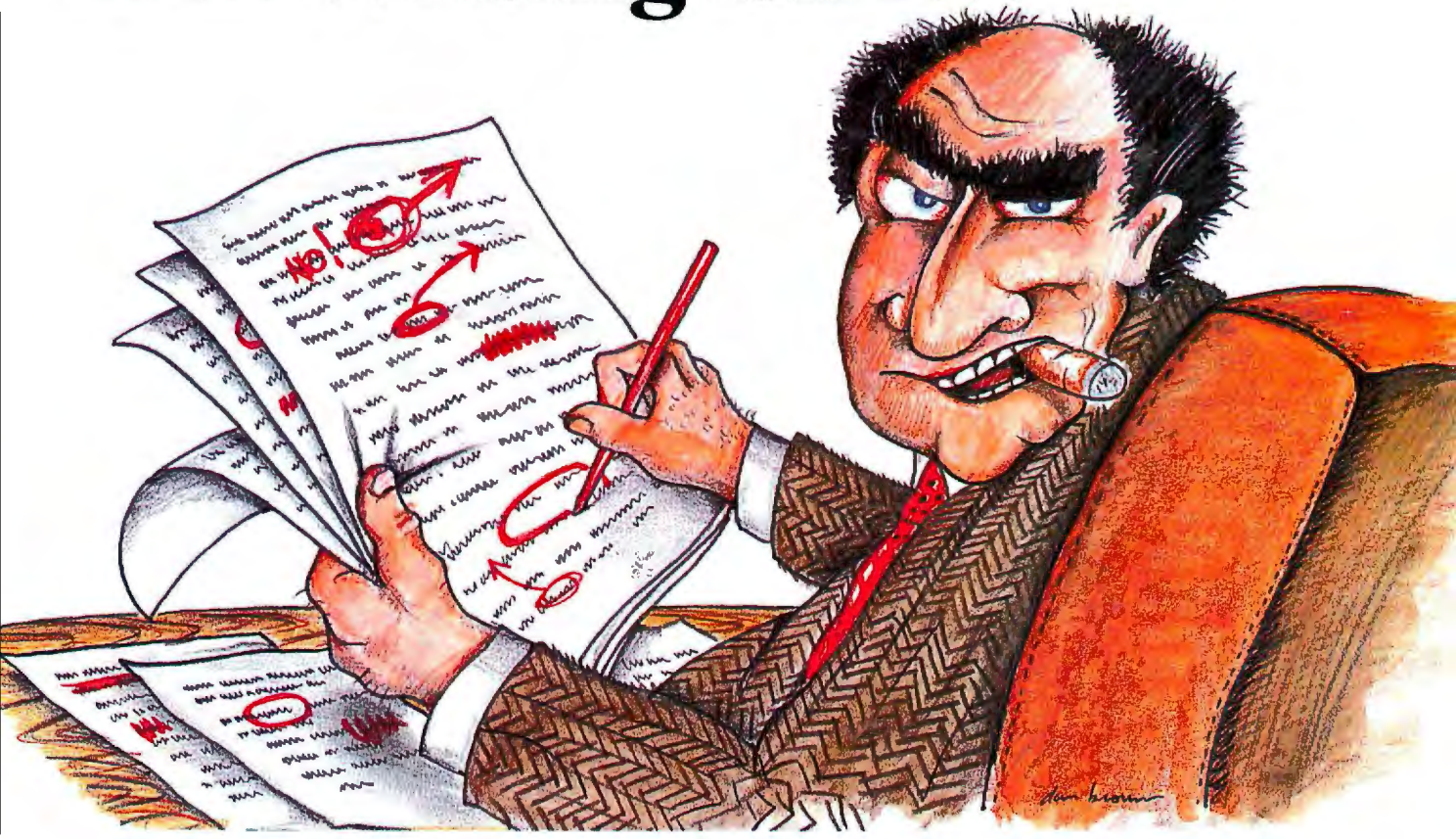

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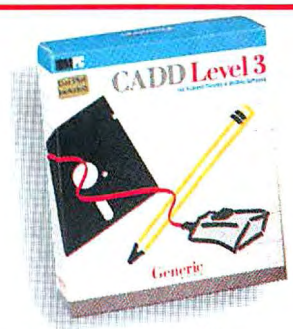

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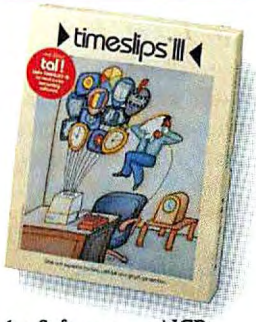

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3729 ◙LapLink Mac 2.0 *(Mac-PC transfer)* 79.
5179 ◙LapLink III ..... 85.
4891 ◙ViewLink 1.0 ..... 95.
3727 ◙DeskLink 2.21 ..... 99.

True BASIC, Inc. ... NCP

3561 ◙True BASIC 2.1 ..... 52.

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Or to illustrate

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▣ *Volkswriter 4 with Correct Grammar*–Makes professional word processing simple. The first and only word processor with a fully integrated grammar corrector..... $109.

Vericomp ... NCP
3765 ◉SoftBytes 2.0 ..... 35.
Volkswriter ... NCP
5046 ▣Volkswriter 4 *(w/Correct Grammar)* 109.
WordPerfect Corp. ... NCP
3799 ◉WordPerfect Library 2.0 ..... 75.
3804 □WordPerfect 5.1 ..... 265.
3805 ▣WordPerfect Network 5.1 ..... 389.
3806 Additonal Network Stations 5.1 .... 89.
WordStar USA ... NCP
2825 □WordStar Prof. Release 5.5 .... 229.
5000 □*Upgrade to Release 5.5* ..... 89.
Xerox ... NCP
4539 ◉Professional Extensions 1.0 .... 399.
3812 □Ventura Publisher 2.0 ..... call
XTREE Co. ... NCP
4512 ◉XTREE Pro 1.1 ..... 69.
XYQUEST ... NCP
4393 □XyWrite III Plus 3.55 ..... 229.

RECREATIONAL/EDUCATIONAL

Broderbund ... CP
1413 □Where/World Carmen Sandiego? .. 25.
1414 □Where/USA Carmen Sandiego? ... 25.
1417 □Where/Europe Carmen Sandiego? 29.
5701 □Where/Time Carmen Sandiego? .. 32.
4948 ▣JetFighter *(by Velocity)* ..... 35.
Electronic Arts ... CP
5798 ◉Ferrari Formula I ..... 29.
5806 □F-16 ..... 35.
5805 ◉Starfleet II ..... 45.
5803 ◉Battle of Britain ..... 45.
5804 □Deluxe Paint II *(Enhanced)* ..... 89.
Microprose ... CP
4454 □F-19 Stealth Fighter ..... 39.
2725 □F-15 Strike Eagle ..... 22.
Microsoft ... NCP
2858 □Flight Simulator 4.0 *All New* ..... 39.
Mindscape ... CP
4897 □Gauntlet ..... 29.
4690 ▣Balance of Power 1990 ..... 33.
Parlor Software ... CP
3159 □Bridge Parlor 2.3 ..... 49.
Sierra On-Line ... CP
3405 ◉Thexder ..... $24.
4752 ◉Gold Rush ..... 25.
4455 ◉Leisure Suit Larry II ..... 33.
4345 ◉King's Quest IV *(512k version)* ... 33.
5695 ◉Manhunter: San Francisco ..... 33.
4456 ◉Police Quest II ..... 33.
3404 ◉Space Quest II ..... 33.
5106 ◉Space Quest III ..... 36.
Spectrum Holobyte ... NCP
3467 ◉Tetris *(addicting mind teaser)* .... 24.
4283 ◉Falcon/AT *(F-16 simulation)* ..... 32.
5187 ◉VETTE! ..... 32.
Stone & Assoc. ... NCP
3436 ▣Memory Master *(ages 2-6)* ..... 22.
3435 ◉My Letters,Numbers,Words *(2-6)* 22.
5231 ◉Phonics Plus ..... 22.
3439 □2nd Math *(ages 7-16)* ..... 27.
Sublogic ... NCP
4653 □Up Periscope ..... 25.
3335 □Jet *(requires CGA or EGA)* ..... 33.
True BASIC, Inc. ... NCP
3559 ◉Algebra 3 with Workbook ..... 39.
3590 ◉Pre-Calculus with Workbook .... 39.

Electronic Arts ... CP
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□*Madden Football*–With over 160 different plays, includes 11 man teams, injuries, time outs, and weather ..... $35.

HARDWARE

Manufacturer's standard limited warranty period for items shown is listed after each company name. Some products in their line may have different warranty periods.

AST Research ... 2 years
1223 I/O Mini 2 C/S/P ..... 89.
1302 SixPakPlus 64k C/S/P ..... 129.
4107 RAMpage Plus 286 512k ..... 419.
4105 RAMpage Plus MicroChannel 512k 469.
Brother International ... 1 year
5787 HL-8e Laser Printer ..... 1899.
5788 HL-8Ps PostScript Laser Printer ... call
5786 Toner/Drum Kit ..... 99.
Central Point ... 1 year
5042 Copy II PC Deluxe Option Board .. 115.
Compucable ... 2 years
1604 2-Position switch box ..... $25.
1605 3-Position switch box ..... 35.
Cuesta ... 1 year
1608 Datasaver 400 Watt *(power backup)* 429.
Curtis ... lifetime
1681 Curtis Clip CC-1 ..... 6.
1686 Disk Holder DB-1 ..... 8.
1718 3½" Disk Holder DB-2 ..... 8.
1704 Printer Stand PS-1 ..... 18.
1713 Filtered SafeStrip SPF-3 ..... 24.
1694 Emerald SP-2 ..... 36.
1707 Ruby SPF-2 *(6 outlets; EMI/RFI filtered; 6 ft cord)* ..... 55.
1708 Ruby-Plus SPF-2 Plus *(w/FAX & modem protection)* ..... 65.
DacEasy ... 1 year
ACCELERATORS
3211 Breakthru 286-8 *(8 MHz)* ..... 225.
3210 Breakthru 286-12 *(12 MHz)* ..... 349.
Epson ... 1 year
We are an authorized Epson Service Center.
1906 FX-850 *(80 col., 264 cps, 9 pin)* ... call
1904 FX-1050 *(136 col., 264 cps, 9 pin)* .. call
5183 LQ-510 *(80 col., 180 cps, 24 pin)* .. 349.
1930 LQ-850 *(80 col., 264 cps, 24 pin)* .. call
4117 LQ-950 *(110 col., 220 cps, 24 pin)* .. call
1917 LQ-1050 *(136 col., 264 cps, 24 pin)* call
4116 LQ-2550 *(136 col., 333 cps, 24 pin)* call
5184 LX-810 *(80 col., 180 cps, 9 pin)* ... 199.
1052 Printer-to-IBM cable *(6 feet)* ..... 15.
We carry a full line of Epson accessories and ribbons. Call us with your needs.
5th Generation ... 1 year
3952 Logical Connection 512k ..... 529.
4921 Logical Connection 1 Meg ..... 659.
Hayes ... 2 years
2304 Smartmodem 1200 ..... 289.
2305 Smartmodem 1200B *(w/Smartcom II)* 289.
2306 Smartmodem 1200B *(hardware only)* 259.
2307 Smartmodem 2400 ..... 429.
2308 Smartmodem 2400B *(w/Smartcom II)* 429.
2309 Smartmodem 2400B *(hardware only)* 399.

Samna ... NCP
□*Ami Professional 1.0*–Full-featured word processor for high-powered office automation tasks. Includes mail merge, macros, thesaurus, professionally designed style sheets, and integrated drawing and charting capabilities ..... $319.

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It takes a lot of lumber to run a computer mail order business here in the high rise hamlet of Marlow, NH (pop. 560). In fact, we recently started construction of a new sales and distribution center. Inspired by our well-built mascots, we've cleared ten acres, put in a new road, dug a pond, and are getting as much done as possible before winter. (At which time any tools you drop outside are lost until spring).

Fast stud service!

Admittedly, we've kept the local carpenters pretty busy since 1982, when we had them put some shelves in a closet to create our first warehouse. They've already restored the stately Christmas Tree Inn (c. 1833) to serve as our headquarters and conference center, rebuilt the dam out front, and even created a state-of-the-art TV production studio.

And what, you may ask, do all those sticks, stones, bricks, bracks, tongues and grooves rest upon?

An awful lot of concrete to tell the truth. But it sure helps to have a solid base of customers. So next time you're remodeling your micro, call us for the peripherals and programs. We'll make sure you don't get hammered on price. And we'll provide the toll-free technical support you need to make sure that everything's screwed on right and no wires are crossed. Plus, to keep you on the straight and narrow, we have a gift to help you follow all the rules. Read on!

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Business, like football, is often a game of inches. And the best way to make short work of your long shots is with your very own PC Connection Folding Ruler. Because it's the perfect tool for determining the long and the short of just about anything. You'll receive one free with any order of $500 or more between now and December 31.

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DRIVES

IOMEGA ... 1 year

2485 Bernoulli II Single 20 Meg Internal $767.
5116 Bernoulli II Single 44 Meg Internal 995.
2486 Bernoulli II Dual 20 Meg External 1659.
5117 Bernoulli II Dual 44 Meg External 1969.
4276 20 Meg Cartridge Tripak *(5¼")* . . . 169.
5113 44 Meg Cartridge Tripak *(5¼")* . . . 249.
CONTROLLERS (required)
2499 PC2 Card . . . . . 169.
2500 PC2B Card *(bootable card for PC/XT/AT)* . . . . . 229.
2502 PC4 Card *(for PS/2 Model 50/60/70/80)* . . . . . 299.

Mountain Computer ... 1 year

2917 40 Meg Internal Tape Drive . . . . . 379.
2915 40 Meg External Tape Drive . . . . . 479.
2916 40 Meg External Tape Drive with Power Supply . . . . . 569.
5378 60 Meg External Tape Drive with Power Supply . . . . . 1169.
5616 150 Meg External Tape Drive with Power Supply. . . . . 1495.
5499 80 Meg Internal Tape Drive . . . . . 519.
5503 80 Meg External Tape Drive . . . . . 629.
5190 40 Meg Data Cartridges *(pre-formatted)* . . . . . 35.

Pacific Rim ... 1 year

5010 1.2 Meg External *(for PS/2's)* . . . . . 215.
5011 360k External 5¼" Drive . . . . . 179.

Plus Development ... 2 years

3105 Hardcard 20 Meg *(49 ms)*. . . . . 549.
3106 Hardcard 40 Meg *(28 ms)*. . . . . 699.

Seagate ... 1 year

FREE PCTV® Hard Drive Installation Tape with purchase of 20, 30 or 40 Meg Seagate drive for the IBM PC (not for AT). Beta or VHS.

2285 20 Meg Internal Hard Drive ST225 *(w/controller and cables, 65 ms)* . . 289.
2286 30 Meg Internal Hard Drive ST238 *(w/controller and cables, 65 ms)* . . 299.
4554 40 Meg Int. HD ST251-1 (28 ms) . . 359.
2287 40 Meg Int. HD for PC 251-1 *(w/controller and cables, 28 ms)* . $435.
4624 80 Meg Int. HD ST4096 (28 ms) . . 619.

TEAC ... 1 year

4950 PC, XT 360k Drive *(5¼")* . . . . . 79.
4951 720k Drive *(specify XT or AT, 3½")* . 79.
4670 1.44 Meg Drive for XT *(3½")*. . . . . 99.
4326 1.44 Meg Drive for AT *(includes Bastech software utilities, 3½" copy prot.)* . 119.

Toshiba ... 1 year

3650 AT 360k Drive *(5¼")* . . . . . 85.
3649 AT 1.2 Meg Drive *(5¼")* . . . . . 99.
4755 AT 1.44 Meg Drive *(3½", includes Bastech software utilities)* 119.

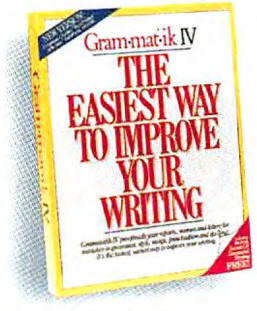
MISCELLANEOUS

CompuServe

1676 CompuServe Information Service . . 24.

Cables ... lifetime

1019 Smartmodem-to-AT cable *(10 feet)* . 15.
1050 Parallel Printer cable *(15 feet)* . . . . . 19.



Reference Software ... NCP

☑*Grammatik IV 1.0*–Checks for grammar, style, usage, punctuation and spelling errors in one pass! Now works within WordPerfect 5.0, Microsoft Word 5.0, Professional Write 2.1, WordStar 5.5, XY Write III & more. . . . $52.

Logitech ... limited lifetime

ScanMan Plus–Features new case design for easier handling! Offers O.C.R. compatibility for broader range of scanning capabilities. Includes enhanced PaintShow Plus graphic editor and works with most popular applications . . $185.

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3291 Sony *(10 disks per box)* . . . . . 12.
2789 Maxell MD2-D *(10 disks per box)* . . . 13.
4192 Verbatim Datalife *(10 disks per box)* . 13.

5¼" DS/High Density Disks *(1.2 Meg)*

3770 Verbatim Datalife *(10 disks per box)* . 19.
3292 Sony *(10 disks per box)* . . . . . 19.
2790 Maxell MD2-HD *(10 disks per box)* . 19.

3½" DS/DD Diskettes *(720k)*

3297 Sony *(10 disks per box)* . . . . . 15.
3772 Verbatim *(10 disks per box)* . . . . . 15.
2792 Maxell *(10 disks per box)* . . . . . 16.

3½" DS/High-Density Diskettes *(1.44 Meg)*

3298 Sony *(10 disks per box)* . . . . . 32.
3773 Verbatim *(10 disks per box)* . . . . . 32.
2793 Maxell *(10 disks per box)* . . . . . 32.

Kraft ... 5 years

Trackball–For IBM and compatibles, features include software selectable dpi ranges from 10 to 1150, ergonomic design and easy installation. An optional foot pedal is available for one-handed control . . . . . $69.

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3248 256k DRAMs *(120 nanosecond)* . . . call
4366 1 Meg x 9 SIMMs *(100 nanosecond)* call
5510 1 Meg x 9 SIMMs *(80 nanosecond)* call
5746 1 Meg Chips *(80 nanosecond)* . . . . call

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- Call 603/446-3383 for information.

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what you demonstrate?

Hercules ... 2 years

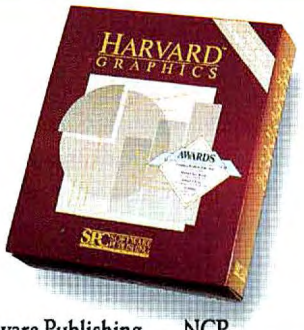
2318	Graphics Card Plus	$189.
5120	VGA Card	189.

Intel ... 5 years

4696	2400B Internal Modem	159.
2352	2400B Internal Modem 2 *(for PS/2)*	249.
5119	2400 Baud External Modem	179.
2346	Inboard 386/PC w/1 Meg	599.
4646	Inboard 386/PC Piggyback 4 Meg	1249.
2339	Inboard 386/AT *(req. inst. kit)*	859.
2338	Inboard 386/AT Installation Kit	139.
4266	Above Board Plus 512k	419.
4267	Above Board Plus I/O 512k	449.
5336	Above Board Plus 8 2 Meg	699.
5342	Above Board Plus 8 I/O 2 Meg	739.
4272	Above Board 2 Plus 512k	469.
4339	Above Board Plus Piggyback w/2 Meg *(upgrades to 6 Meg)*	call
4275	Connection Coprocessor	769.
4857	Visual Edge *(improve the output of your HP Laserjet II)*	449.

MATH COPROCESSORS

2374	8087-2 *(for 8 MHz 8088 CPU's)*	129.
2368	80287 *(for 6 MHz 80286 CPU's)*	135.
2370	80287-8 *(for 8 MHz 80286 CPU's)*	199.
2369	80287-10 *(for PS/2 Models 50 & 60)*	229.
4750	80387SX *(for 80386SX CPU's)*	309.
2371	80387 *(for 16 MHz 80386 CPU's)*	349.
2372	80387-20 *(for 20 MHz 80386 CPU's)*	399.
4121	80387-25 *(for 25 MHz 80386 CPU's)*	499.



Software Publishing ... NCP

☑*Harvard Graphics 2.12*–Be "free and easy" with the industry's best-selling presentation graphics package. Now with a coupon for free drawing accessory (normally $149 List). Graphically the best choice ..... $299.

Kensington Microware ... 1 year

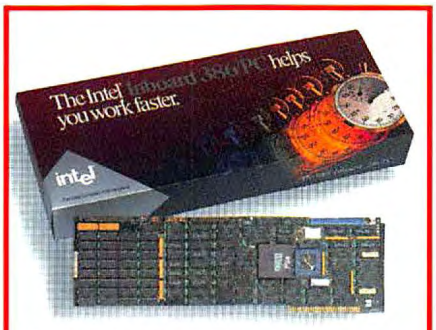
2581	Masterpiece	94.
2582	Masterpiece Plus	109.
4972	PowerTree 10	19.
4973	PowerTree 20	27.
4974	PowerTree 50	54.
5697	Expert Mouse *(Trackball for PS/2)*	115.

Key tronic ... 3 years

2537	101 Keyboard	99.
4518	101 Plus Keyboard	99.

Kraft ... 5 years

5800	3 button Thunder Joystick	29.
5813	ThunderStick w/new game adapter	55.
4292	3 button Joystick w/game adapter	45.



Intel ... 5 years

Inboard 386/PC–Boost your PC performance. A 16Mhz 80386 processor and 1Mb RAM allows you to handle today's most advanced applications, including Lotus 1-2-3 Release 3. 30 day money back guarantee..... $599.

5801	New Game Adapter *(2 game ports)*	27.
5802	Trackball	69.

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5464	Series 2 Mouse *(C9 for PS/2's)*	65.
4388	ClearCase Mouse *(serial only)*	65.
5151	HiREZ Mouse *(C9)*	85.
5152	Mouse w/Paint Show *(C9)*	99.
4297	ScanMan Plus *(hand scanner)*	185.

Magnavox ... 2 years

4758	13" CGA Monitor *(8CM515)*	269.
4760	13" Hi-Res Monitor *(9CMO53)*	369.
4761	13" VGA Monitor *(9CMO62)*	389.
4762	13" VGA Monitor *(9CMO82)*	449.

Micron Technology ... 2 years

5818	Beyond 640 EMS Board 1 MB *(exp. to 8 MB w/daughter card)*	369.
5821	Beyond EX Extended Memory Board 2 MB *(exp. to 4 MB w/daughter card)*	599.

Microsoft ... lifetime

2870	Mach 20 *(1 year warranty)*	349.
2897	Mouse with Paintbrush	109.
2896	Mouse with Easy CAD	125.
2898	Mouse with Windows 286 2.1	139.

Mouse Systems ... lifetime

2812	OmniMouse *(serial only; 1 year wrty)*	39.
4306	PC Mouse II w/PC Paint+	89.

NEC ... 2 years

4799	Multisync 2A *(VGA Monitor)*	499.
5085	Multisync 3-D Monitor	689.

Orchid Technologies ... 4 years

3069	Tiny Turbo 286 *(accelerator board)*	219.
4765	Designer 800 VGA *(360 x 480)*	159.
4690	ProDesigner VGA *(800 x 600)*	249.

PC Power & Cooling Sys. ... 1 yr

REPLACEMENT POWER SUPPLIES

3202	Turbo Cool 150 *(25° - 40° cooler)*	129.
3205	Turbo Cool 250 *(25° - 30° cooler)*	$169.
3200	Silencer 150 *(84% noise reduction)*	115.
4514	Turbo Cool 375	299.

Practical Peripherals ... 5 years

3101	1200 Baud Internal Modem	69.
3100	1200 Baud External Modem *(mini)*	77.
3097	Microbuffer Inline *(par. print buffer/32k)*	135.
3103	2400 Baud Internal Modem	139.
3102	2400 Baud External Modem	179.
5285	2400 Baud Ext. MNP Modem *(Lev 5)*	209.
4542	2400 Baud Internal Modem for PS/2	229.

Princeton Graphics ... 1 year

3166	Ultrasync *(800 x 600 max. res.)*	549.

Quadram ... 1 year

5143	JT-FAX 9600	549.

Safe Power Systems ... 2 years

4561	Safe 250W *(standby power bkup)*	249.
4562	Safe 425W *(standby power bkup)*	369.
4563	Safe 500W *(standby power bkup)*	495.

SOTA Technology ... 2 years

5107	Floppy Drive Controller *(S/P)*	99.
5109	SOTA VGA/16 *(with 256k)*	219.
5111	SOTA 286i-12 *(12 MHz accelerator)*	299.
5402	SOTA 386i-16 *(16 MHz accelerator)*	419.

Targus ... lifetime

4899	Nylon Laptop carrying case	55.
4901	Leather Laptop carrying case	139.

TheComplete PC ... 2 years

4889	TheComplete Hand Scanner 400	159.
5598	TheComplete Half Pg. Scanner 400	189.
4887	TheComplete FAX 9600	429.
5140	TheComplete Page Scanner	549.

OCR SOFTWARE

5789	TheComplete OCR/HS 1.0	199.
5807	TheComplete OCR/Page 1.0	319.

Toshiba ... 1 year

3684	T1000 Laptop *(80C88, 6.4 lbs.)*	669.
4856	T3100E Laptop *(12 MHz, 20 Meg)*	2749.
4958	T1600 Laptop *(12 MHz, 20 Meg)*	3249.

Video 7 ... 5 years

3778	VEGA VGA	259.
4193	FastWrite VGA *(includes 256k)*	319.
4194	VRAM VGA *(includes 256k)*	469.

Microsoft ... NCP

☐*Flight Simulator 4.0*–New version! Create and fly your own experimental aircraft or choose from a variety including the Sopwith Camel and Schwiezer 2-32 Sailplane. Moving scenery and random weather add to realism .... $39.

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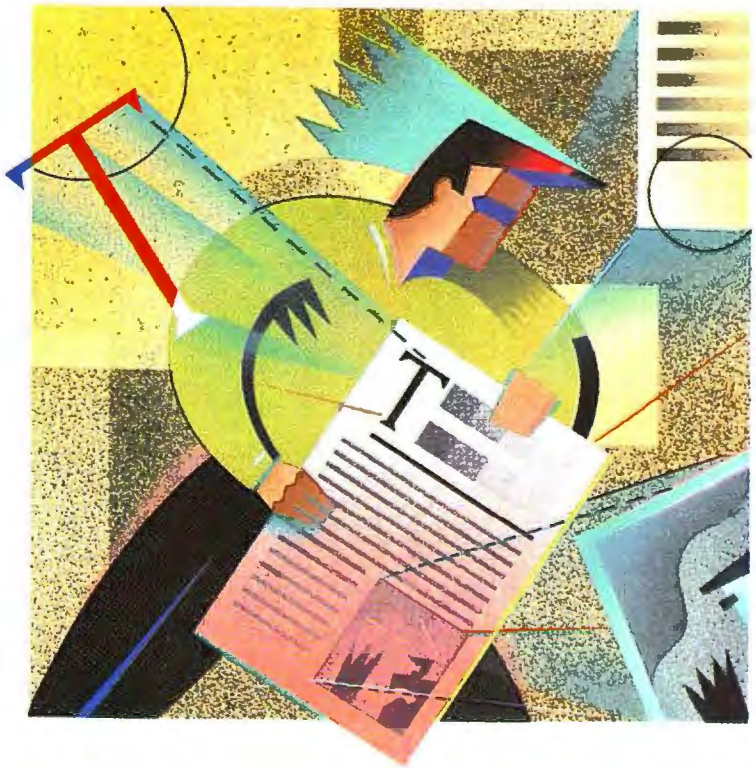


STEVE LYONS

Want to put out a professional-looking report or newsletter enlivened with snappy graphics? You needn't strain your word processor's talents or spring for an expensive (and complex) high-end desktop publishing (DTP) program. Today's low-end DTP programs are intelligently streamlined versions of the big boys, with prices and learning curves anybody can handle. This review tackles the four leading products in the category: Logitech's new *Finesse*, Software Publishing's best-selling *PFS: First Publisher*, Springboard Publishing's *Springboard Publisher*, and our Best Buy, Timeworks' *Publish-It*.

In document-production power, these four programs fall between high-end word processing and professional-level DTP. Superficially, *Microsoft Word*'s and *WordPerfect*'s newspaper-style column layouts, wide range of font styles and sizes, and support of graphics integration might seem to make these word processors able DTP programs. But while both offer primitive page preview with graphics, neither lets you edit WYSI-

THE REDWOOD VISTA

HOMEOWNER

City News Beat

City Council Approves Thompson Environmental Impact Report

Last night's City Council meeting ended with a 5-2 vote to approve the EIR for the Thompson Project, which has been hotly contested by the public since it came up for approval. The approval of the EIR was, in essence, a rejection of an appeal sought after by a group of citizens concerned about toxic waste that is possibly resident in the soil, a former dump site.

The local residents have been interested in the proceedings since the project first came up for approval in September. This is a very unusual situation that both the Planning Commission and the City Council have found, given that there is a project already approved for the site in question.

The approved project consists of 1.75 million square feet of commercial space, some designated for research and development.

The proposed Thompson Project will split the space into a combination of residential (apartments) and commercial property. Initial reviews of the public demand on the detrimental impact that the increased traffic would have on the community.

However, what most of the citizens did not know was that the project that was originally approved would have had a much more detrimental effect on the environment.

Obviously, everyone's first choice is to maintain the space as

Sports News

Crew Races in Redwood Vista

It's that time of year again. Soon, college teams from all over the state will be traveling to the Vista to have their annual crew competition. The meets will start

next month with a bang, the traditional Cal vs. Stanford meet. Both teams are reported to have outstanding new freshmen on the team. Cal and Stanford both lost some of their strongest team members who were seniors and graduated last year.

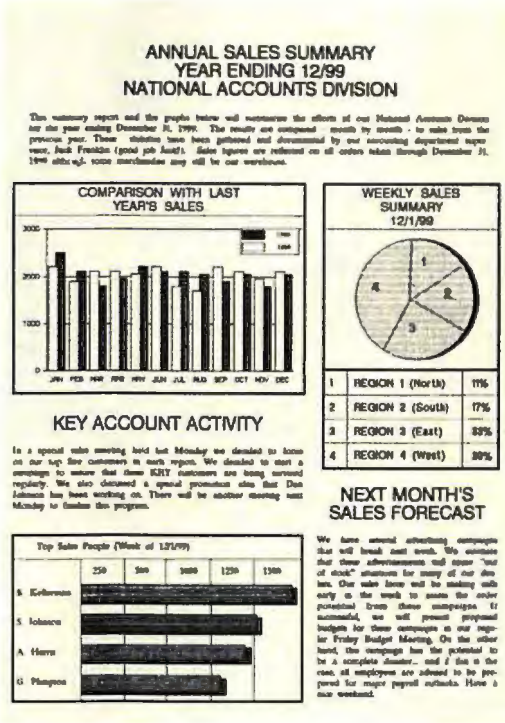
As part of Cal's successful recruiting effort this year, they acquired Monroe High School's star oarsman, Steve Frazier. Steve was an academic All-American and captain of the team which took first place in the state regatta last year.

Be sure to come early to get a prime space on the levee and watch the practice sprints beginning at the end of the lagoon. The meets will begin at 8:00 AM with heats every half hour.

The usual vendors will be out, selling beer, soft drinks, hot dogs, and hamburgers.

Redwood Vista Homeowner

Page 1



ANNUAL SALES SUMMARY
YEAR ENDING 12/99
NATIONAL ACCOUNTS DIVISION

COMPARISON WITH LAST YEAR'S SALES

WEEKLY SALES SUMMARY 12/1/99

1	REGION 1 (North)	11%
2	REGION 2 (South)	17%
3	REGION 3 (East)	33%
4	REGION 4 (West)	39%

KEY ACCOUNT ACTIVITY

NEXT MONTH'S SALES FORECAST

Top Sales People (Week of 12/1/99)

WYG text, the critical DTP capability.

On the other hand, the packages reviewed here can't equal *Ventura*'s or *PageMaker*'s ability to create long documents or those programs' sophisticated typography and design features. None of the four can import Encapsulated PostScript (EPS) files, for example, and only *Finesse* accepts scanned TIFF images.

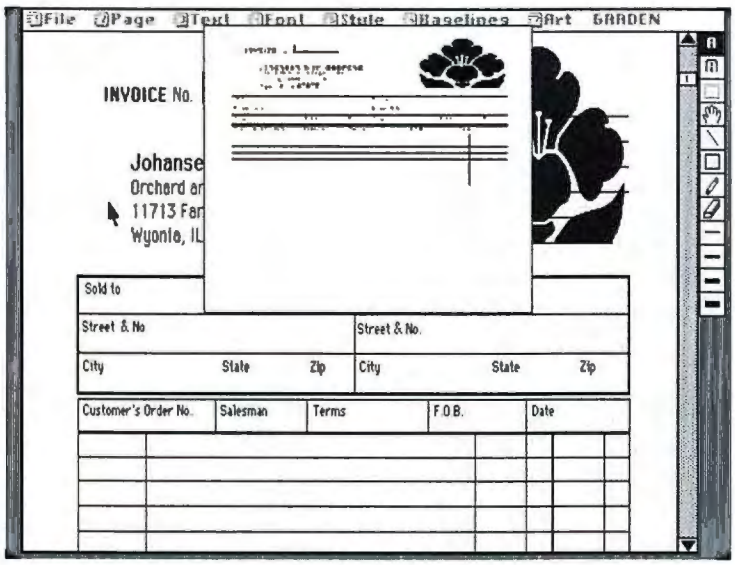
Assuming you can live without Bezier curves and book-length documents, here are the essential features to watch for. A good low-end DTP program should supply document templates to help beginners position imported text and graphics. Once the material is in place, solid word processing features become essential. Style sheets—found only in *Publish-It*—are a major convenience, letting you quickly set and change layouts and paragraph styles throughout a document. Good drawing tools are helpful, but you don't have to be an artist if the package has a good clip-art library. Finally, support for downloadable fonts (such as those from Bitstream) can greatly improve the appearance of a document, both on the screen and on the page.

Finesse 3.0

The new kid on the low-end DTP block, Logitech's $179 *Finesse*, has a useful range of page-design features and a fine selection of Bitstream *Fontware*. Alas, *Finesse* is limited to 16-page documents, and the program's slim image-handling features make it a poor choice if your documents require sophisticated graphics.

Finesse offers an array of design elements: 20 single, dashed, and double line styles, for example, versus the other programs' maximum of 5. But its word processing features are just adequate: *Finesse* lets you set eight left-justified or decimal tabs, for instance, but doesn't offer center- or right-aligned tabs. The package's graphics support is very limited; you can draw lines and boxes, but that's about all.

Finesse's excellent font package compensates somewhat for its poor graphics support. The newsletter on the left was output on a 9-pin dot matrix Brother printer. Publish-It's control of typography is unrivaled. Note the tight, attractive letterspacing and word spacing in the newsletter on the right.



PFS: First Publisher is quick and neat, but its page preview leaves much to be desired: Elements are dropped, resolution is poor, and the page image is squashed.

Finesse's offering of Bitstream *Fontware* is the best in its class, however, with 11 scalable outline fonts (the installation kit is included free). Moreover, the program's built-in scanner support is a persuasive enticement for users to buy Logitech's $309 handheld ScanMan unit.

Combined with its good layout tools and scanner support, the Bitstream tie-in makes *Finesse* a laudable product. But its features set is slimmer than *Publish-It*'s, and its anemic graphics controls make designing heavily illustrated documents taxing.

EXECUTIVE SUMMARY

Finesse 3.0

Desktop publishing program

Finesse competes against look-alike *Publish-It*, and that's not easy. With built-in support for scanners and an outstanding set of included Bitstream Fontware, it's a fine platform for quick-and-easy document design. But *Finesse*'s graphics and drawing support are minimal.

	POOR	FAIR	GOOD	EXCELLENT	
Page design and layout				●	
Typographic features				●	
Graphics features		●			
Printing					●
Overall value				●	

Reader service no. 610

PFS: First Publisher 2.1

The category's long-time best-seller, Software Publishing's *PFS: First Publisher* is quick, easy to use, and a bargain at $129 (see *The Software Shelf*, *PCW*, November 1988). But Software Publishing has rested on its laurels, and the program's feature set is now bested by the other programs in this review.

First Publisher lets you save page designs as templates for laying out other documents but lacks true style sheets. Worse, its word processing features are rudimentary, lacking even search and replace. And skimpy drawing tools limit you to straight lines, boxes, and freehand sketching.

While graphics handling is basic, the 150 images in the included clip-art library are of high quality (3000 images are available in separate libraries). You can also take snapshots of images with a new screen-capture program. *First Publisher* comes with five bit-mapped Bitstream *Fontware* typefaces, but you have to buy the installation kit separately.

First Publisher is aimed at novices, and its manual is stuffed with handy tips. But the low-end category that *First Publisher* once dominated has moved beyond it. The easiest-to-use package in this roundup, it also has the least all-around DTP power.

EXECUTIVE SUMMARY

PFS: First Publisher 2.1

Desktop publishing program

Silky smooth and easy to learn, *PFS: First Publisher* is still a good choice for simple documents. But other low-priced programs now offer more features.

	POOR	FAIR	GOOD	EXCELLENT	
Page design and layout			●		
Typographic features			●		
Graphics features				●	
Printing			●		
Overall value			●		

Reader service no. 611

FEATURES EVALUATION

$200 Buys a Lot of Desktop Publishing

Among these easy-to-use desktop publishing programs, Publish-It offers the most impressive range of features, with Finesse not far behind.

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

	Finesse 3.0	PFS: First Publisher 2.1	Publish-It 2.1	Springboard Publisher 1.01
Page design and layout				
Shows facing pages	●	○	●	○
200% and 50% page views	◒[1]	○	●	○
User-definable layout grids	●	○	○	●
Snap-to-grid	●	●	○	●
Multiple ruler units	●	●	●	●
Style sheets	○	○	●	○
Maximum pages per document	16	99	999	▼
Creates template documents	●	●	●	●
Automatic text flow across pages	◒[2]	◒[2]	◒[2]	●
Creates frame borders automatically	●	○	●	●
Headers/footers	●	○	●	○
Prints in landscape mode	●	○	●	○
Graphics handling				
Draws lines, squares, rectangles	●	●	●	●
Draws ovals/circles	○	○	●	●
Curve-fitting drawing tool	○	○	○	●
Draws polygons	○	○	●	●
Fill patterns	9	0	36	24
Freehand drawing	○	●	●	●
Flips images left–right, top–bottom	○	●	○	●
Vertical and diagonal text	○	○	○	●
Screen-capture utility	○	●	○	○
Graphics file formats supported				
EPS	○	○	○	○
.PCX	●	●	●	●
.PIC	○	●	●	○
TIFF	●	○	○	○

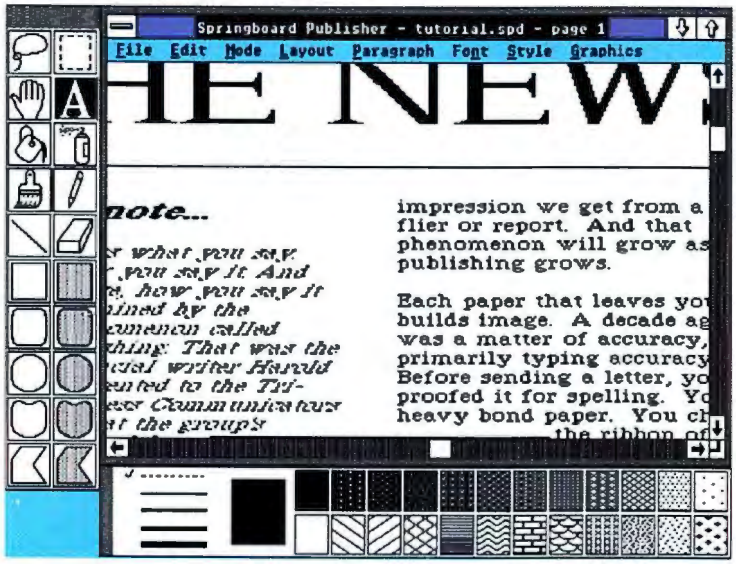
	Finesse 3.0	PFS: First Publisher 2.1	Publish-It 2.1	Springboard Publisher 1.01
Word processing/text importing				
Global search and replace	●	○	●	○
Left/right/center tabs	◒[3]	○	●	●
Automatic page numbers	●	○	●	●
Widow/orphan control	○	○	○	●
Automatic hyphenation	●	○	●	○
Manual hyphenation	●	○	●	○
Automatic kerning	○	○	●	●
Manual kerning	●	○	●	●
Word spacing control	○	○	●	○
Reverse type (white on black)	◒[4]	◒[4]	●	●
Built-in soft fonts	11	15	7	6
Font size range	6–99	6–72	7–72	9–72
Supports HP-compatible downloadable fonts	○	●	○	●
Supports Bitstream Fontware	●	◒[5]	◒[5]	◒[6]
Imports text formats[7]				
Word 5.0	●	◒[8]	●	●
WordPerfect 5.0	●	●	◒[9]	●
WordStar 5.0	●	◒[10]	◒[11]	◒[12]
Wang	○	●	○	○

[1] Fifty percent view available.
[2] You must create text frames to receive text overflow from previous pages.
[3] Left tabs only.
[4] In graphics mode only.
[5] Does not include Bitstream installation kit.
[6] Printer fonts only.
[7] Including earlier versions of word processing programs.
[8] Only up to Word 4.0.
[9] Only up to WordPerfect 4.2.
[10] Only up to WordStar 4.0.
[11] Only up to WordStar 3.x.
[12] Only up to WordStar 3.3.

Publish-It 1.13

A wealth of well-implemented features puts *Publish-It* a peg above its rivals in this review. Where others give a passing nod to hyphenation and kerning, for example, *Publish-It* excels at both. The $200 program lacks only automatic text flow and an undo command.

Feature-rich but friendly, *Publish-It* helps you work smoothly and logically. Want to change the overall appearance of a document? Powerful style sheets control a full range of formatting specs. Need to align the columns in a table set in proportionally spaced text? *Publish-It* comes to the rescue with a table-justification feature that lets you



Springboard Publisher's on-screen text resolution is nothing to get excited about, but no other program in this group can match its array of drawing tools.

set up nine tabs using left, right, center, or decimal justification and dot or underscore leaders.

Publish-It's word processing features are the best in the bunch, and its typographic features are a delight. You can kern letter pairs in half-point (1/144-inch) increments and set letterspacing (tracking) for text. A commendable hyphenation routine can even prevent two specified words from being separated at the end of a line—a trick that baffles *PFS: First Publisher* and *Springboard Publisher*.

First-class graphics features let you scale and size images easily, and about 100 home- and hobby-oriented graphic images are supplied. On the downside, *Publish-It* can handle only eight fonts at a time. It supports Bitstream fonts, but you must buy the fonts and installation kit separately.

Timeworks proved that compromise can be creative when *Publish-It* version 1.12 earned our Best Buy this spring (see *The Software Shelf*, *PCW*, February 1989). Thanks to its excellent word processing, graphics, and typographic controls, *Publish-It 1.13* wins our award again.

EXECUTIVE SUMMARY

Publish-It 1.13

Desktop publishing program

BEST BUY

Publish-It's first-rate typographic controls, well-designed layout and drawing tools, and good word processing make it the best-balanced package reviewed.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout				●
Typographic features				●
Graphics features			●	
Printing			●	
Overall value				●

Reader service no. 612

Springboard Publisher 1.01

Windows-based *Springboard Publisher* is one of those programs that almost gets it right. Its image manipulation and drawing tools are the best in this group, but its word processor is flawed. Creating master pages is remarkably easy, but the $200 program accesses the hard disk so often it becomes unbearably slow.

Springboard delivers such niceties as widow and orphan control, automatic file backup, and page and column hard breaks, and it deserves special mention for the way it flows text between page frames. While the other programs make you link new frames manually to allow text to flow onto subsequent pages, *Springboard* creates new master pages automatically.

Yet just when you get your hopes up, the program stalls. Its indifferent word processing features don't include search and replace, and you must convert *WordPerfect 5.0* files to *4.2* format before importing. Worse, the program lacks automatic hyphenation, so you have to insert hyphens manually before printing a document. Moreover, these hard hyphens move to the middle of lines when you edit the text and must be removed manually. In a program otherwise well suited to longish documents, this inconvenience lets you down with a thump.

Springboard Publisher's graphics tools are top-drawer; of the programs reviewed, only *Publish-It* comes close. You can easily draw straight lines and perfect squares and

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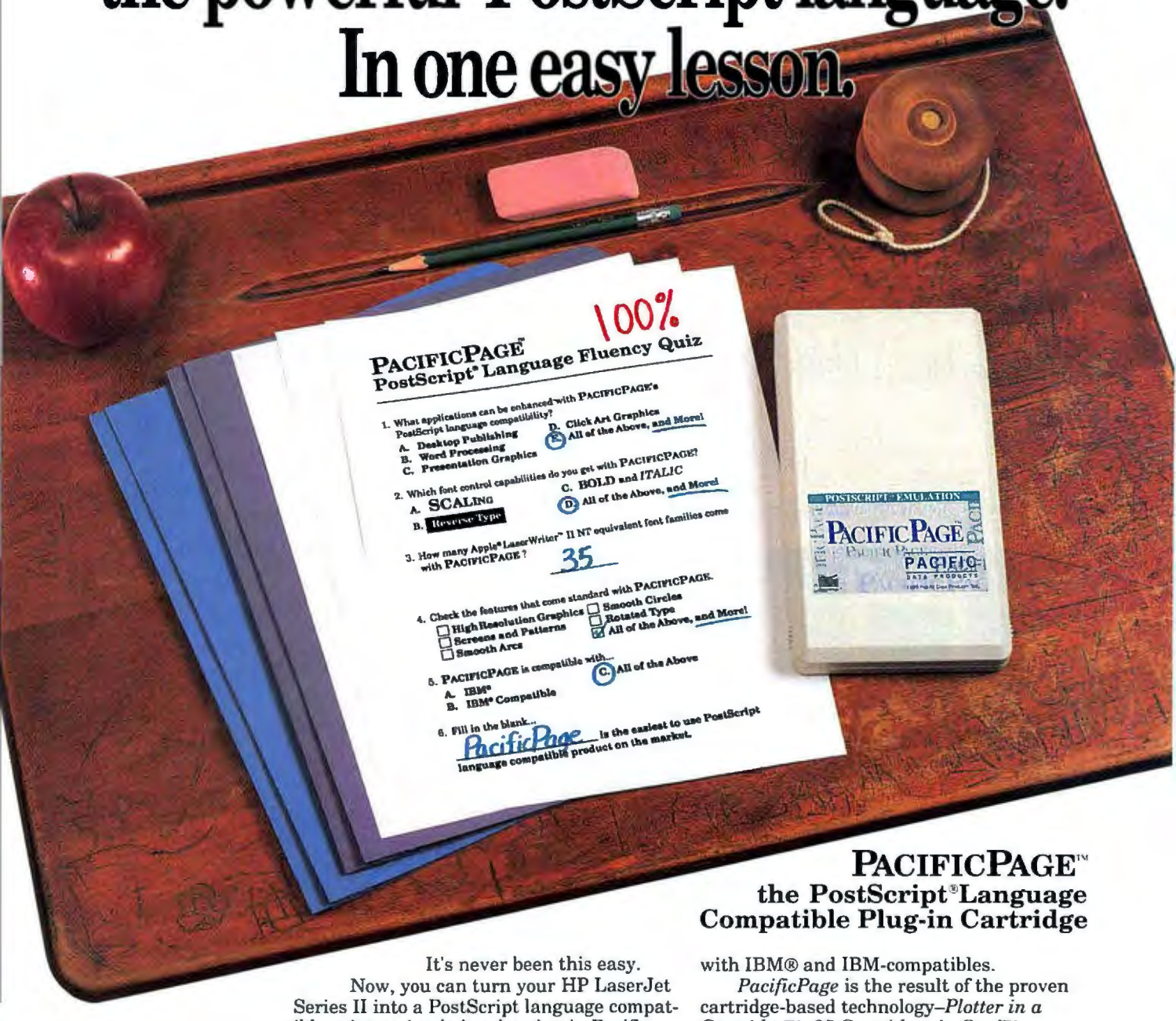

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PhoenixPage

Circle 319 on reader service card

circles, create transparent or opaque patterns and lines, and use 35 paintbrushes and 24 fill patterns. And only *Springboard Publisher* can trace image edges and rotate images freely (the other programs limit you to rotation in 90-degree increments).

Springboard Publisher's few large flaws obscure its many small virtues. It handles graphics beautifully, for example, but sometimes runs like a turtle. It accepts long documents but can't hyphenate properly. It's recommended only for people who need its superior image manipulation.

Hand-Eye Coordination

The programs reviewed represent your best bets in low-end DTP, but the category is a lively one, with new mid- and low-end programs popping up all over. More important, emerging *Windows*-based word processors may finally lend word processing the DTP punch it now lacks (see the *Ami Professional* preview in this issue's Special Report).

Meanwhile, *PFS: First Publisher* will give you an easy introduction to DTP—though not much else. If you need flashy drawing tools and own a fast hard disk, *Springboard Publisher* will probably fill the bill. And if support for scanned images is important, *Finesse* is a must. But for all-around utility, *Publish-It* is the top choice; its wonderful control of typography points up the other packages' shortcomings, and its balance and depth of features win top honors, hands down. ●

George Beinhorn is a freelance writer in North San Juan, California.

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

EXECUTIVE SUMMARY

Springboard Publisher 1.01

Desktop publishing program

Springboard Publisher has great drawing tools and a slick, easy-to-learn structure. It can even pour text into long documents; too bad it can't automatically hyphenate them. Lack of search and replace and slow screen redraws and printouts are other minuses.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout			●	
Typographic features	●			
Graphics features				●
Printing			●	
Overall value			●	

Reader service no. 613

WHERE TO BUY

Finesse 3.0
Logitech, Inc.
6505 Kaiser Dr.
Fremont, CA 94555
800/231-7717,
800/552-8885 California, 415/795-8500,
415/792-8901 (fax),
415/795-0408 (BBS)
LIST PRICE: $179
REQUIREMENTS: 640K, hard disk, DOS 2.1 or later version (3.1 to use included Bitstream Fontware), graphics adapter, mouse
TECHNICAL SUPPORT: unlimited, toll number, M–Th 8–5, F–Sun 9–4
OTHER SUPPORT: tech support BBS, BIX conference (Logitech)
Reader service no. 610

PFS: First Publisher 2.1
Software Publishing Corp.
1901 Landings Dr.
P.O. Box 7210
Mountain View, CA 94039-7210
415/962-8910
LIST PRICE: $129
REQUIREMENTS: 512K, two disk drives, DOS 2.1 or later version, graphics adapter; mouse recommended
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–4
OTHER SUPPORT: quarterly newsletter free to registered users, CompuServe forum (GO SPCFORUM)
Reader service no. 611

Publish-It 1.13
Timeworks
444 Lake Cook Rd.
Deerfield, IL
60015-4919
312/948-9200,
312/948-7626 (fax)
LIST PRICE: $199.95
REQUIREMENTS: 512K, two disk drives, DOS 3.0 or later version, graphics adapter (640K required for EGA, VGA, or Hercules graphics); mouse recommended
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 612

Springboard Publisher 1.01
Springboard Software
7808 Creekridge Cir.
Minneapolis, MN 55435
800/445-4780,
612/944-3915,
612/944-1832 (fax)
LIST PRICE: $129.95
REQUIREMENTS: 512K (640K recommended), 3MB hard disk space (1MB if Windows is already installed), graphics adapter, mouse
TECHNICAL SUPPORT: unlimited, toll number, M–Th 8:30–5
OTHER SUPPORT: 30-day money-back guarantee
Reader service no. 613

No Pain, Big Gains: Five Low-Cost LANs

Peer-to-peer LANs emphasize easy access to data and resources—not complicated administration.

If you'd rather spend more time working and less time playing network administrator, you may fit the peer-LAN profile.

Robert Lauriston

Peer-to-peer LANs have a bad—and wholly undeserved—reputation as underpowered country cousins to slick server-based LANs like *NetWare* and *LAN Manager*. They offer almost every important capability of server LANs (file and printer sharing, E-mail support, and the ability to run multiuser business software), plus one crucial capability that many server LANs lack: the ability to access network resources anywhere on the LAN, not just on the server.

Whereas server LANs often must be set up by high-priced network specialists, peer LANs are designed to be installed by end users. Also, peer LANs are generally easier to maintain and use—and much kinder to the pocketbook. A full-featured ten-station peer LAN will save you at least $1000 over a comparable server LAN—and probably even more. If you include the cost of the expensive high-speed server that you won't need to buy, you could end up saving $5000 or more.

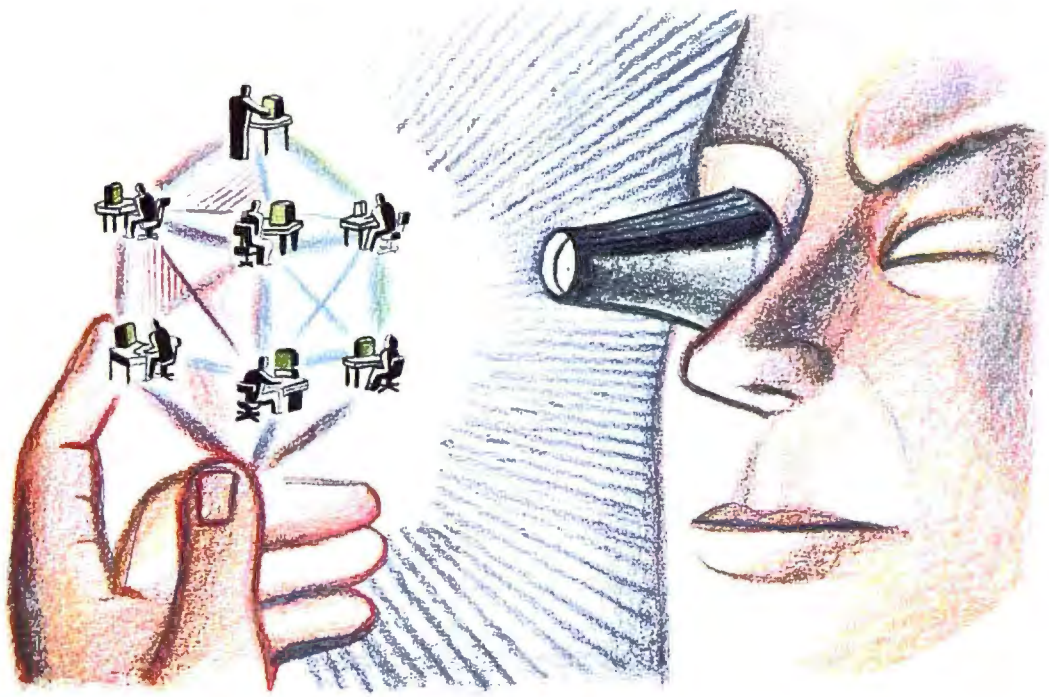
PC World has taken a close look at five of the most popular peer LANs: DCA's *10Net Plus 4.0.83*, D-Link's *Lansmart 1.14E*, Artisoft's *Lantastic 2.53*, Performance Technology's *Powerlan 1.2*, and Sun Microsystems' *TOPS 2.1*. All five are similar: They use menus to access network resources (but let you use the command line, or a batch file, if you prefer); and they let you guard sensitive data with password protection.

Performance is overrated as a server LAN buying issue; unless network traffic is exceptionally heavy, disk access speed, not LAN performance, is the limiting factor. With peer LANs, which are generally unsuitable for heavy-duty multiuser applications, speed is even less important (see the sidebar "Peer LANs: Who Needs 'Em?"). Nonetheless, all these LANs are fast enough for everyday computing.

To simplify product comparisons, all LANs have been priced in a standard ten-workstation configuration that includes software, ten of the company's least expensive adapter cards, and E-mail.

10Net Plus 4.0.83

DCA's *10Net Plus* comes packed with extras, including a strong E-mail package and real-time conferencing software. It offers securi-



ty and administrative features rivaling those of server LANs like *NetWare* and *3+Open*. But it falls short in three key areas: its relatively complicated setup and use, the less-than-average amount of RAM it leaves free for applications, and its price ($4950), among the highest in the roundup.

Like all the peer LANs reviewed here, *10Net Plus* follows a "host/client" model in sharing network resources. Hosts offer local resources, like a printer or a group of files, to the rest of the network. Clients use resources on a remote host. Any PC on the net can be a host, a client, or both; being a host uses up more RAM.

10Net Plus provides a series of crude but functional menus for sharing network resources. For instance, the Use Network Device menu shows prospective clients a list of host computers and the resources each offers. To use a resource, you highlight it, then tap a key to assign it a drive letter (if it's a directory) or an LPT port (if it's a printer). Unfortunately, not all network accesses under *10Net Plus* are this friendly. If you're running in host mode, the Share Network Device menu requires that you type in the designations of directories or printers you want to make available. Happily, good context-sensitive help is provided, because most users will need it.

With DOS 3.3 and all network software loaded, *10Net Plus* leaves host PCs with only 443K of usable RAM; you get a bit more (471K) in client-only mode. Considering that many applications require 512K, this below-average headroom may be a problem.

Installation is menu driven, but some of the settings are obscure, and you must follow the manual carefully to avoid confusion. And while the manual is clearly written, it's poorly organized.

10Net Plus's security and administrative features are unusually powerful for a peer LAN. In most peer LANs, password protection and read/write/create restrictions descend automatically to all subdirectories below a shared directory. But *10Net Plus* lets you set unique restrictions for each subdirectory, and even for individual files. Utilities are provided to help the network administra-

DAVID SUTER

EXECUTIVE SUMMARY

10Net Plus 4.0.83

LAN operating system

10Net Plus's administrative, security, and communications features are good enough to stand up against those of top server LANs. But it's high priced and relatively hard to use.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing				●
Security and administration				●
Overall value				●

Reader service no. 651

tor track network activity like file access and printer use.

10Net Plus comes with a generous bundle of communications software, including the *Network Courier* E-mail package, real-time conferencing for up to 40 users, a work-group calendar scheduler, and a network bulletin board.

10Net Plus is the only peer LAN whose security and administrative features are as powerful as those of high-end server LANs. But unless you need those features, you'll probably find *10Net Plus* unnecessarily hard to use, overly RAM hungry, and too expensive compared to other peer LANs.

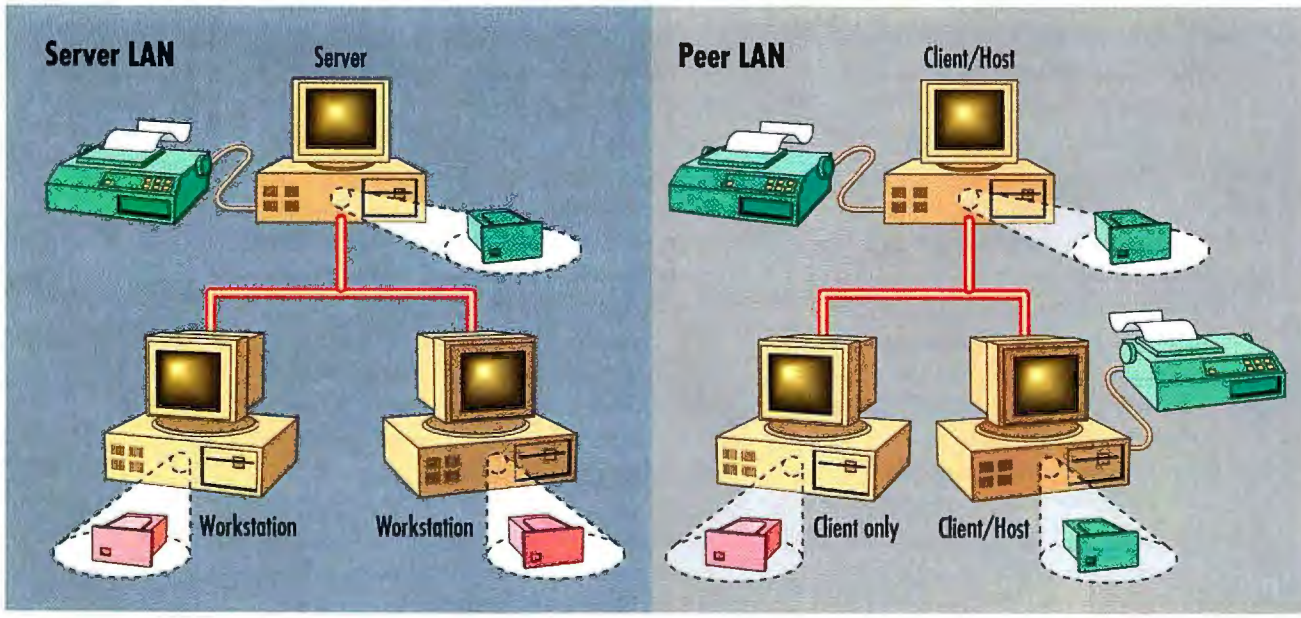
Lansmart 1.14E

D-Link's *Lansmart* is wonderfully easy to install, a treat to use, and (at $2980) one of the lowest-priced products in this review. You can even access *Lansmart* commands from within applications by running it in memory-resident mode.

Lansmart's pop-up interface is its biggest strength. Network menu choices are so descriptive and well organized that you may never notice the lack of on-line help. Whether you're sharing or using resources, you choose from a handy on-screen listing of available directories and printers. You can save your current set of resources so that they'll be loaded automatically the next time you start your PC.

The amount of available user RAM is average—which is to say not very good. You get 448K in host mode (barely sufficient for many business applications) and 518K in client mode. Moreover, if you run *Lansmart* in memory-resident mode, it gobbles an additional 80K of already scarce memory.

Share—But Not Alike



In server LANs, you can't access hard disks attached to other workstations (red)—the only shared resources are those on the server (green).

But in peer LANs, you can access any workstation's hard disk or printer (green), and it can access yours—provided you both choose to share.

EXECUTIVE SUMMARY

Lansmart 1.14E

LAN operating system

Lansmart's low price buys you an easy-to-use, easy-to-install, full-featured peer LAN package. However, the security and administration features are bare bones.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing			●	
Security and administration		●		
Overall value			●	

Reader service no. 652

While *Lansmart* has no menu-driven installation utility, it's so easy to set up that you'll never miss the menus. The first time you log on, you'll be asked a few questions about the network board you're using and whether you want to be a host or a client. Thereafter, every time you start your PC you'll be asked whether you want to load *Lansmart* or not. That's all there is to it.

Administrative and security features are minimal. Options for protecting subdirectories are limited to assigning passwords and toggling read/write/create access. The manual is clear, complete, concise, and well indexed.

D-Link provides no software bundle, and its optional programs are disappointing. A bare-bones E-mail package has a nice text editor but can't send separate files as part of a message, and a remote-control troubleshooting utility is too slow to be practical.

Aside from the amount of RAM it needs and substandard E-mail, there's very little wrong (and a lot right) with *Lansmart*. Its price is low, its ease of use is exemplary, and despite the lack of menu-driven installation, setup is the easiest of any product in the roundup.

Lantastic 2.53

Artisoft's *Lantastic* is a fantastic deal. At $2517, it's the least expensive LAN reviewed, but its value is anything but low-end. Installation is painless, the user interface is a snap, and it offers the highest amount of workstation RAM in the roundup.

Lantastic's menus provide point-and-shoot access to resources, and clear context-sensitive help is just a keystroke away. If you run the program in host mode, the list of resources you offer is automatically saved and is reloaded every time *Lantastic* starts. (Unfortunately, resources used in client mode cannot be saved.)

With both DOS 3.3 and *Lantastic* loaded, you get a remarkable 542K of usable RAM in host mode and 564K in client mode. That's enough to run almost any business application, with enough left over for TSRs like *SideKick*.

PEER-TO-PEER LANS: WHO NEEDS 'EM?

Peer-to-peer LANs are particularly appropriate for small, independent, informal work groups whose members need to share data and are capable of protecting it themselves. Peer LAN partisans tend to find network security disruptive and network administrators intrusive.

If, however, a multiuser data base is one of your main business tools, a peer LAN may be inadvisable. There's no problem with several users' looking up information in the same file at the same time, but if multiple users need to enter information simultaneously, you'll need to use one PC as a dedicated file server to protect against data corruption. In addition, if many users try to make simultaneous entries, you will find out the hard way that peer LANs can't match *NetWare's* high-speed performance under a heavy load. Finally, peer LANs lack advanced fault-tolerance features that give multiuser data bases extra protection from corruption.

Furthermore, working on a peer LAN can be slightly awkward. Shareable files may reside on any PC on the net, not merely on the server; if a given PC is not turned on, essential files may not be available. This also makes LAN-wide backup tricky. Finally, if you're running an application that resides on someone else's PC, and the host PC crashes, your PC may go down too. —R. L.

MATT NIELSEN

FEATURES EVALUATION

Fantastic Lantastic: Highest RAM at Lowest Price

Artisoft's low-priced Lantastic 2.53 delivers all the key peer-to-peer features: It's easy to install, offers menu-driven networking, and leaves much more usable memory than the others.

● Yes
○ No
◒ Deficient

Standard features	10Net Plus 4.0.83	Lansmart 1.14E	Lantastic 2.53	Powerlan 1.2	TOPS 2.1
Price[1]	$4950	$2980	$2517	$5080	$5469
Installation					
Menu-driven installation	●	○	●	◒[2]	●
Connectivity					
OS/2 workstations	○	○	○	◒[7]	○
Mac workstations	○	○	○	○	●
Usable RAM in 640K host workstation[3]	443K	448K	542K	466K	359K
Usable RAM in 640K client workstation	471K	518K	564K	520K	462K
Maximum number of stations	unlimited	255K	unlimited	255	256
File and resource sharing					
Open files on host stations	●	●	●	●	●
Menu-driven network software	●	●	●	●	●
Context-sensitive help	●	○	●	●	●
RAM needed for TSR operation	none[4]	80K	5K	42K-133K[5]	N/A
Save resource connections on the fly	○	●	○	○	●
Maximum number of client drive/printer connections	26/3	26/3	26/3	26/5	10/3
Automatic network reconnect	○	○	●	●	○
Printing					
Share printer at host workstation	●	●	●	●	●
Access print queue from within application	◒[6]	●	●	●	○
E-mail included	●	●	●	◒[7]	◒[7]
Scheduler included	●	○	○	○	○
Messaging	●	●	●	●	○
Share modem	○	◒[7]	○	○	○
Log-in via modem	◒[7]	○	○	○	○
Security and administration					
User groups	●	○	●	○	○
Assign passwords to network resources	●	●	●	●	●
Restrict access to individual subdirectories of shared directory	●	○	○	○	○
Restrict creation and deletion of files	●	●	●	●	○
Restrict execution of files	○	○	●	○	○
Limit number of users in subdirectories	◒[8]	○	○	○	○
Restrict access to individual files	●	○	○	○	○
Perform full network backup from workstation	●	●	●	●	●
Administrative utilities	●	○	●	●	○

[1] Minimum price for ten stations, including software, company's least expensive adapter board, and E-mail.
[2] NETBIOS must be installed manually.
[3] With default settings unchanged, after loading DOS and LAN software and sharing one directory and one printer.
[4] TSR can't manage network resources; separate E-mail TSR takes 78K (alarm only: 12K).
[5] Can manage network printers but not directories.
[6] Cancel current job only.
[7] Available at extra cost.
[8] Restrict to single user only.

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Circle 173 on reader service card

EXECUTIVE SUMMARY

Lantastic 2.53

LAN operating system

Lantastic gives you easy installation, a great user interface, and the highest RAM count in the roundup—all for a remarkably low price. *Lantastic*'s name is no exaggeration.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing				●
Security and administration			●	
Overall value				●

Reader service no. 653

Installation is simple. A menu-driven setup program automatically loads and configures network software. The manual itself is a mixed blessing; its explanations are good, but it lacks an index and fails to explain some important features, like E-mail.

Lantastic provides a surprisingly powerful set of administrative tools. You can assign access rights to groups of users, and you can keep audit trails of network activity. You can even restrict file lookups (DIRs) and program execution.

Lantastic gives you an E-mail feature, but it's relatively crude—you'll probably want to buy a third-party program. Even so, *Lantastic*'s low price, painless installation, slick user interface, and minimal use of RAM hit all the key points, and hit them hard. It's a winning package—and a Best Buy.

Powerlan 1.2

Performance Technology's *Powerlan* is quite expensive ($5080), but it doesn't offer much in the way of advanced features. In fact, it's a lot harder to use and install than peer LANs that are far less costly.

Powerlan's interface is unnecessarily complex, with 11 different submenus. It's also the only peer LAN reviewed that makes you specify the location and network name of a resource before you can use it. The context-sensitive help doesn't add a great deal to what you see on the menus.

Installation is also overly complicated, and the manual doesn't help much; it's poorly written and disorganized and lacks trouble-shooting tips.

With careful tuning (and hand-holding from your dealer), *Powerlan* can be tweaked to leave slightly more user RAM than the norm: 466K in host mode and 520K in client mode. But the default configuration leaves you with 20K less, and the documentation doesn't tell you how to improve on that.

Powerlan's security features are minimal. Your only options are password protection and the ability to restrict read/write/create permission.

BUYING SMART

The make-or-break features to keep in mind when choosing a peer LAN can be reduced to three: ease of installation, ease of sharing network resources, and amount of available workstation RAM.

Software installation should be much simpler and faster than with your average server LANs. Ideally, it should be handled by a menu-driven utility and require minimal tweaking afterwards. It should demand no prior knowledge of DOS, take no more than 5 minutes per station, and provide context-sensitive on-line help. If jumpers on the network boards need to be set or software parameters optimized for speed, memory, and so on, the process should be outlined clearly in the installation section of the manual.

Ease of sharing network resources means that clients should be able to pick remote hosts, drives, and printers from a list. Hosts should be able to access a similar point-and-shoot menu to choose which directories they want to share.

Peer LANs' appetites for memory vary widely—and your ability to run common business software varies with it. With DOS and network software loaded, these peer LANs leave you an average of 500K of usable RAM in client mode and 450K in host mode; some of the products reviewed leave you even less. If you use memory-resident E-mail, the memory drain becomes even more critical.

—R. L.

EXECUTIVE SUMMARY

Powerlan 1.2

LAN operating system

This high-ticket LAN fails to deliver value to justify its price. The amount of usable RAM is a bit above average but not nearly as high as *Lantastic's*. Moreover, this LAN is hard to install, difficult to use, and equipped with only an average feature set.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing				●
Security and administration			●	
Overall value			●	

Reader service no. 654

TOPS's appetite for RAM is by far the worst in the roundup.

No software is bundled with the LAN. If you want to pay extra, Performance Technology will sell you a copy of *cc:Mail*, an excellent third-party E-mail package the company guarantees will work with its software. Other options include network backup software and a disk mirroring utility.

Powerlan has the second-best memory size in the roundup, but *Lantastic* offers more memory—and more features—at less than half the price.

TOPS 2.1

Sun Microsystems' *TOPS* has been one of the most popular peer LANs on the scene for many years, thanks to its unique ability to connect PCs and Macs. Version 2.1 adds support for Ethernet and NETBIOS. Unfortunately (to quote TOPS technical support), it is "inherently just a memory hog," and at $5469 it is also the most expensive LAN in the roundup.

(At press time, we learned that Sun Microsystems is about to release *TOPS* version 3.0—a "radically different product" that seems to address many of the problems with version 2.1. Version 3.0, which should be shipping by the time you read this, will include printing, messaging, E-mail, and a full file-sharing system—and use only 80K in host mode.)

The excellent interface in version 2.1 is unchanged from the earlier version, with point-and-shoot resource selection in both host and client modes. Users can save their resource sets to batch files, which can then be loaded automatically. Context-sensitive help is, um, tops.

TOPS's appetite for RAM is by far the worst in the roundup. While clients get a passable 462K, if you want to share resources in host mode, you can end up with as little as 359K of usable RAM. If one of your applications needs NETBIOS, that eats another 47K. As a partial solution, you can switch from host to client mode without rebooting.

Worse yet, the new version seems a bit buggy. In our test, perfectly innocuous batch files occasionally froze the keyboard, and *WordPerfect* wouldn't grant a second user read-only access to an open file. TOPS acknowledged most of the problems and even had a patch for the *WordPerfect* glitch—but finding so many bugs is still troubling.

Installation is such a snap, you may never need to crack the thorough, easy-to-understand manual. A menu-driven utility even helps you configure your network adapter board.

TOPS's lack of administrative utilities may make you nervous. Security is limited to password protection and setting read-only or read/write access for shared subdirectories.

Optional software includes the *InBox*

EXECUTIVE SUMMARY

TOPS 2.1

LAN operating system

TOPS's ability to connect PCs and Macs is unique among the products reviewed, and its user interface is exemplary—but it gobbles far too much memory. Moreover, its high price and buggy upgrade are discouraging.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing			●	
Security and administration	●			
Overall value			●	

Reader service no. 655

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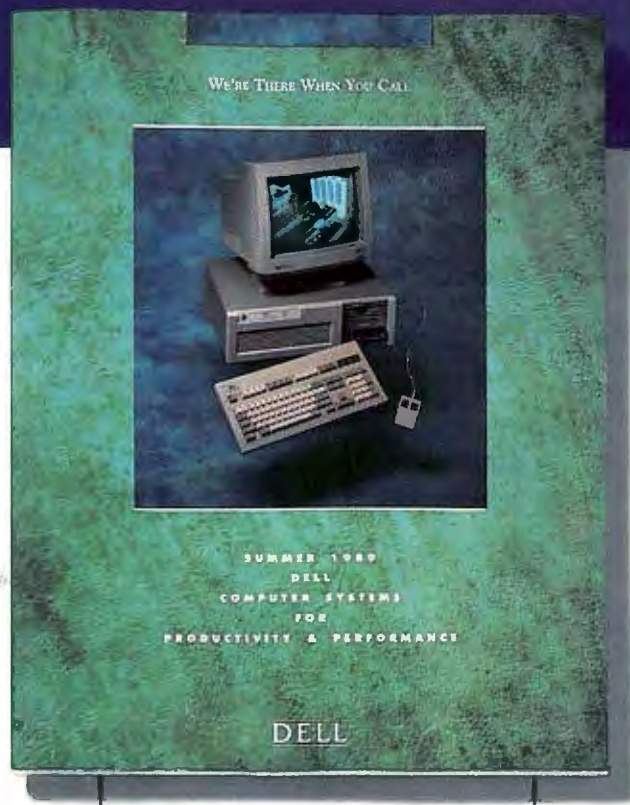

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11DL9

Circle 318 on reader service card

E-mail package, which, while no match for top E-mail programs, covers the basics. If you use *TOPS*'s own FlashCard boards, the $189 *NetPrint* utility lets you print to an Apple LaserWriter or other AppleTalk-compatible printers.

Those who must have Mac-PC connectivity may be willing to put up with *TOPS 2.1*'s bugs and RAM gobbling. The rest of us will want to take a very close look at version 3.0.

Making a Peer LAN Plan

Users who want peer-to-peer capabilities plus powerful security features may find *10Net Plus* irresistible, despite its high $4950 price and awkward interface. On the other hand, if Mac-PC connectivity is a must, *TOPS* is your only choice among peer LANs —despite its stratospheric $5469 price tag. But for most peer LAN shoppers, easy-to-use *Lantastic*, with its come-hither combination of high workstation RAM and bargain-basement $2517 price, is simply impossible to beat.

With leading server LANs like *NetWare/386* including more and more peer LAN features, it seems clear that peer-to-peer networking is the wave of the future. Still, until peer LANs offer all the features found in top server LANs, they won't be right for everyone. But the reverse is also true: If you don't need server-based security, fault tolerance, or the ability to make simultaneous entries to a data base, why pay the proverbial arm and leg for them? Happily, with peer LANs like *Lantastic* and *10Net Plus* to choose from, you no longer have to. ●

Robert Lauriston is a San Francisco–based computer consultant who specializes in LAN and word processing installations.

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

WHERE TO BUY

10Net Plus 4.0.83
Digital Communications Associates, Inc.
7887 Washington Village Dr. #200
Dayton, OH 45459
800/358-1010,
800/782-1010 (Ohio),
513/433-2238
LIST PRICE: software only—single user $195, 8 users $795, unlimited users $2595; software and hardwore bundles (per user)—StarLAN-compatible twisted-pair board $495, Ethernet board $695, 1-mbps proprietary fiber-optic board $795, 10-mbps proprietary fiber-optic board $1295
ACCESSORIES: audio-visual training kit $105
REQUIREMENTS: 512K, DOS 3.1 or later version
WARRANTY: one year parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll-free number, M–F 8:30–5:30
OTHER SUPPORT: BBS, fax, telex, regional and on-site training
Reader service no. 651

Lansmart 1.14E
D-Link Systems, Inc.
5 Musick
Irvine, CA 92718
714/455-1688
LIST PRICE: software only (unlimited users) $395
ACCESSORIES: 1-mbps twisted-pair board $249, Arcnet board $245, 8-bit Ethernet board $369, 16-bit Ethernet board $465; D-Link E-mail package $95; modem server $395; NetWare driver $95
REQUIREMENTS: 256K (512K recommended), DOS 3.1 or later version
WARRANTY: one year parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll-free number, M–F 8–5
OTHER SUPPORT: BBS, newsletter
Reader service no. 652

Lantastic 2.53
Artisoft, Inc.
Artisoft Plaza
575 E. River Rd.
Tucson, AZ 85704
602/293-6363
LIST PRICE: starter kit (hardware for 2 users and software for unlimited users)—proprietary hardware $525, Ethernet hardware $725; adapter-independent software (up to 120 users) $495 (requires NETBIOS); additional card/cable sets —proprietary hardware $249, Ethernet hardware $349
ACCESSORIES: star hub/repeater $495; 50-foot dual twisted-pair cable $40, 100-foot dual twisted-pair cable $74
REQUIREMENTS: 256K RAM, DOS 3.1 or later version
WARRANTY: one year parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll number, M–F 8–5
OTHER SUPPORT: BBS, EchoNet, newsletter
Reader service no. 653

Powerlan 1.2
Performance Technology
800 Lincoln Ctr.
7800 IH 10 West
San Antonio, TX 78230
512/349-2000
LIST PRICE: (software only) 4 users $595, 8 users $1195, unlimited users $1995
ACCESSORIES: 8-bit Arcnet board $179, 16-bit Arcnet board $695, 16-bit MCA Arcnet board $795; cc:Mail $695; NETBIOS $50, site license $500; OS/2 Link $500; Powersave $495; Powerserve $1995; Navigate $150; Powerlan for unlimited users plus NETBIOS, Powerserve, Navigate $2595; same plus Powermirror, Powersave $3495
REQUIREMENTS: 256K, DOS 3.1 or later version (3.3 recommended)
WARRANTY: 90 days parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: none
OTHER SUPPORT: through dealers, E-mail for large accounts
Reader service no. 654

TOPS 2.1
Sun Microsystems, TOPS Division
950 Marina Village Pkwy.
Alameda, CA 94501
415/769-9669
LIST PRICE: (software only) $189 per station
ACCESSORIES: FlashCard $239; Telecannector $59; repeater $189; TOPS for Mac $249 per station; NetPrint $189 per station; InBox for PC $599 per LAN, InBox for Mac $249 per LAN, InBox PC-to-Mac $99 per PC
REQUIREMENTS: 512K (640K recommended), DOS 3.1 or later version
WARRANTY: one year parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll number, M–F 7–5
OTHER SUPPORT: BBS, BIX
Reader service no. 655

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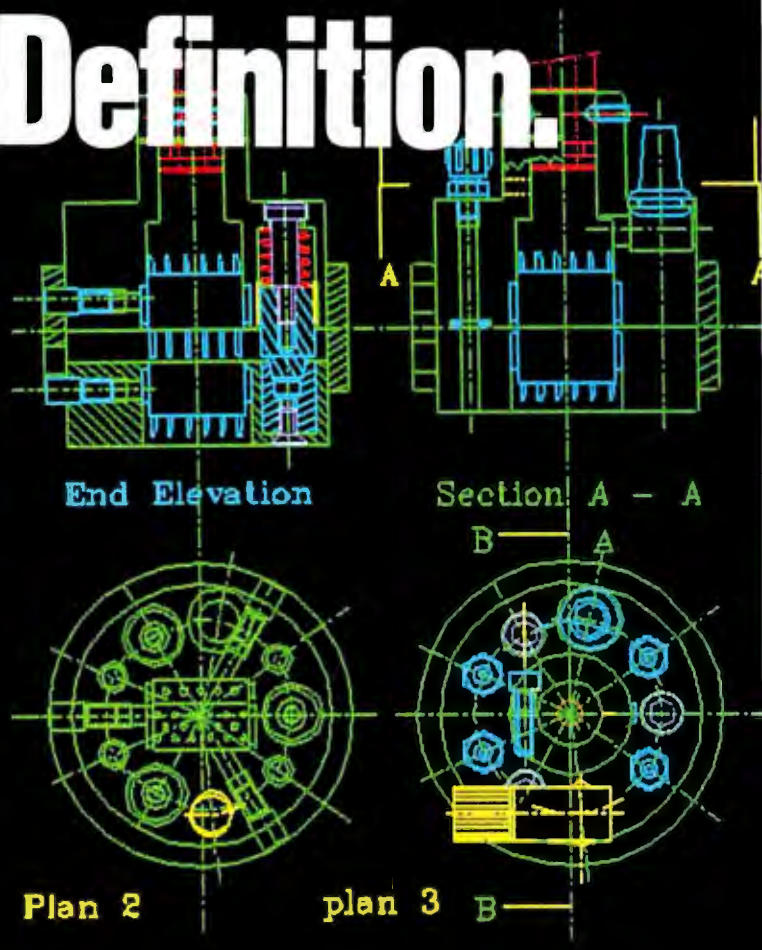

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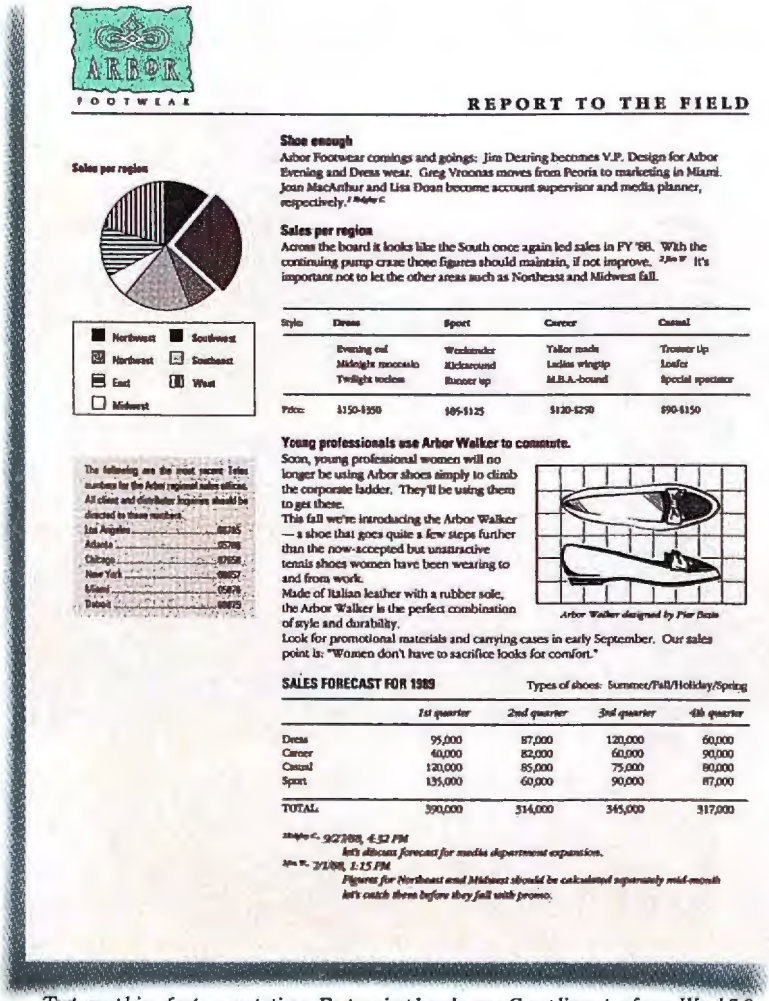
Circle 255 on reader service card

If you want better word processing, don't settle for Perfect.



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Copy Block	4	7
Delete Line	2	4
Italicize Word	2	5
Change Font and Size	6	9
Add Footer	1	7
Box Paragraph	5	12
Total	20	44

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WINDOWS

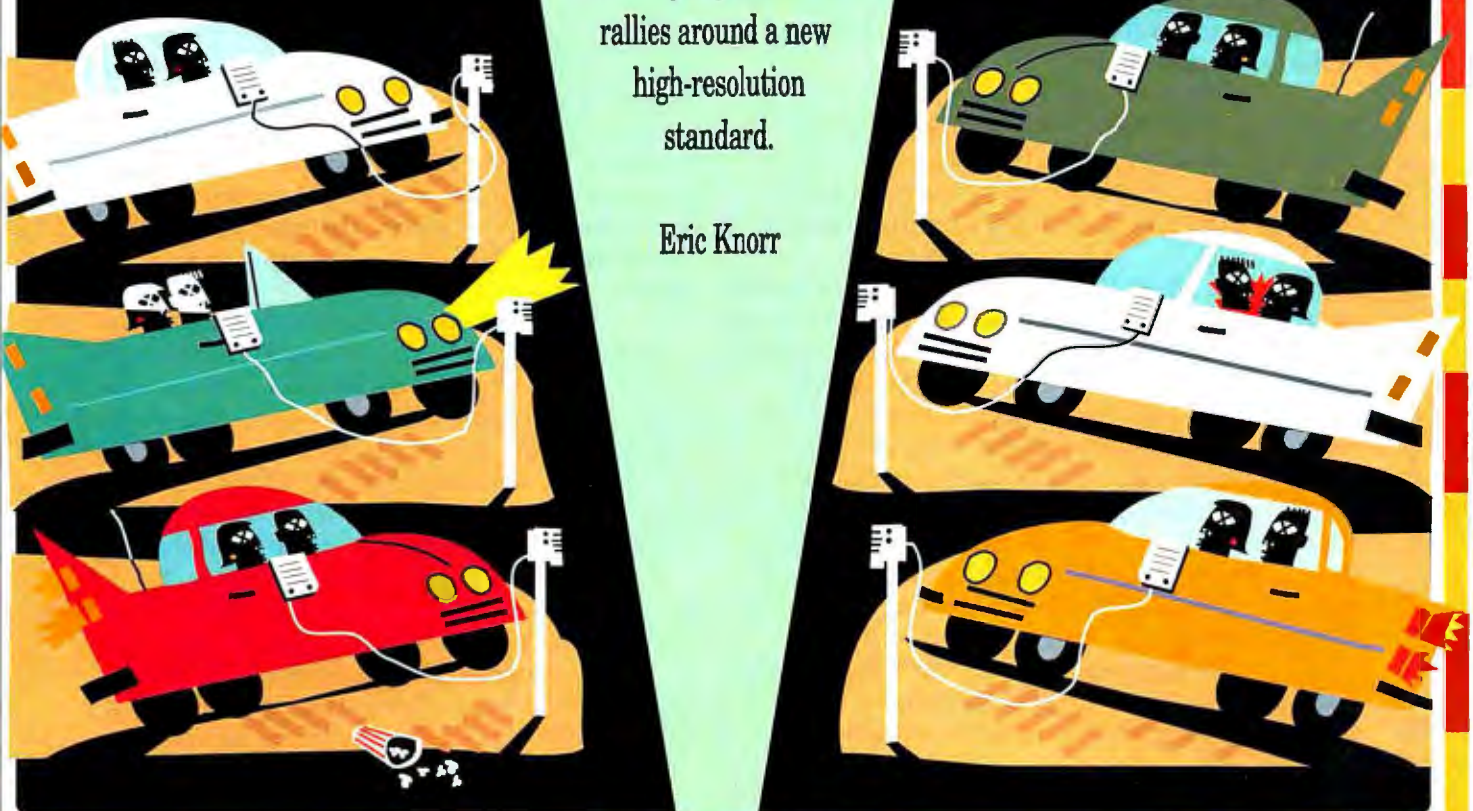
A PC WORLD SUPPLEMENT ON WINDOWING ENVIRONMENTS AND APPLICATIONS

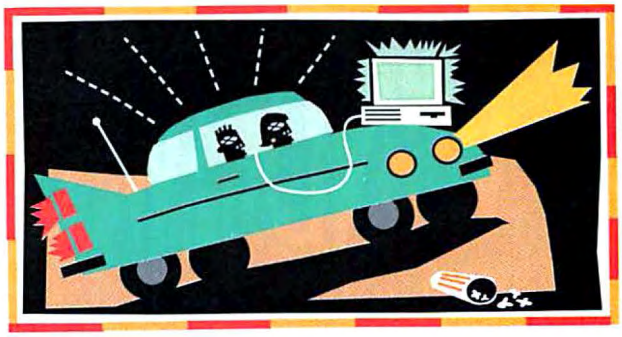
EDITED BY ROBERT LUHN

IMAGES FOR THE '90s

Is VGA resolution sharp enough and are VGA monitors big enough for a Presentation Manager future? The industry says no—and rallies around a new high-resolution standard.

Eric Knorr





Working with *Windows* or Presentation Manager (PM) on a 12-inch screen has its drawbacks. Rather than spend time maximizing and minimizing windows, wouldn't you rather have a screen that's big enough to accommodate several applications in open, usable windows simultaneously?

Sure you would. And rest assured that the industry, beginning with IBM, has anticipated demand for displays so large they take much of the window shuffling out of multitasking. IBM's 8514 monitor measures 16 inches diagonally and, when driven by the 8514/A graphics board, offers 1024 by 768 resolution—nearly 65 percent more viewing area than the typical VGA setup and more than 2½ times the pixels. In practical terms, that adds up to about twice the space for open windows.

IBM introduced the 8514/A in 1987, when CAD and desktop publishing were the only applications that needed it. But that was before PM. Now nearly every graphics hardware vendor is working on its own 1024 by 768 board, in the hope that PM will catch on and cause an upgrade frenzy.

At 1024 by 768, you need the power of a processor like the 8514/A's; in a fast PC, a VGA controller running at 1024 by 768 (in one of the proprietary "super VGA" modes provided with many VGA boards) causes a bottleneck. Most graphics hardware companies are working on 8514/A clones, while several—including NEC, Dell Computer, Vermont Microsystems, and Compaq/Renaissance GRX—have released boards based on Texas Instruments' 34010 graphics coprocessor. Software written specifically for one type of board won't run on the other, but both will be compatible with PM and, of course, any application written for the environment.

The key role of PM is clear. As long as software developers write for PM and graphics hardware engineers provide PM drivers, any PM application will drive any display at its maximum resolution. If PM becomes the mainstream business computing environment, we'll exchange shuffling through setup menus and fiddling with drivers and DIP switches for plug-'n'-play convenience.

Another Cost of OS/2?

To the multitudes who use EGA or VGA hardware, the prospect of yet another graphics upgrade is discouraging—especially after a look at IBM's prices. Shell out $1550 for the 8514 monitor, $1290 for the 8514/A board, and an extra $270 for enough RAM to display 256 simultaneous colors at full resolution, and you could have bought a fully loaded 286 for the same $3110.

Fortunately, IBM has competitors. The general industry consensus is that the cost of large-screen, 1024 by 768 graphics must drop to a street price of around $1000 for both board and monitor before business people upgrade en masse.

According to Greg Reznick, vice president of systems marketing for Headland Technology, the price of a 16-inch monitor bundled with a 1024 by 768 board will drop to the magic $1000 mark "by the end of 1990"—and many other industry leaders agree. Headland, Western Digital Imaging, Chips and Technologies, and Integrated Information Technology are all working the board side of the equation by developing low-cost chipsets compatible with IBM's 8514/A.

The monitor in the hypothetical $1000 bundle is, like IBM's 8514, an *interlaced* monitor. This means that its electron guns first draw the even scan lines of a video image and then go back to fill in the odd scan lines, instead of the faster single pass executed by the guns in a *noninterlaced* monitor. Interlacing drastically reduces the cost of monitor electronics, but the trade-off is either flicker or streaking, depending on the type of screen phosphor used.

Unlike IBM, NEC Home Electronics doesn't believe you should accept the compromise of interlacing. The company's new MultiSync 4d and 5d monitors offer 1024 by 768 (or better) resolution without interlacing, and they should be shipping by the time you read this. The 19-inch MultiSync 5d targets CAD and desktop publishing applica-

GORDON STUDER ILLUSTRATIONS CREATED WITH COREL DRAW

tions, but the 16-inch 4d is clearly aimed at the PM environment. Unfortunately, the noninterlaced circuitry drives the 4d's price $250 higher than that of IBM's 8514.

Along with its new monitors, NEC is also offering the MultiSync Graphics Engine, a 1024 by 768 board that centers on the 34010 graphics coprocessor. Although software written directly to 8514/A hardware won't run on the board, the resolution and color selection match those of IBM's 8514/A. The board also provides special speed-up logic for PM.

Forging an Interim Standard

The universal software/hardware compatibility offered by PM—known as device independence—is still a long way off. Robert Dickinson, vice president and general manager of WDI, hazards that "we're a generation or two away—say, late 1991."

Meanwhile, in the transitional period before PM takes hold, people considering a 1024 by 768 display must determine whether their favorite software can drive it at full resolution. Thanks to the Video Electronics Standards Association (VESA), which recently published the 8514/A's hardware specifications so programmers could write to it, boards compatible with IBM's 8514/A should have better support from today's software than 34010 boards do.

Of course, software vendors may still take their time supporting either standard. That's why NEC added a complete VGA chipset to the MultiSync Graphics Engine, making it backward compatible with software written for the VGA, EGA, Hercules, CGA, and MDA boards. All that logic raises the price, though, to a whopping $1499.

IIT is also following this one-size-fits-all strategy, but on the chip level. The company claims its Integrated Graphics Controller chip will be register-level compatible not only with the 8514/A but also with the VGA, EGA, Hercules, CGA, and MDA. "Our objective is to drive the 8514/A market," says Gene Parrot, vice president of sales and marketing. "We believe our customers will be able to sell backward-compatible 8514/A boards for $799 or less." These boards could be sold as VGAs for as low as $599; to upgrade to 8514/A capability, you would merely add the RAM necessary for 1024 by 768 resolution.

That's an affordable solution as far as the boards go, but the biggest cost will be the monitor, and here we have a classic catch-22. The manufacturing cost of 16-inch CRTs will plummet only when vendors sell a lot of them, but demand won't peak until the prices fall.

Is this monitor the wave of the future? NEC's 16-inch MultiSync 4d has the resolution and screen area to make multitasking sing.

VGA Versus 8514/A: Highest Modes Compared

With over 2½ times the pixels, the 8514/A delivers a far crisper display than the VGA can.

	VGA	8514/A
Graphics		
resolution (horizontal by vertical)	640×480	1024×768
total pixels	307,200	786,432
on-screen colors	16	256
palette size	262,144	262,144
Text		
characters (columns by lines)	80×30	146×51
character matrix (horizontal by vertical)	8×16	7×15

The industry is banking on PM users' lust for elbow room: Only then will they feel compelled to upgrade to the bigger screen. As with so many other things—including device independence—the next step in graphics depends on how many of us find PM irresistible.

Eric Knorr is a senior editor for PC World.

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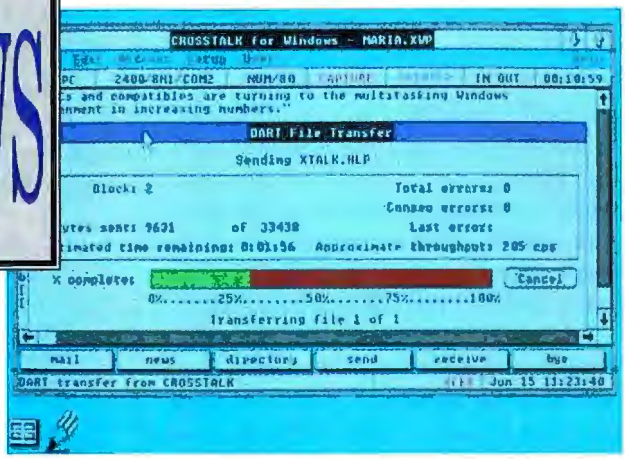
A powerful programming language, based on CROSSTALK Mk.4's CASL™ language. Programming tools are provided for Windows-specific tasks like creating dialog boxes and executing DDE functions.

48 user-programmable function keys for one keystroke operation of host responses or "scripts". In addition, the function keys can be invoked by a customized pull-down menu selection or by clicking on-screen icons with the mouse.

Capture host data to printer or disk file, with "playback" of captured host sessions.



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PREVIEW

AMI GOES PROFESSIONAL

Powerhouse word processing comes to Windows.
George Campbell

The gap between word processing and desktop publishing is growing paper-thin. High-end programs like *Microsoft Word 5.0* and *WordPerfect 5.0* offer graphics integration, fonts, and page preview modes that edge onto *Ventura Publisher*'s turf. But tapping these features takes some doing. If you need high-test word processing seamlessly merged with facile desktop publishing tools, the answer may lie with *Windows* programs such as Samna's *Ami Professional*.

Although it matches *Word* and *WordPerfect* feature for feature, *Ami Professional* is often much easier to use. Thanks to its typographic tools, point-and-drag graphics manipulation, and *Ventura*-like frames and style sheets, it could be the only publishing program you'll ever need.

The prerelease copy examined here was about 95 percent complete, offering a solid look at what's to come. As you might expect, *Ami Professional* preserves *Ami*'s menu- and icon-driven interface, keyboard shortcuts, formatting aids, spelling checker, and easy graphics handling, supplementing them with a panoply of heavy-duty word processing features. The mail merge feature now lets you insert field names from a menu instead of having to type them into a mail merge letter. Need to build a table of contents or an index? Just mark the desired text with the mouse and select a single menu option. A complete document summary sheet plus pop-up Post-it–style notes allow easy group editing and tracking of revisions. And unlike *Word*, with its cumbersome style sheets, *Ami Professional*'s formatting is applied by simply highlighting text and selecting a style from an on-screen box.

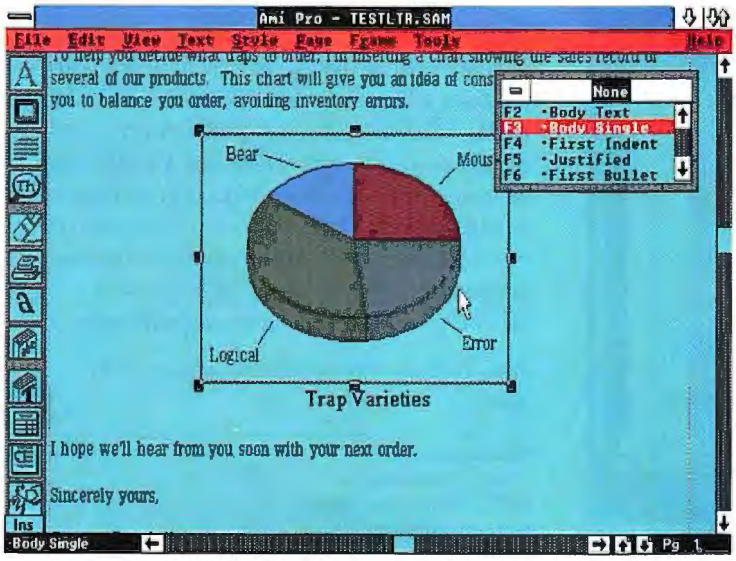
Like any advanced word processor, *Ami Professional* lets you record keyboard macros (and mouse-selected commands) and play them back. Boilerplate text can be stored in glossaries, and there's a 40,000-word thesaurus that even provides dictionary definitions.

Two hot features you won't find in most word processors will win many converts. The first is a table generator that Samna claims will take typed data or *1-2-3*, *Excel*, or *dBASE* files and transform them into a *1-2-3*-style table you can drop into a document. The second is a snazzy built-in business charting function that offers six types of graphs with color and 3-D variations. You can also import .PCX, TIFF, .PIC, and *Windows Paint* images and import and export formatted *Word*, *WordPerfect*, and *WordStar* files.

Ami Professional supports one-way DDE links to other *Windows* applications. You can easily create a sales report with numbers tied to a range in an *Excel* worksheet; change the worksheet, and the document will be updated automatically.

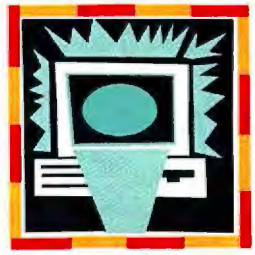
Samna's new *Ami* could be one of those programs that spurs users to move to *Windows*. Just remember that the package will cost $495 and probably require a *fast* 80286 computer at the very least. A run-time version of *Windows/286* will be included with the program when it ships at the end of 1989.

George Campbell regularly contributes articles to PC World *on word processing and telecommunications software.*



You can use Ami Professional's charting feature to add punch to otherwise humdrum documents. Full control of chart labels and legends is one of the promises.

Ami Professional
Samna Corp.
5600 Glenridge Dr.
Atlanta, GA 30342
800/831-9679, 404/851-0007
Reader service no. 604



COMMUNICATIONS, THE MAC WAY

A popular Mac communications program comes to Windows—and may find the going rough.

Judy Getts

In the Mac world, Software Ventures' *MicroPhone II* gets high marks for its slick background file transfers, powerful script language, high-speed modem support, and a learn mode that lets novices build log-on scripts easily. These features will now appear in the *Windows* version of the product, but they might not be enough. Established competitors like *DynaComm* offer a complete set of modem controls and protocols, while newcomer *Crosstalk for Windows* assembles *Mk.4*-like powers behind a friendly face. Will *MicroPhone II* be able to compete?

Not right away. Based on our examination of a prerelease version and interviews with the company, the first release of *MicroPhone II* will be short on error-checking protocols and terminal emulations, and it won't support *Windows*' DDE. According to the manufacturer, no planned version will include a text editor or on-line help.

Some users may also chafe at the lack of a central dialing directory, but sending and downloading files is rather simple. As in *DynaComm*, related functions are grouped under a handful of menus. Flip open the Phone menu, for example, and you can dial, wait for a call, or run scripts with a few mouse clicks. Toggling from a *MicroPhone II* session to another application takes a single click; *MicroPhone II* will neatly perform file transfers in the background while you work away.

Configuring *MicroPhone II*, however, won't be so simple. Phone numbers are stored in "documents" that are shackled to a single set of communications parameters. Thus, if you wanted both 1200-bps and 2400-bps settings for MCI Mail, you'd have to create two documents. Changing modem settings is even stickier. You must select the Import Script function, choose from a list of inscrutably named modem drivers that control specialized functions, such as hanging up the phone, and import the script.

MicroPhone's Pascal-like script language is likewise geared for skilled users—and you'll have to master it to do more than basic file transfers. Once you're proficient, you'll find that scripts can fetch MCI mail, automate file transfers, run unattended communications sessions, and turn your PC into a BBS. If you mostly log on to on-line services, you can turn to *MicroPhone*'s Watch Me function, which will record your keystrokes (complete with a remote system's responses) for easy playback. *MicroPhone* will also include prefab scripts for CompuServe, MCI, EasyLink, and other services.

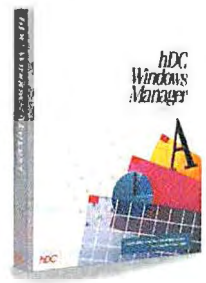
But such powers may not satisfy bread-and-butter communications users when *MicroPhone II* is released at the end of 1989 for $295. The program will include only XMODEM, 1K XMODEM, YMODEM, and YMODEM-G error-correction protocols, and VT-52 and VT-100 terminal emulations. *Windows* buffs will be disappointed as well, since DDE support is down the road. Software Ventures plans to beef up the program in future releases. When it does, *MicroPhone II* could be a strong contender.

Judy Getts is a contributing editor for PC World.

MicroPhone's Watch Me feature is a telecommunicator's blessing. It will "watch" as you log on to an on-line service, then replay your keystrokes to automatically log you on to the service the next time you call.

MicroPhone II
Software Ventures Corp.
2907 Claremont Ave. #220
Berkeley, CA 94705
415/644-3232
Reader service no. 607

Introducing hDC Windows Manager and MicroApps. The Windows-enhancing, desktop-customizing, file-saving, work-organizing, memory and font viewing, appointment-reminding utility for Microsoft Windows.



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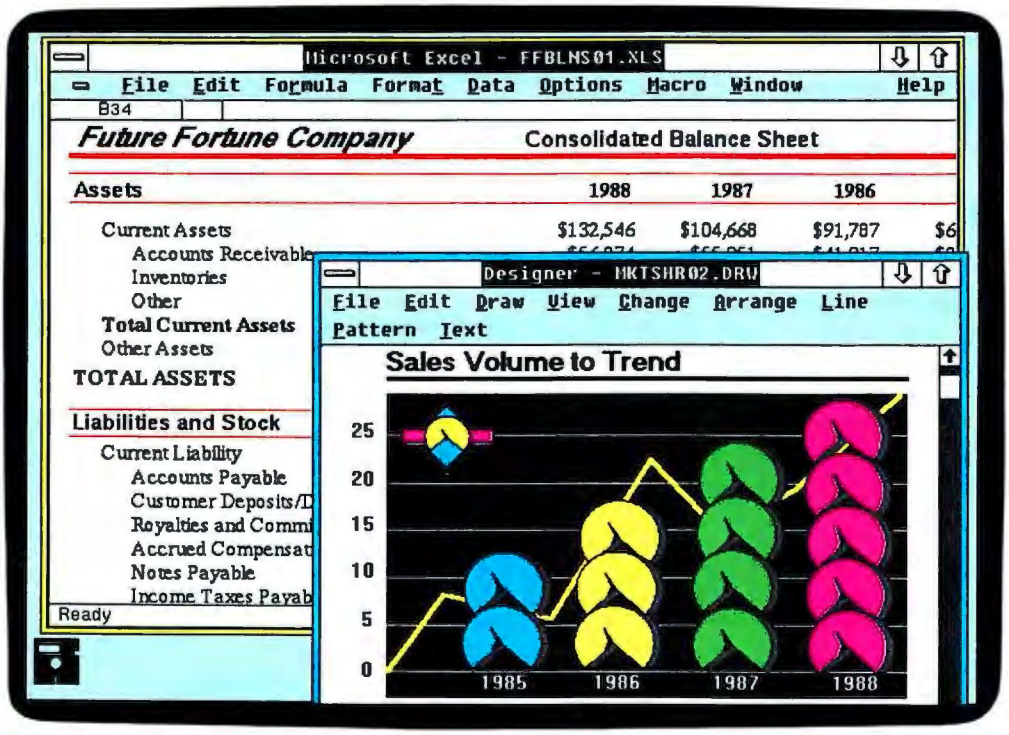
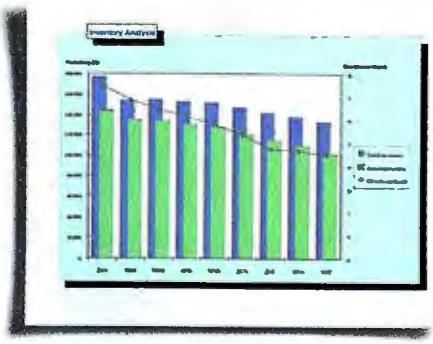
Circle 107 on reader service card

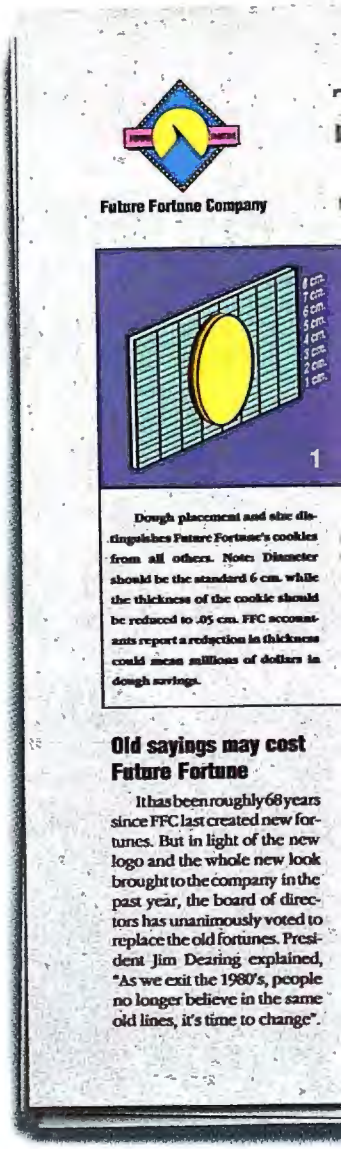


By no small coincidence, Microsoft Windows works the way you do: On more than one thing at a time.

WYSIWYG. What you see on screen...

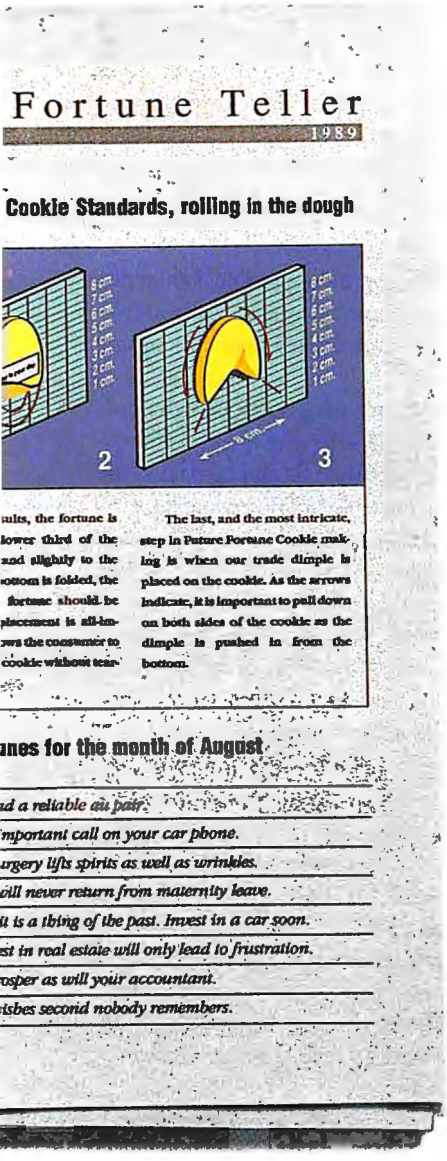


...is exactly what you get on paper.



An entire environment that le

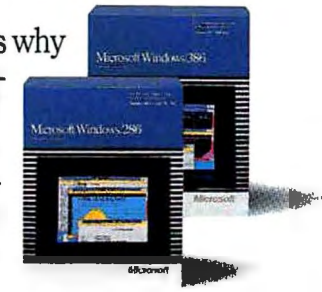
More good news: Hundreds of great Windows applications are available right now, as you read.



u do amazing things—like this—simply.

We'd like everyone who's using Windows applications on a part-time basis to please stop.

The trouble with using Windows™ applications every once in a while, is that you're only amazingly productive every once in a while.



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BRIDGE/386 AND TOOLKIT 1.1

Batch language

PROS: Integrated editor, excellent debugging support, can control Windows and non-Windows applications

CONS: No on-line help, can't develop custom icons, expensive

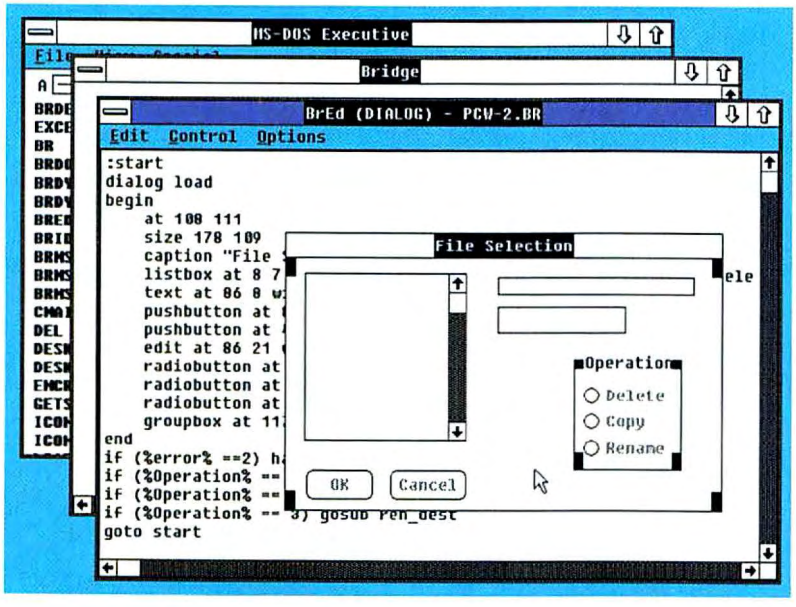
John Walkenbach

"You press the button, we do the rest." Kodak's old slogan aptly sums up the appeal of *Bridge*, a batch language that lets you perform complex *Windows* operations with push-button ease.

The *Bridge/386–Toolkit* combination goes far beyond DOS batch capabilities. (The stand-alone *Bridge/386* and */286* products are underpowered versions that aren't recommended.) A reasonably experienced user can easily add a custom menu system to *Windows* or write a short batch file that loads, sizes, and places applications on screen. If you've written heavy-duty DOS batch files or *1-2-3* macros, adding fancy touches like dialog boxes is child's play.

Those with programming experience can easily create turnkey interfaces that transparently tie different *Windows* applications together. Using *Windows'* DDE facility, a *Bridge* file could gather user input with a custom data entry form, pour the data into *Excel* for calculation, then paste the result into an *Ami* document and print it out. The user would deal only with the custom input screen.

Since the *Bridge/386–Toolkit* combination works under *Windows/386*, it can even manage DOS programs in their own windows and pass data using the Clipboard.



The BRED editor lets you craft custom dialog boxes by mixing and matching elements such as buttons, list boxes, and icons, then generates the Bridge code. If you change your mind, you edit the dialog box itself, not the code.

(*Bridge/286* is limited to passing commands at the DOS prompt.) If you're really ambitious, *Bridge* can even link applications on networked PCs.

The key to such easy batch file development is BRED, *Bridge*'s integrated editor. Functions and commands can be pasted directly into a file from pulldown menus. There's a RUN command for testing files on the fly, single-step and line-by-line tracing, and even a way to monitor variables and change them midstream. BRED can also spit out code for *Windows*-style dialog boxes with list boxes, radio buttons, and icons. *Windows* developers take note: *Bridge* will save code in *Windows SDK* format, making it easier to quickly prototype *Windows* applications.

Bridge batch language resembles BASIC with its IF...THEN...ELSE, GOSUB, WHILE, and FOR...NEXT constructs. You can work with arrays, pass parameters to subroutines, and transfer control to another *Bridge* file. Version 1.1 can also incorporate bit-mapped graphics, but you can't create custom icons.

Developers won't find on-line help in *Bridge*, nor does it include a facility to build custom help for end users. BRED and a new demo provide some help with the first problem, but *Bridge* is still largely a tool for advanced users and developers. But if you're after total control—and then some—this pricey utility can do the job.

John Walkenbach is vice president and manager of market research at a major savings and loan association based in Southern California.

WHERE TO BUY

Bridge/386 and Toolkit 1.1
Softbridge Microsystems
125 Cambridge Park Dr.
Cambridge, MA 02140
617/576-2257
LIST PRICE: $695, Bridge/286 $199, Bridge/386 $249
REQUIREMENTS: Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 602

WINDOWS MANAGER 1.0

Windows desktop utility

PROS: Automates loading and placement of Windows applications; can create custom worksets; excellent font and memory viewers

CONS: Doesn't simplify file management

Patrick Marshall

hDC's $79.95 *Windows Manager* is a nifty little package, but it doesn't quite live up to its ambitious name. This is no super batch language or even a front end for the MS-DOS Executive, but rather a smorgasbord of seven utilities that fills certain gaps in the *Windows* environment. With it, you can automatically load, size, and place predefined groups of applications ("worksets"); rearrange windows in a flash; view available fonts and system memory usage; and even call on a screen blanker.

Of course, *Windows Manager* isn't the first program to provide such tools—either the powerful *PubTech File Organizer* or the $35 shareware *Command Post* will do the job. But *Manager* makes some tasks pretty easy. For example, if you regularly use *Excel, PageMaker,* and the *Windows* calculator together, you can take a snapshot of this workset with *Manager* and load them (and specific data files) with a single command thereafter.

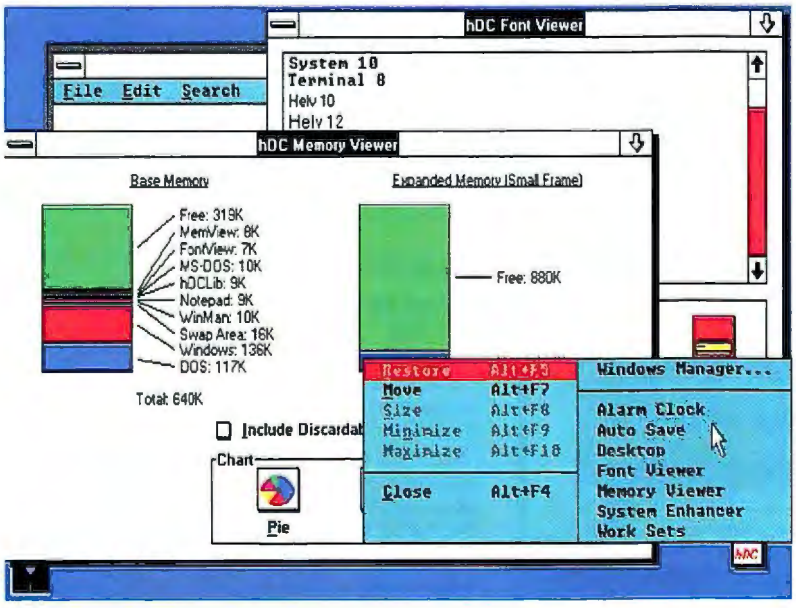
Just remember that *Manager* isn't a DOS shell; you're still stuck with MS-DOS Executive's eye-blurring file list. But if you also buy hDC's $79.95 *Windows Express,* you can mask the Executive with custom menus and create worksheets, and still beat *PubTech*'s $199.95 price tag.

Still, hDC's pair can't match *PubTech*'s file-management clout. You don't get total Mac-style icon control of the *Windows* environment, much less the ability to copy, move, delete, or print files. And neither hDC program offers *PubTech*'s text-search and file-viewing functions.

But what *Manager* does, it does well. For example, *Manager* will display samples of available printer and screen fonts; *PubTech* merely lists them. Wonder how much system memory is available? *PubTech* notes only active applications and remaining memory, but *Manager*'s memory viewer pinpoints which applications are loaded, how much RAM each occupies, and how much free space is left, using colorful bar or pie charts. hDC also tosses in an autosave feature and a digital clock with three alarms.

So is *Manager* worth the price? It depends. If you don't need font or memory viewers, *Command Post* is a better bargain. If you want total control, the premium-priced *PubTech File Organizer* offers the most punch. But if you don't need *PubTech*'s file-management functions, the *Windows Manager/Windows Express* combination is a slick way to clean up your windows.

Patrick Marshall writes for Congressional Quarterly's Editorial Research Reports *in Washington, D.C.*



Windows Manager provides a vivid and more detailed view of memory than other Windows utilities, using bar or pie charts. You can attach the Manager menu to the Windows menu bar or place it anywhere on the screen.

WHERE TO BUY

Windows Manager 1.0
hDC Computer Corp.
15379 N.E. 90th St.
Redmond, WA 98052-3522
206/885-5550
LIST PRICE: $79.95, Windows Express $79.95
REQUIREMENTS: Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: free for 90 days from first call, toll number, M–F 7–3.
OTHER SUPPORT SERVICES: none
Reader service no. 650

DESKTOP SET 2.01

Desktop utilities

PROS: Powerful file viewer, calendar/expense ledger, phone book/dialer, and calculator

CONS: Some bugs, calendar can't automatically post recurring appointments, expensive

Patrick Marshall

DeskTop Set is clearly a labor of love. Instead of being designed by committee, it's the brainchild of Konstantin Monastyrsky, émigré programmer and owner of Okna (Russian for "windows") Corporation. And like a labor of love, *DeskTop Set* is both inspired and flawed. It's not a great little product, but with some fixing, it could be.

DeskTop Set admirably replaces *Windows'* wan collection of desktop utilities, but it lacks some key features, and it occasionally crashes. The program's most innovative contribution is a file viewer. Unlike in *Windows'* Notepad, which is limited to ASCII text files, the viewer snoops through almost any formatted text file. Better still, you can split the screen and view different parts of the same file, search for characters, insert bookmarks, print files, and even specify margins, line spacing, and headers and footers.

DeskTop Set's calculator isn't a quantum leap in innovation, but if you're a *Windows* number cruncher, the on-screen tape may be worth the price tag—especially when a tape can be annotated, globally edited, and saved for later reference. *DeskTop Set* even displays the most recent session when you call up the calculator.

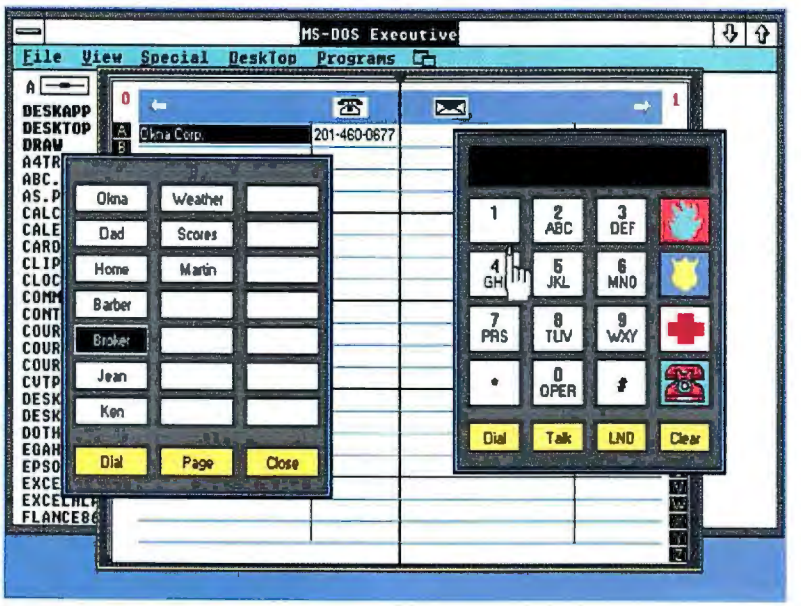
The calendar is also head and shoulders above *Windows'*. Both programs let you post daily appointments, set alarms, view months, and so on, but only *DeskTop Set*'s calendar includes a daily expense log. This isn't just a list with an addition function—you can precode expense categories such as "meals" and note which are deductible. Later, enter an expense, its code, and any notes, and they're posted automatically. Unfortunately, you can't issue reports by expense categories yet.

What cripples the calendar, however, is its inability to automatically schedule regularly recurring appointments such as weekly staff meetings, or to search for text strings. If you're managing anything but a very simple calendar, you'll find these flaws fatal.

The phone book, however, is superb, and it does more than simply store numbers and addresses in a familiar manual format. You can set up multiple phone books and automatically maintain a log of outgoing calls. The dialer can call any number on screen, has room for 105 preset phone numbers, and will supply area codes for major American cities. One flaw: Phone calls sometimes disappear into the modem and can't be switched over to your phone.

DeskTop Set isn't quite ready for prime time, but Okna is constantly improving it. Once a few bugs are squashed and gaps filled, *DeskTop Set* could be the *SideKick* that *Windows* users have been waiting for.

Patrick Marshall writes for Congressional Quarterly's Editorial Research Reports *in Washington, D.C.*



DeskTop Set's phone book/dialer features a speed-key pad with room for 21 preset phone numbers. You can also call up an area code directory and automatically log outgoing calls.

WHERE TO BUY

DeskTop Set 2.01
Okna Corp.
285 Van Buren St.
P.O. Box 522
Lyndhurst, NJ 07071
201/460-0677
LIST PRICE: $129
REQUIREMENTS: 512K, DOS 3.0 or later version, Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
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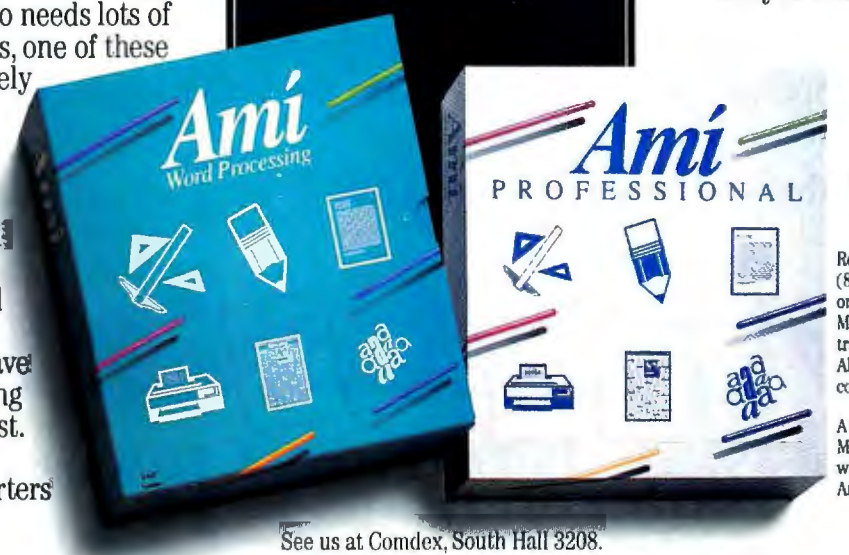

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TaxView 2.00

1040 tax-preparation program

PROS: Mimics Form 1040 on screen, includes many federal forms, produces legal-size dot matrix and laser printer output, cheap

CONS: Data not always passed to related forms, few state schedules, no multiple tax scenarios

Ralph Soucie

TaxView's designers believe that imitation is the easiest form of data entry. Instead of gathering tax information in Q. and A. fashion, *TaxView* reproduces IRS forms in toto on screen. You just fill in the familiar blanks, then print out a signature-ready tax return on a dot matrix or a laser printer. It's so simple you won't even need the manual.

This literal approach is dandy if you're doing only one relatively straightforward tax return. But if you're preparing complicated, multischedule returns, you'll go mad scrolling past reams of IRS descriptions and waiting for the screen to redraw. Worse, in some situations, *TaxView* doesn't automatically post data to related forms, a defect likely to foul up even experienced tax preparers.

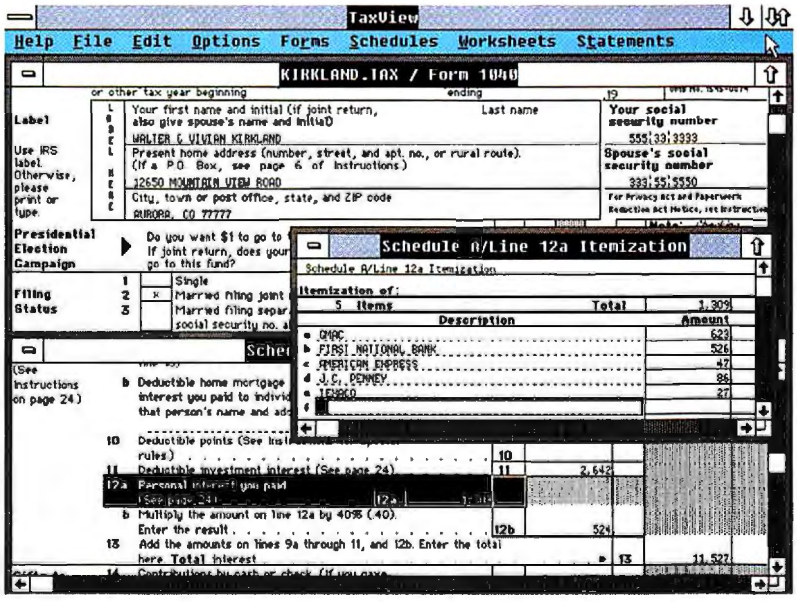
Installing *TaxView* is a prompt-driven affair, but adding the supplied downloadable laser fonts for printing the tax forms means fiddling with *Windows*' control panel. Once you pick the desired 1040 form, *TaxView* pops it onto the screen. You fill in the form as you would its paper equivalent and jump to supporting forms and schedules by double-clicking the appropriate input field.

As you move through *TaxView*, you'll find it surprisingly powerful for the price. It handles all depreciation methods and computes passive loss limitations. Keeping track of supporting detail for partnership income and capital gains is a breeze with *TaxView*'s predesigned statements. And you can create free-form itemization schedules to back up any line item on a return.

But *TaxView* has some irritating potholes. If you have multiple business schedules, the program won't automatically limit your total Section 179 deduction to the statutory $10,000. And Schedule C net income does not automatically generate a Schedule SE. Sophisticated real estate investors with interest expense or passive losses should definitely steer clear of *TaxView*, since the program does not transfer certain critical computed amounts from one tax form to another.

TaxView does a nice job with detailed personal returns—even for two or three sole proprietorships. But watch out if your return touches on complex tax issues. The problem is, most nonprofessionals can't identify these situations. When *TaxView* solves its shortcomings, it will be well worth recommending. Note: Future versions of the program will be sold as *Macintax for Windows*.

Ralph Soucie is a contributing editor for PC World.



TaxView can create a supporting itemization schedule for virtually any line item on the return—in this case, for personal interest on Schedule A.

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TaxView 2.00
SoftView, Inc.
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Camarillo, CA 93010
805/388-2626
LIST PRICE: $99, annual update $55; state modules $79, annual update $40 (for California, Connecticut, Illinois, Massachusetts, New Jersey, New York, Ohio, and Virginia)
REQUIREMENTS: 640K, hard disk with 2.5MB free, DOS 3.0 or later version, Windows 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 601

SUPERBASE 2

Data manager

PROS: Menu-driven application building, easy data validation, mail merge, text editor, communications facility

CONS: Limited input-form and report capabilities, tedious query editing, doesn't follow Windows interface conventions, no font support, slow

Alan Schwartz

Data management programs still have one foot in the programming world. *Superbase 2* tries to pull a toe out of the muck. Instead of presenting users with an arcane command language, *Superbase* lets you store and manipulate information using menus and dialog boxes. To build a query or report, you click through a series of dialog boxes that ask you to specify fields, sorting order, filters, and subtotals. Then *Superbase* assembles a command string that you can execute and save.

Click an icon on the VCR-like control bar at the bottom of the screen, and you can spin through data in a table view (spreadsheet-style rows and columns), a record view (field names alongside data values), or a form view that lets you arrange fields anywhere on screen. (You can't edit data in a table view.)

Setting up data validation based on a lookup table is short work; enter the wrong value, and up pops a list of proper responses. Multifield index keys and multiple indexes are supported, although creating a multiple-field index requires you to define a virtual concatenated field in your file—not the most intuitive approach to the problem.

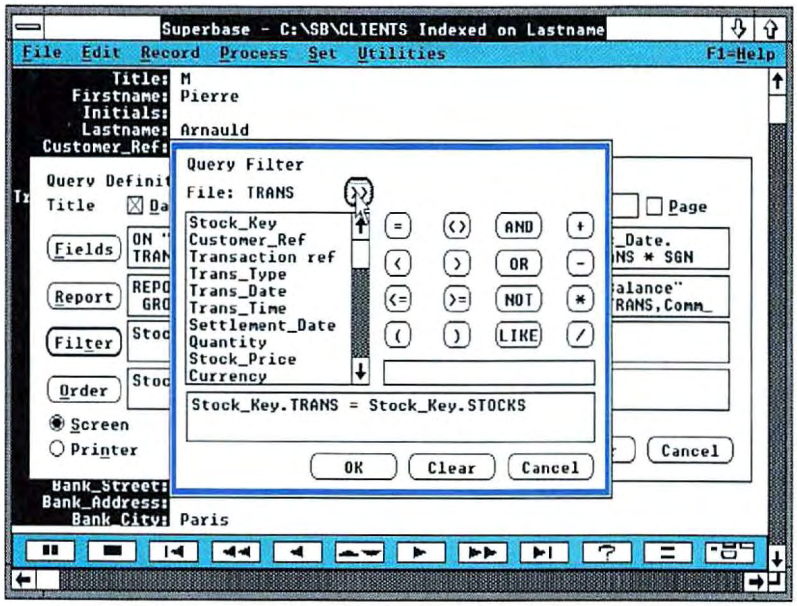
Superbase has a built-in *Write*-like word processor that ties into an easy mail merge facility. The program also imports and exports *dBASE II* and *III*, *Excel*, *1-2-3*, and delimited and fixed-field-length ASCII files. You can even display images as fields in a record.

Sounds good, doesn't it? But in practice it's clear that *Superbase* can't beat *Alpha Four* and *Q&A 3.0* on their own turf. *Q&A*'s tightly integrated word processor and simple forms-oriented query system are more powerful than *Superbase*'s approach. *Alpha Four*'s custom data-input screens and report capabilities make data management chores much easier for most users.

Even if you prefer the *Superbase* way, be prepared for some quirks. Changing a query means slogging through the dialog boxes again or modifying a huge command string by hand. Order a query differently from the current index, and you'll gaze endlessly at *Windows*' hourglass icon.

If you must have a *Windows*-based data manager, hold out for Xerox's long-awaited *FormBase;* otherwise, exit *Windows* and check out *Q&A* or *Alpha Four*. You might also consider Precision's forthcoming *Superbase 4*—which promises a BASIC-like command language, DDE support, presentation-quality forms output, and multiuser hooks.●

Alan Schwartz is a data base application specialist living in San Francisco.



Superbase's feature-rich queries can be built and modified by clicking through dialog boxes. Data in related files can also be accessed with a click of the mouse.

WHERE TO BUY

Superbase 2
Precision Software, Inc.
8404 Sterling St., Ste. A
Irving, TX 75063
800/562-9909, 214/929-4888
LIST PRICE: $295
REQUIREMENTS: 640K, DOS 3.0 or later version, Windows 2.03 or later version (Windows run-time included)
TECHNICAL SUPPORT: unlimited via mail and CompuServe and American People/Link forums, unlimited phone support first 90 days, toll number, M–F 8:30–5:30
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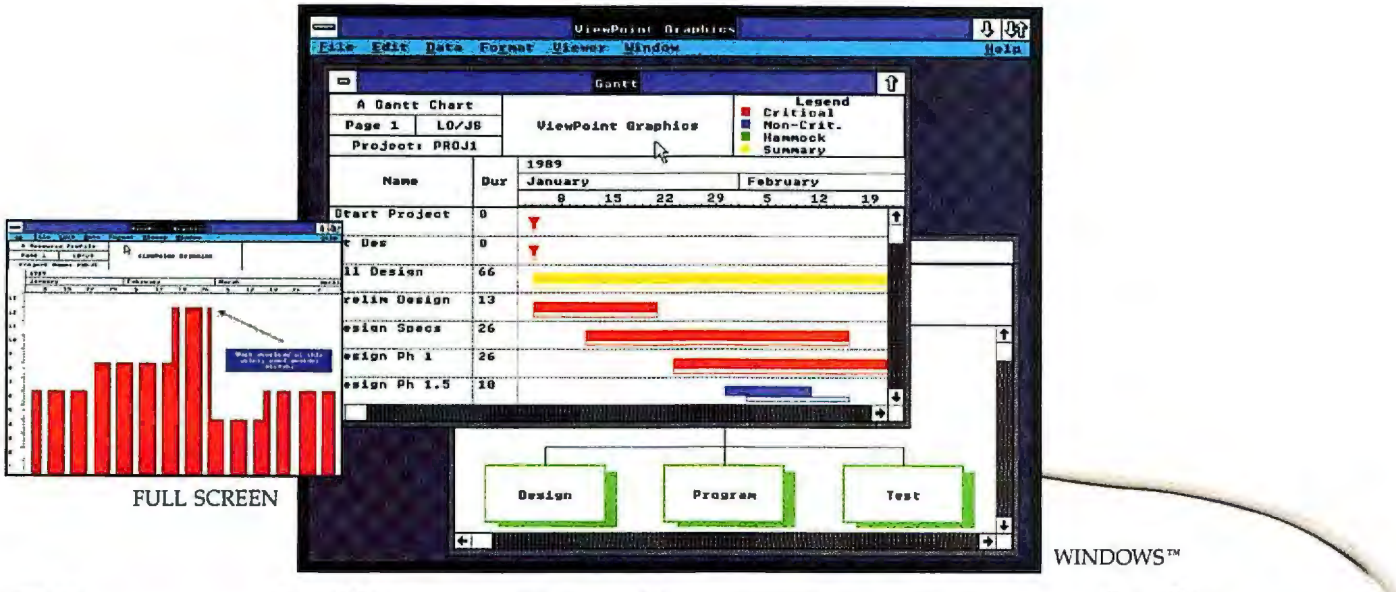

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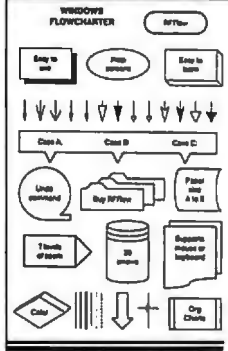

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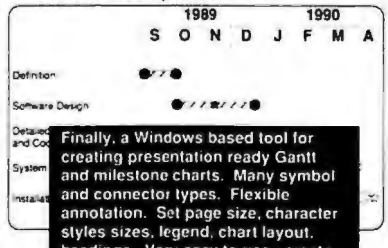

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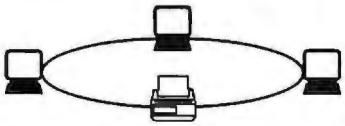

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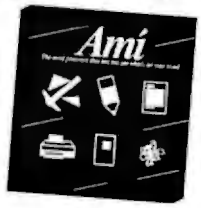

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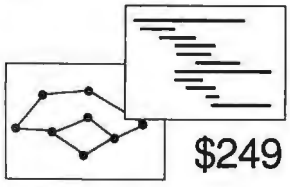

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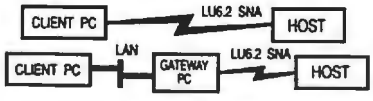

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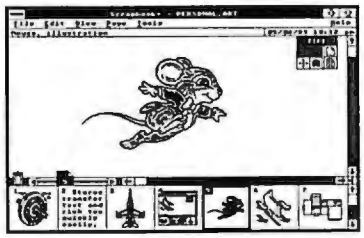

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NETWORKS

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DAN ESCOBAR

Wells Fargo's Kingsley Mar advises careful prototyping: "If you take shortcuts, you just get burned."

NEED AN EDGE ON THE COMPETITION? BEHIND-THE-SCENES VISIONARIES ARE DISCOVERING THAT LAN APPLICATIONS CAN MAKE THEIR BUSINESSES RUN FASTER, CHEAPER, AND SMARTER.

ERIC BENDER

"This is where we process billions of dollars every day," says the financial services executive, looking toward the networked PCs that stretch across a floor of offices a few blocks off Wall Street. "This is the lifeblood of our business."

PC local area networks (LANs) didn't start out in such starring roles. Instead, they infiltrated organizations as cost-saving mechanisms for sharing resources like hard disks and printers. The cost/benefit arguments only grew more persuasive as net adapters fell in price, cabling schemes became faster and more flexible, net system software gained maturity, applications began to exploit net capabilities, and nets gained solid links to other computer environments.

Now the advantages of net applications are crystallizing. Electronic mail is an instant hit, even for messages that never leave the department. Job-specific packages for traveling professionals are tightening their links with LANs, helping automate the flow of information to and from home base. E-mail packages like Enable Software's *Higgins* add support for client tracking. Upcoming group productivity packages like Lotus's *Notes* will offer greater help; one bank already employs a beta version to quickly assemble a portfolio of customer information—including personal details like name of spouse—before important visits.

But most payoffs have come from unglamorous work in the trenches, where in-house developers painstakingly customize data base applications. These systems target specific jobs within a single organization and knit them together with related tasks—often with favorable impact on the bottom line.

RESHAPING THE BUSINESS

Shearson Lehman Hutton's Taxable Fixed Income division is one of the largest bond trading operations on Wall Street. The division's Trading Services group processes thousands of transactions each day on a Novell LAN that links 300 PCs.

"Several years ago, our business began a period of explosive growth," recalls Mark Rufeh, senior vice president. "The accounting and operations staff worked 12-hour days." After Shearson's senior management initiated a strategic push for automation, "Trading Services brought PCs to the back offices, networked them, and wrote custom applications to support specific business needs," says Rufeh. "This decentralized approach accelerated application development and allowed application design to be closer to the user."

LANs "have greatly improved the timeliness, capacity, and accuracy of transaction processing," Rufeh says. "For example, over the last two years, our business in money market securities has more than doubled, yet we haven't added one employee." And employees are working normal hours again.

United Parcel Service turned to PC LANs to lower costs, boost productivity, and permit more flexible communications, says Marc Dodge, a UPS LAN network support manager in Paramus, New Jersey. "With 12 million packages a day, our logistics are pretty staggering," Dodge says. "We've installed 200 LANs in the United States and Canada." While standard word processing and spreadsheet packages are offered on the Novell nets, "what drives us is applications we do ourselves," Dodge says. As new applications appear, his group evaluates cost of delivery on PC LANs versus traditional minicomputers.

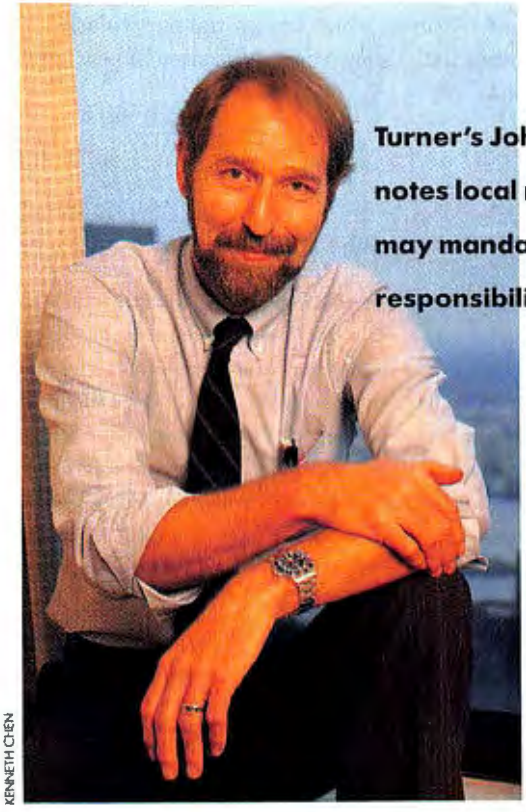
First for UPS came accounting and data entry—"Data entry was a great place to start," Dodge says. Faster data entry produced a 10 percent boost in productivity. With employees making 500 million keystrokes a month, "ten percent is a nice piece of change," he notes. Nets also gave managers better tools for optimizing daily operations.

Next on line was delivery information. Employees can digitize the delivery record with a hand scanner and store that data on the LAN; if the customer wants proof of delivery, an image of the receiving signature can be merged into a letter and printed out. UPS also employs the nets as routes to mainframe hosts and is stringing together multiple nets at its big district offices. And the company's telecommunications group is linking district offices across the U.S. through high-speed leased lines.

Wells Fargo's Wholesale Loan Systems group depends totally on PC nets, notes Kingsley Mar, systems vice president for research and development in San Francisco. More than 1400 PCs are networked at 40 offices in California and 6 out of state; the Novell and 3Com nets are connected by an IBM mainframe net. Users get standard word processing, file manager, spreadsheet, and E-mail packages. Wells Fargo also writes proprietary software, primarily with Nantucket's *Clipper*, for credit analysis and other tasks. Mar reports that a pilot LAN test in one large office worked so well that the unit reduced its staffing budget even before installing the net, allowing the employee count to adjust through attrition.

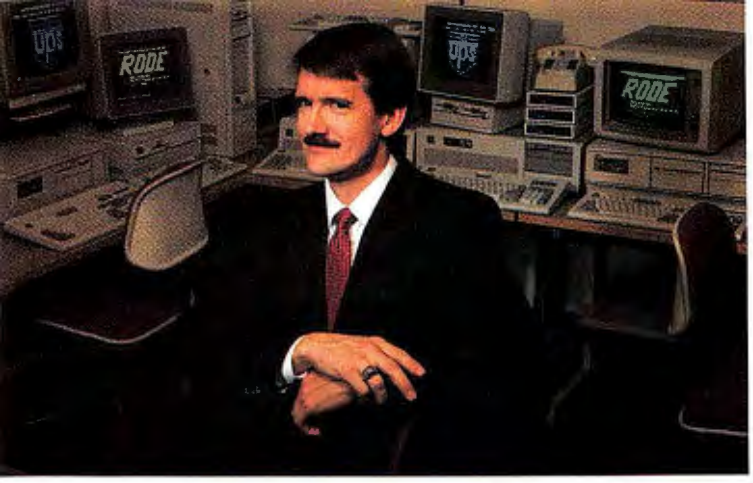
"There's no question that networks changed how we do business," says John Good, manager of distributed systems at Turner Construction in New York City. The worldwide construction firm has placed over 30 Banyan Systems LANs, he says, and he expects that number to triple in the next two to three years. "We're now starting to see a number of [construction] projects themselves putting in nets," Good adds.

Turner is tapping PC nets to replace minis as front ends for mainframes and has been eliminating costly leased phone lines in favor of dial-up lines. In addition to generic applications, the net hosts packages that cover project/cost forecasts and management detail in great depth. Many of these programs were brought down from the mainframe and are more functional and easier to use than their predecessors; they often give faster results as well. Overall, Good sees "a lot of user enthusiasm, although users have been almost overwhelmed by the number of things that have to be assimilated."



KENNETH CHEN

Turner's John Good notes local networks may mandate local responsibility for data.



YVONNE HEMSEY

While UPS networks provide familiar packages to users, "what drives us is applications we do ourselves," says Marc Dodge.

"The network has revolutionized us," declares July Verdon, who aided a network project at Treatment Alternatives for Special Clients (TASC) in Chicago. The nonprofit agency acts as an intermediary between criminal courts and drug treatment facilities. Tracking clients all the way through parole takes "six months to six years, sometimes longer, and there's paperwork every step of the way," she says.

"Everything that would go into a client file now goes on line," into custom *DataFlex* applications, Verdon explains. TASC's Chicago office has about 60 PCs on a Novell LAN; other offices around Illinois have been equipped with smaller nets. Employees can quickly find needed information—even if it's at other offices—because the nets are connected. "If someone in Peoria needs information on a case that's in Springfield, it takes just minutes," she says. "Before, it took days." TASC also taps *Higgins* for E-mail, which has proved particularly helpful for immediate agencywide notification of new laws or regulations.

TECHNICAL TOUCHSTONES

Users emphasize the need for careful net planning. Along these lines, Wells Fargo's Mar calls for hardware and software standards (for instance, a limit of five machine configurations). He also stresses careful, step-by-step moves into production. "If you take shortcuts, you just get burned." Turner's Good adds that even a system that's been extensively debugged may break down later as components are updated.

As LAN applications become central to an operation, service and support prove essential. "Service has to be figured in as a fundamental cost," Mar says. Even so, finding effective service isn't always simple. "The tough part is, there's not a single vendor that can get everything working and keep it working," he maintains. That mandates in-house expertise.

But the greatest barriers to leveraged net investments aren't unmet product and service needs—they're cost and organizational issues. Take the National Education Association, the union of 1.8 million teachers in public education, which handles office automation via 200 PCs on a Banyan LAN at its Washington, D.C., headquarters. With nets, the NEA has slashed the cost of connecting to its mainframes, and its state affiliates are doing likewise, says Brice Bonwill, system specialist. Potentially, NEA locals could dial into a state's net and get everything available at state and national levels, Bonwill notes. However, expense is a deterrent, he says, "and the state doesn't want to lose control of the information."

Another hurdle: "A majority of people think you need a big box to do big processing," says one network advocate. "The main battle we're still waging is in changing people's thinking." ●

Eric Bender is a senior associate editor for PC World.

REMEMBER THE END USER

In large organizations, mission-criticol applications running on a PC LAN (or anywhere else) are written by professional in-house developers. But the professionals need to observe the first law of applications: Pay serious attention to end users.

Shearson Lehman Hutton's band trading group ensures that this is done, via an organizational approach, notes Mark Rufeh, senior vice president. The PC development group that supports the back office reports to him rather than to Shearson's central information systems group. "The people who build the system and the people who use the system are the some, and they're all married to the process," Rufeh says.

Once the software is built, user training becomes critical—particularly since many more employees are working on PCs than the handful who once stared into dumb terminals. "And as you move from a centralized environment, with everything pretty much controlled from one point, to a highly decentralized environment, the responsibilities also shift," says John Good, manager of distributed systems at Turner Construction. "If you forgot to back up your data, don't call me and start moaning."

Wells Fargo created an aggressive on-site training program that lets employees "walk away with something directly relevant to their jobs, not just with 284 spreadsheets," says Kingsley Mar, systems vice president for research and development. While some veteran employees dreaded the LAN, "it really didn't impact any of them." The net provided a complete but controlled environment, so experienced PC users didn't enjoy much of an edge. —E. B.

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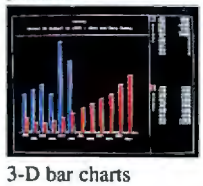

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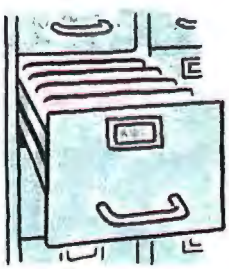
Matt Lake



dBASE owes much of its popularity to the thousands of third-party utilities that support it. The vast majority of them are aimed at programmers, but this Buyers' Guide focuses on utilities designed for the average end user: report generators, search utilities, and other programs that either help users work more efficiently with *dBASE III Plus* and compatibles or provide some missing functionality.

In the *dBASE* world, the line between what constitutes a programmer and a casual user isn't always clear, and some tools will be used by both. For example, the query builders presented here are also helpful to programmers. By the same token, application generators aren't covered here, though some target end users.

All the products listed in the guide are *dBASE III Plus*–compatible. Many also work with clones such as *Foxbase* and *dBXL* and compilers such as *Quicksilver* and *Clipper*, and some work with *dBASE IV*. Look over the symbols at the end of each product description to make sure the utility works with your program.

This guide focuses on commercial products, but alternative shareware products abound. Check your favorite BBS, or buy EMS's "dBUtility Directory," which lists hundreds of public domain, shareware, and commercial *dBASE* utilities (available from EMS, 4505 Buckhurst Ct., Olney, MD 20832; 301/924-3594, 301/963-2708 [fax]).

This guide covers products in eight categories: report generators, graphics utilities, query builders, file conversion utilities, data compression utilities, search utilities, data salvage utilities, and memory managers. Some are stand-alone programs, able to read .DBF files directly; others are TSRs that pop up or work transparently from within *dBASE*.

There are several key features to look for. Third-party report generators greatly improve on the limited reporting skills of *dBASE III Plus* and its clones. Most offer enhanced layout tools and better font and printer support. Some supply canned formats and let you interactively fine-tune a report on screen without having to print it out at every stage. Band orientation—a *Paradox*-style report interface—makes it easier to format discrete portions of your document.

If you've already spent $500 on a generic graphics program that can use *dBASE* data, all well and good. But if you want a cheaper alternative just for *dBASE*, you'll find utilities that build business graphics from .DBF files without tedious conversion. A *dBASE* graphics package lets you graph either whole .DBF files or selected data. Other graphics utilities covered here are primarily scanner control packages that let you tag records with scanned images to turn *dBASE* into an image data base.

dBASE IV introduced both query by example (QBE)—a helpful table-based querying method—and structured query language (SQL) to the *dBASE* world, but *III Plus* and its compatibles offer only limited tools for selecting and analyzing data. A third-party query builder can help you get a better view of your data using QBE. One product, *dQuery*, also provides SQL queries.

If you need to pass *dBASE* records to another data manager or a word processor or pull in data from *1-2-3* or another program, a file conversion program is indispensable. A good file converter supports numerous format conversions and automatically formats data and adjusts field lengths. You should also be able to convert selected fields or records as well as whole files.

Data compression utilities reduce the amount of disk space taken up by data and program files, an especially useful option if a data base holds many empty fields. Some can squeeze data as you enter it, and some also encrypt data.

Can't find that missing record? Need to purge your data base of duplicates? A search utility can help. Most can find the right record using a single word, and some catch typing and spelling errors by recognizing approximate matches.

If a data base becomes corrupted, you'll need the help of a salvage utility. *dBASE* files can be damaged in two ways. Internal damage happens when file headers get overwritten, records are offset, or spurious characters appear. Lost clusters of data and DOS-level damage to directories or file allocation tables can also spell catastrophe. A good salvage utility diagnoses such problems and lets you decide whether to repair them automatically or use built-in tools to correct the problem manually.

While you're running *dBASE*, you can use the Run command to load another program—but only if you've got enough RAM. If you strike out, a memory manager can ease the crunch by temporarily moving *dBASE* files to disk without closing them down.

Finally, we cover a few utilities that defy categorization. If you need on-line help or *dBASE* just isn't fast enough, the solution could be here. ●

Matt Lake is an editorial assistant at PC World.

ILLUSTRATIONS BY ROLLIN MCGRAIL

Key to Compatibility

3+	dBASE III Plus
4	dBASE IV
C	Clipper
d	dBXL
F	Foxbase
Q	Quicksilver

REPORT GENERATORS

dbPublisher 2.0

More than just a report writer, *dbPublisher* calls upon sophisticated desktop publishing to integrate data base, spreadsheet, word processing, and graphics files into a polished document. It features numerous levels of grouping and includes formatting templates. From a mouse-run windowing interface, you can choose from a variety of fonts and HP and PostScript laser printers. Other features include bar-code generation and math and statistical functions. List price: $695.

3+ 4 C d F Q

Digital Composition Systems
1715 W. Northern Ave.
Phoenix, AZ 85021
800/527-2506, 602/870-7667, 602/870-7668 (fax)
Reader service no. 615

dTrieve 1.2

Designed for simplified reporting with a minimum of keystrokes, *dTrieve* lets users choose canned formats from pop-up windows. It supports nine levels of grouping. List price: $99.

3+ 4 C d F Q

Datamate
4135 S. 100th East Ave. #128
Tulsa, OK 74146
800/444-6283, 918/664-7276
Reader service no. 616

R & R Relational Report Writer, Version 3B

R & R is a band-oriented report writer that offers eight levels of grouping. It can generate reports from up to ten data bases, with multiple relations from each file. Using a *1-2-3*–style interface, you can control a report's pitch, font, orientation, and margins. The program also provides mail merge and mailing label options. The run-time version's unlimited-use license (no additional fee) permits you to attach the utility to *Clipper* object modules. You can buy a code generator to modify report code and add it to applications. List price: $149, code generator $149.

3+ 4 C d F Q

Concentric Data Systems
18 Lyman St.
Westborough, MA 01581
800/325-9035, 508/366-1122, 508/366-2954 (fax)
Reader service no. 617

Snow Report Writer 3.02

An on-line tutorial and context-sensitive help ease the user into the

Snow Report Writer's window-oriented interface. It can merge and set multiple relations between data from 15 files, and it imposes no grouping limits. You can print reports to screen, to disk, or to a printer. Other features include sort and math functions, mailing labels, and the ability to import spreadsheet and word processing files. List price: $695, LAN version $995.
3+ 4 C d F Q
Snow Software
2360 Congress Ave.
Clearwater, FL 34621
800/283-7669, 813/784-8899, 813/786-5904 (fax)
Reader service no. 618

For more information about all products in this section, circle reader service no. 902.

GRAPHICS UTILITIES

dGE 3.0
dGE is a TSR that can turn selected *dBASE* data into bar, 3-D bar, polyline, polyvector, pie, exploded pie, high/low/close, and time series charts. *dGE* works with many dot matrix and laser printers, plotters, and graphics cards. (*Clipper* users must compile and link *dGE*.) List price: $195.
3+ 4 C F Q
Pinnacle Publishing
P.O. Box 8099
Federal Way, WA 98003
800/231-1293, 206/941-2300, 206/946-1491 (fax)
Reader service no. 619

dPict 1.1
dPict reads data directly from .DBF files to produce bar, line, and pie charts and histograms. The utility stores the graphs in a .PIC file. Scaling is not user adjustable. List price: $49.95.
3+ 4 C d F Q
Paragon Technical Services
1581 Garland Ave.
Tustin, CA 92680
714/832-3327, 714/730-0815 (fax)
Reader service no. 620

FoxGraph
FoxGraph translates .DBF files into ASCII text, then produces business graphics from a library of 15 chart and graph styles, including multiple pies and horizontal and vertical stacked bars. You can also choose from 32 3-D graphics formats, including bars, pyramids, ribbons, and floating planes. List price: $295.
3+ 4 d F
Fox Software
134 W. South Boundary
Perrysburg, OH 43511
419/874-0162, 419/874-8678 (fax)
Reader service no. 621

Scanbase API 2.0
Scanbase API is a scanner control package that can also turn *dBASE* into an image data base for personnel records, security checks, and other uses. You can load it within *dBASE*, attach .PCX files to selected records, and display them side by side. List price: $395.
3+ 4 C d F Q
Scanbase Graphics
16 Robertson Rd.
Morristown, NJ 07960
201/644-9090, 201/360-2715 (fax)
Reader service no. 622

SilverPaint Library 1.13
SilverPaint is a graphic enhancement library that can attach .PCX files such as scanned images to any *dBASE* record. It also contains graphics primitives to let you draw your own lines and circles. The program's library of sounds can be used to sound alerts for such incidents as data security breaches. List price: $99.95.
3+ 4 C d F Q
SilverWare
3010 LBJ Frwy. #740
Dallas, TX 75234
214/247-0131, 214/406-9999 (fax)
Reader service no. 623

For more information about all products in this section, circle reader service no. 903.

QUERY BUILDERS

dQuery 3.0
Compatible with *dBASE* and *1-2-3* file formats, *dQuery* provides a QBE system similar to IBM's Query Management Facility (QMF). It also generates SQL commands. It can use relational joins to query data base and spreadsheet files at the same time and can handle 32 files per query. You can select data from a .DBF file and save it to a spreadsheet, and vice versa. The package also includes a report writer with eight grouping levels. List price: $195.
3+ 4 C d F Q
Quadbase Systems
790 Lucerne Dr. #51
Sunnyvale, CA 94086
408/738-6989
Reader service no. 624

Query 2.0
Query reads .DBF files directly and uses pulldown menus to guide users through a proprietary QBE-like query-building process. Additional features include a report writer and a graphics module for displaying histograms. List price: $88.
3+ 4
YSC Technology
47 Protea Garden
Willowdale, Ontario
M2K 2W5, Canada
416/733-0228
Reader service no. 625

Seekit 1.4
Seekit provides a QBE system for sorting data and index files. With its function key interface, you can query up to 42 fields and five data bases. Compiled index files are not supported, but *Seekit*'s run-time version can be linked to *Clipper* object modules. Source code is included and can be used without royalties. List price: $199.90.
3+
Integrated Data Technologies
4813 Springfield Ave.
Philadelphia, PA 19143
215/726-6124
Reader service no. 626

For more information about all products in this section, circle reader service no. 904.

FILE CONVERSION UTILITIES

Data Junction 3.0
Data Junction is a two-way file translator. The starter version translates between *dBASE*, *1-2-3*, and *WordPerfect* secondary merge files and more than a dozen other for-

mats. The professional version includes *Paradox*, *R:base*, *Excel*, and others. List price: starter $99, professional $199.
3+ 4 C d F Q
Tools and Techniques
1620 W. 12th St.
Austin, TX 78703
800/444-1945, 512/482-0824
Reader service no. 627

DBMS/Copy 2.0

DBMS/Copy converts the format of whole files or selected fields between *dBASE*, *1-2-3*, *Symphony*, *Quattro*, *Paradox*, *Excel*, *PC-File*, and over 50 other programs. *DBMS/Copy Plus* adds the ability to recalculate during file conversion. List price: $195, Plus version $295.
3+ 4 C d F Q
Conceptual Software
P.O. Box 56627
Houston, TX 77256
800/782-8969, 713/667-4222, 713/667-3329 (fax)
Reader service no. 628

MacroPIK'r 1.4g

MacroPIK'r performs two-way conversions between .DBF files and .WKS, .WK1, .DIF, .DBS, and SYLK files. It provides a mouse-oriented interface and includes a macro capability. List price: $249.
3+ 4 C d F Q
Samkhya Corp.
P.O. Box 142
Petaluma, CA 94953
800/442-0012, 707/763-2800
Reader service no. 629

PC Converter Plus 1.3

This utility converts files between *dBASE*, *1-2-3*, *dBXL*, *R:base*, *Symphony*, and other spreadsheet and data base programs. *PC Converter Plus* enables users to change field names in the converted file, expanding them to up to 22 characters. List price: $79.95.
3+ F
Softsync
162 Madison Ave.
New York, NY 10016
212/685-2080, 212/685-6322 (fax)
Reader service no. 630

Transformer

Transformer allows users to convert selected fields from *dBASE* files into *1-2-3*- or any *1-2-3*–compatible spreadsheet format, including *Quattro* and *Excel*. You can also set transfer conditions so that only certain records are converted. List price: $149.
3+ C
SourceMate Information Systems
20 Sunnyside Ave.
Mill Valley, CA 94941
415/381-1011, 415/381-7451 (fax)
Reader service no. 631

For more information about all products in this section, circle reader service no. 905.

DATA COMPRESSION UTILITIES

Free Space 1.1

Free Space is an archiving utility that compresses and encrypts .DBF and ASCII files. Tate claims that compression ratios are as high as 6 to 1. List price: $69.95.
3+ 4 C d F Q
Tate Publishing
2101 Hamilton Ave.
Torrance, CA 90502
800/234-8283 ext. 602
Reader service no. 632

NewSpace 1.07

NewSpace is a TSR that compresses data base, spreadsheet, or word processing data as you enter it. *dBASE* files can be reduced to less than half their size. An unerase feature retrieves the five most recently deleted files. List price: $69.95.
3+ 4 C d F Q
Isogon
330 Seventh Ave.
New York, NY 10001
800/662-6036, 212/967-2424, 212/967-3198 (fax)
Reader service no. 633

Squish Plus 1.05

Because DOS recognizes it as a device driver, *Squish Plus* is compatible with any program. It can compress files written to hard or floppy disks and does not need to uncompress an entire file to read or write to it. *Squish Plus* can also password protect records. List price: $99.95.
3+ 4 C d F Q
Sundog Software
264 Court St.
Brooklyn, NY 11231
718/855-9141
Reader service no. 634

For more information about all products in this section, circle reader service no. 906.

SEARCH UTILITIES

DataFinder 4.01

This memory-resident utility can search globally for precise or approximate matches for any field, including memo fields. *DataFinder* performs case-sensitive searches and lets you append, edit, delete, and undelete records. It has logical operators and lets you switch data bases, directories, and drives on the fly. List price: $99.95.
3+ 4 C d F Q
TSR Systems Ltd.
1600B Main St.
Port Jefferson, NY 11777
516/331-6336, 516/331-6377 (fax)
Reader service no. 635

dDupChk Duplicate Recognition 1.0

dDupChk searches for duplicate records and finds near matches using the Soundex algorithm. It features an on-screen editor for indexing (but not directly deleting) extraneous entries. List price: $135.
3+ 4 C d F Q
Prairie Software
11455 Valley View Rd.
Eden Prairie, MN 55344
800/356-6821, 612/941-1276, 612/941-8924 (fax)
Reader service no. 636

Friendly Finder 4.3

Using a proprietary algorithm, *Friendly Finder* makes case-insensitive searches for matching or near-matching records. You can choose between TSR or stand-alone operation. It searches up to eight fields at a time and lists matches in a window, in descending order of similarity to the look-up sample. *Friendly Finder* prohibits editing or deleting, making it safe for multiuser data base searches. List price: $99.
3+ C d F Q
Proximity Technology
3511 N.E. 22nd Ave.
Fort Lauderdale, FL 33308
800/543-3511, 305/566-3511, 305/566-2088 (fax)
Reader service no. 637

UltraSearch 1.1

This stand-alone utility makes precise searches on *dBASE* files for strings as short as a few characters. Its edit feature lets you modify files, flag records for deletion, and conceal confidential data. Users can store search results in a log file. List price: $79.95.

3+ 4 C d F Q

Index Applications
8546 Broadway #208
San Antonio, TX 78217
800/334-8099, 512/822-4818, 512/828-5074 (fax)
Reader service no. 638

For more information about all products in this section, circle reader service no. 907.

DATA SALVAGE UTILTIES

dBASE File Recovery 1.0

Missing file structures, damaged data files, incorrect record counts, and FAT glitches are just some of the internal and DOS-level problems *File Recovery* corrects. Its interface is modeled closely on *dBASE IV*'s, and on-line help is available. It automatically fixes corrupt headers, copying the data base to a new file, and diagnoses other problems that the user can fix with a library of built-in tools. It can also recover deleted or zapped files. List price: $99.95.

3+ 4 C d F Q

Tate Publishing
2101 Hamilton Ave.
Torrance, CA 90502
800/234-8283 ext. 602
Reader service no. 639

dSalvage 1.44
dSalvage Professional 2.11

dSalvage provides diagnostic and repair tools for .DBF files suffering internal or DOS-level damage. On-line help and menus lead users from diagnosis to repair. Editing tools enable you to access and change records. The Professional version lets you build headers and find and delete control and graphics characters. This *PC World* Best Buy was reviewed in *The Software Shelf*, *PCW*, May 1989. List price: $99.95, Professional $199.95.

3+ 4 C d F Q

Comtech Publishing Ltd.
P.O. Box 456
Pittsford, NY 14534
800/456-7005, 716/586-3365
Reader service no. 640

QuickFix-2 1.08

QuickFix-2 diagnoses most file problems quickly. It uses the DOS directory as its measure—assuming the directory is intact. You can replace a damaged header with a backup file's and automatically remove unwanted characters. You can even correct offset data and erroneous record counts on screen before saving the fix to disk. *QuickFix-2* tracks up to 512 bad records, which you can print out as a repair log. List price: $49.95.

3+ C d F

Hilco Software
11266 Barnett Valley Rd.
Sebastopol, CA 95472
707/829-5011
Reader service no. 641

For more information about all products in this section, circle reader service no. 908.

MEMORY MANAGERS

AutoSwap 1.2

AutoSwap is loaded along with *dBASE* via a switch and uses as little as 5K of RAM. Whenever the *dBASE* Run command is issued, *AutoSwap* saves data base and program files to disk to free up memory to run the other application. List price: $49, network/run-time versions $199.

3+ 4 C d F Q

The Lambda Group
555 De Haro St.
San Francisco, CA 94107
800/873-7927, 415/626-4545
Reader service no. 642

Dr. Switch

Dr. Switch, previously called *Switch It*, is a memory-management TSR that lets you access other applications while running *dBASE*. It trades *dBASE* code and data from RAM to disk in 256K and larger blocks. Only the run-time version supports dBASE compilers. List price: $59.95, run-time version $79.95.

3+ 4 C d F Q

Black & White Int'l
23 W. 88th St.
New York, NY 10024
212/787-6633
Reader service no. 643

Trading Places 1.0

Trading Places is a *dBASE* memory manager that also works with *1-2-3*, *WordPerfect*, and other applications. It swaps code and data between RAM and disk and can manipulate up to 32 TSRs such as *SideKick*, using a minimum of 14K itself. List price: $99.95.

3+ 4 C d F Q

Tate Publishing
2101 Hamilton Ave.
Torrance, CA 90502
800/234-8283 ext. 602
Reader service no. 644

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

MISCELLANEOUS

dBASE On Line 2.0

Offering on-line help for all major dBASE dialects, *On Line* provides a reference for commands, functions, file structure, and error codes. Norton Guide's *Reference Engine*—included in the price—stays in memory, calling up help screens from its disk-based reference data base. List price: $149.

3+ 4 C d F Q

SofSolutions
440 Quentin Dr.
San Antonio, TX 78201
800/622-6435
Reader service no. 645

dBoost 2.0

Using proprietary algorithms, this TSR speeds up dBASE applications, particularly as data bases grow. Advanced buffering and other functions can make applications run up to twice as fast. List price: $69.95.

3+ 4 C F Q

Isogon
330 Seventh Ave.
New York, NY 10001
800/662-6036, 212/967-2424, 212/967-3198 (fax)
Reader service no. 646 ●

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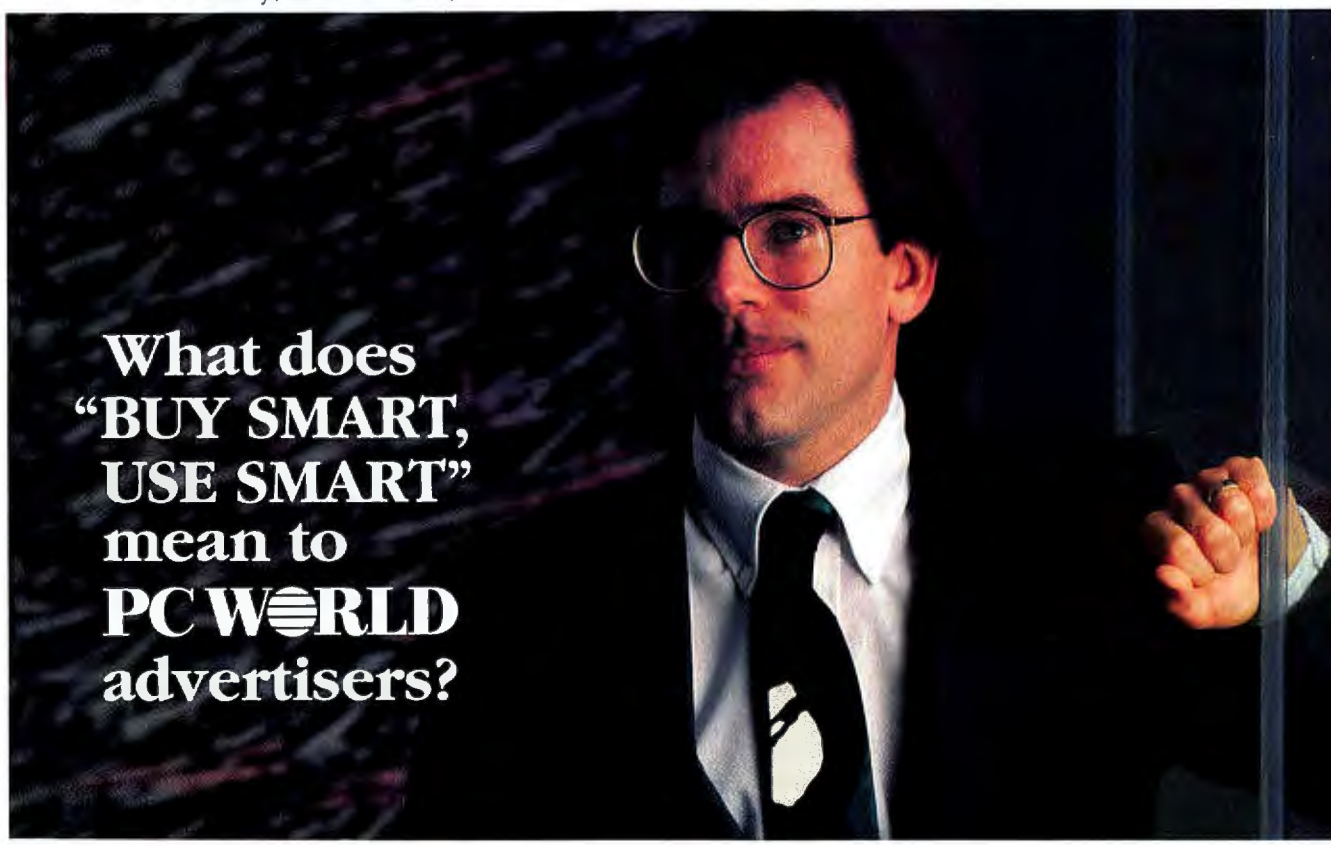
Richard Landry, editor-in-chief, *PC World*



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Easing Into WordPerfect Macro Programming

WordPerfect's recorded keystroke macros are useful, but not nearly as powerful as those built with its programming language. Creating a macro to automate block moves demonstrates how to harness that power.

Word Processing

Robert Lauriston

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With *WordPerfect* macros, you work hard at first to save time later. Nearly every new *WordPerfect* user is dismayed to learn that you have to press at least seven keys just to move a block of text. Even with a recorded keystroke macro, you can only pare the process to six. But if you edit that macro with *WordPerfect*'s built-in macro editor, you can add a block-copy capability, create a custom menu, and learn a lot about *WordPerfect*'s powerful macro programming along the way.

WordPerfect 5.0's 39 new macro commands and functions remove most of the program's previous limits. Now the macros can respond flexibly to keyboard input and let you design your own *WordPerfect*-style prompts and menus. In this article you'll create a recorded block-move macro and then soup it up with the macro editor, using variables, subroutines, and nine basic programming commands.

▶ Raw Material: A Recorded Macro

To start, you'll record a keystroke macro summoned with <Alt>-M (for Move) that moves a block of text.

1. You need sample text to build this macro. On a clear *WordPerfect* screen, type **Sample**, then press **<Home>** **<Cursor Left>** to position the cursor under the 'S'. Now press **<Ctrl>-<F10>** **<Alt>-M**, type **Block Move** to name the macro, and press **<Enter>** to begin recording keystrokes. The words 'Macro Def' flashing at

the lower right corner of the screen show that your keystrokes are being recorded.

2. Press **<Alt>-<F4>** to turn the Block function on.

3. Press **<Ctrl>-<Page Up>P** to insert a pause in the macro. When you use the macro, this pause will let you highlight the block.

4. Press **<Home> <Cursor Right>** to highlight the text 'Sample', and press **<Enter>** to end the pause.

5. Press **<Ctrl>-<F4>BM<F1>** to cut the block.

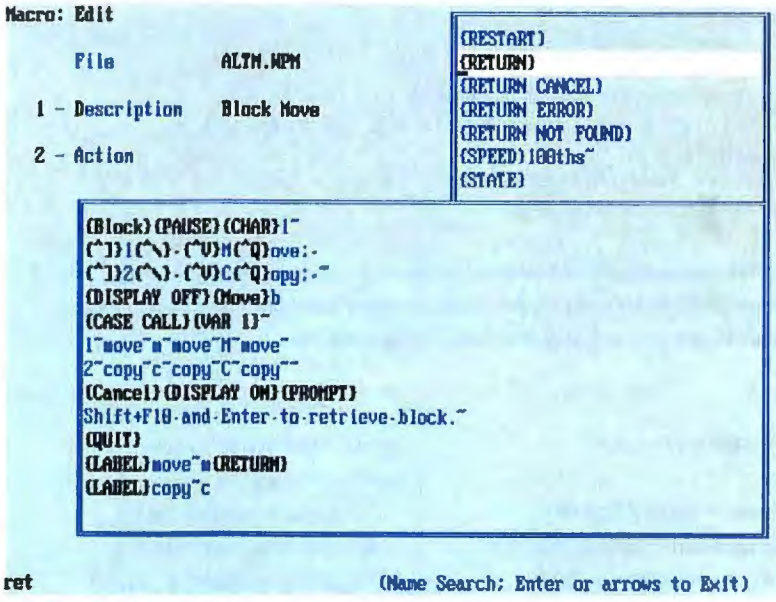
6. Finally, press **<Ctrl>-<F10>** to finish macro recording. The flashing 'Macro Def' prompt will disappear.

To use the macro, press **<Alt>-M**, highlight the desired text, and press **<Enter>** to cut the block. To paste the block elsewhere, press **<Shift>-<F10>** (Retrieve) and **<Enter>**.

Programming Builds a Better Macro

While useful, the initial version of the <Alt>-M macro is fairly limited. It includes only two block functions—move and delete—and doesn't tell you how to recall data from the delete buffer. And to automate copying a block, you'd have to record a second similar <Alt>-*key* macro. But with *WordPerfect*'s macro editor you can improve <Alt>-M with a copy feature and a prompt instead.

You can't build a macro from scratch with *WordPerfect*'s built-in macro editor; you can only modify an existing macro. You insert most regular *WordPerfect* commands by pressing the keys they're assigned to. Pressing <Alt>-<F4>, for example, enters the Block command. (Note that you can't just type in the command names.) To insert any of *WordPerfect*'s 39 macro programming commands, you use the editor's pop-up list. Just scroll through a list (or jump to a command by typing its first few letters) and press <Enter>. (In the macro editor, all commands are enclosed in braces.)



The Macro editor's pop-up list of programming commands appears in the upper right of the screen. A keystroke pulls the command into the editor's boxed work area.

▶ Building a Macro Step by Step

To begin modifying the <Alt>-M macro, press **<Ctrl>-<F10><Alt>-MEA** to load it into the editor. Now take a deep breath, and type in the following keystrokes to duplicate the macro command listing in **FIGURE 1**. We'll explain the steps later.

1. Position the cursor under the {Move} command and press **<Ctrl>-<End>**. This deletes the previous macro commands, leaving only {Block}{Pause} on the screen. Press **<Enter>** to move to the next line. Note that hard returns only make the macro easier to read; they have no effect on what it does.

2. Press **<Ctrl>-<Page Up>CHAR<Enter>** to bring in the {CHAR} command from the pop-up list, type **1~**, and press **<Enter>**.

3. Press **<Ctrl>-]1<Ctrl>-\<Space><Ctrl>-V<Ctrl>-VM<Ctrl>-Q**, type **ove:**, press **<Space>**, and then press **<Enter>**.

4. Press **<Ctrl>-]2<Ctrl>-\<Space><Ctrl>-V<Ctrl>-VC<Ctrl>-Q**, type **opy:**, press **<Space>~**, and press **<Enter>**.

5. Press **<Ctrl>-<Page Up>D**

```
 1. {Block}{PAUSE}
 2. {CHAR}1~
 3. {^]}1{^\} {^V}M{^Q}ove;
 4. {^]}2{^\} {^V}C{^Q}opy:~
 5. {DISPLAY OFF}{Move}b
 6. {CASE CALL}{VAR 1}~
 7. 1~move~m~move~M~move~
 8. 2~copy~c~copy~C~copy~~
 9. {Cancel}{DISPLAY ON}{PROMPT}
10. Shift+F10 and Enter to retrieve block.~
11. {QUIT}
12. {LABEL}move~m{RETURN}
13. {LABEL}copy~c{RETURN}
```

FIGURE 1: The macro editor displays commands in braces. Programming language commands are in uppercase ({DISPLAY OFF}), and regular editing commands have initial caps ({Block}). (Line numbers are for reference only; they don't appear in the macro file.)

<Enter> <Ctrl>-F4>b, and <Enter>.

6. Press <Ctrl>-<Page Up> CAS <Cursor Down> <Enter> <Ctrl>-V <Alt>-1~ to enter the {CASE CALL} command, and press <Enter>.

7. Type 1~move~m~move~ M~move~. Press <Enter>.

8. Type 2~copy~c~copy~ C~copy~~. This line must end with *two* tildes or the macro won't work. Press <Enter>.

9. Press <Ctrl>-V<F1> <Ctrl>-<Page Up>D<Cursor Down> <Enter> <Ctrl>-<Page Up>PR <Enter> <Enter>.

10. To remind yourself how to retrieve the block, type the message Shift+F10 and Enter to retrieve block.~, and press <Enter>.

11. Press <Ctrl>-<Page Up>Q <Enter> to insert the {Quit} command. Press <Enter>.

12. Press <Ctrl>-<Page Up>L <Enter>. Type move~m and press <Ctrl>-<Page Up>RET<Enter> <Enter>.

13. Press <Ctrl>-<Page Up>L <Enter>. Type copy~c, and finally, press <Ctrl>-<Page Up>RET <Enter> <Enter>.

Now compare what you've entered with FIGURE 1. Make any necessary corrections, then press <F7> twice to save the macro.

To use this macro, press <Alt>-M and highlight the block. Press <Enter>, and *WordPerfect* displays a two-choice menu. After you make a selection, the macro reminds you to press <Shift>-<F10> <Enter> to paste the block.

What Makes This Macro Tick

So what's going on in the macro, and what can you learn from it? Let's take a look at each of the macro commands we've used.

There's nothing new in the first line: The macro turns the block command on, and {PAUSE} suspends the action until you highlight the block and press <Enter>.

Lines 2, 3, and 4 create a *WordPerfect*-style prompt line that appears as '1 Move; 2 Copy:'. This is done with the {CHAR} command, whose syntax is {CHAR}*variable~prompt~*. Basically, {CHAR} displays a prompt, waits for you to press a key, assigns that character to a variable, then continues running the macro.

Line 2 is the "{CHAR}*variable number~*" part of the command. Macros use up to ten variables, {VAR 0} to {VAR 9}, to store keystrokes. The number 1 tells the macro to assign the character you type in response to the {CHAR} prompt to {VAR 1}.

Lines 3 and 4 make up the "*prompt*" portion of the {CHAR} command, which generates the on-screen menu '1 Move; 2 Copy:'. *WordPerfect* displays menu choice numbers in boldface; {^]} and {^\} toggle boldface, and {^V} and {^Q} turn the menu-letter display attribute on and off. How menu letters appear on screen varies according to your graphics board and default settings, but using {^V} and {^Q} ensures that your macros' menus match *WordPerfect*'s. The tilde at the end of line 4 marks the end of the {CHAR} command.

{DISPLAY OFF} in line 5 speeds up macro execution by not updating the screen. The block function is on at this point in the macro, so {Move}b activates *WordPerfect*'s Move menu and selects b for block. (Since the display is turned off, you don't actually see the menu.)

Lines 6, 7, and 8 represent the {CASE CALL} command, which teams up with the {CHAR} command to search for and run the subroutines "move" and "copy" on lines 12 and 13 in this macro. The syntax for the {CASE CALL} command is: {CASE CALL}*value*~case1~label1~case2~label2~...~~

{CASE CALL} reads the variable value recorded by the {CHAR} command and checks it against a case statement (case1, case2, and so on). If it finds a match, {CASE CALL} reads the corresponding subroutine label (label1, label2, and so on), jumps to the subroutine, and runs it.

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In line 6, {CASE CALL} reads the character that {CHAR} has stored in {VAR 1} and searches for a match among several case statements.

Lines 7 and 8 define {CASE CALL}'s case statements and identify the corresponding subroutine labels. To duplicate *WordPerfect 5.0*'s mnemonic menus, you need three case statements for "move" and three for "copy": a number, a lowercase letter, and an uppercase letter.

For "move," the possible choices are 1, m, and M (line 7); for "copy" the choices are 2, c, and C (line 8). Each case statement has a label that corresponds to a subroutine—in this case, either line 12 or 13. The double tildes (~~) at the end of line 8 mark the end of the {CASE CALL} command.

The {LABEL} command (whose syntax is {LABEL} *subroutine name*~) specifies two simple subroutines that start *WordPerfect*'s move and copy functions, respectively. {RETURN} marks the end of a subroutine.

After the macro has run the subroutine, it continues with the command that follows the {CASE} statement, beginning at line 9 in this macro. {DISPLAY ON} lets you see on-screen information. The {PROMPT} command (whose syntax is {PROMPT}*message*~) displays a message at the *WordPerfect* status line. Line 10 contains the text for the {PROMPT} message, the block-retrieve reminder.

The {QUIT} command on line 11 ends the macro and also separates the main body of the macro from the subroutines.

To Learn More About Macros

For a discussion of *WordPerfect 5.0*'s macro programming language and the built-in macro editor, look at the Advanced Macros section of the program manual's appendix. If that section of your manual begins with a discussion of the macro command keys rather than the macro editor, call WordPerfect at 800/321-4566 and ask for the free Advanced Macros supplement.

As you become more macro-literate, you may start to feel hampered by *WordPerfect 5.0*'s built-in editor. It lets you view only 13 lines of a macro at a time and lacks block, cut-and-paste, search-and-replace, and printing functions. Fortunately, the recently upgraded *WordPerfect Library Macro Editor* provides all these missing functions, plus full-screen editing and its own internal macros. Anyone with more than a casual interest in *WordPerfect* macros should get the $15 *Macro Editor 5.0*.

POWER TIP NO. 73

An Easy Way to Find DOS Subdirectories

When you're working in a directory packed with data, it's difficult to see the subdirectories among the files. Instead of typing DIR, which lists a mélange of subdirectories and files, try the DIR * command, which lists only subdirectories and any files without a file name extension. It'll save you time and frustration during a sudirectory hunt.

Gary Ritchie
Calgary, Alberta, Canada

TIPS & TECHNIQUES

Data Management

Flawless Form Letters With dBASE IV

You don't need a word processor to turn out polished mass mailings. Here are step-by-step instructions for mastering dBASE IV's powerful mail merge function.

What you need: dBASE IV, a printer

Ever run into this problem? Your clients' addresses are in a data base, but you must use a word processor to produce mail merge letters. The result is a tedious data extraction and the risk of errors cropping up when you're updating duplicate mailing lists.

Users of Ashton-Tate's *dBASE IV* have an alternative. With its built-in printer drivers, font support, and visual display, *dBASE IV*'s band-oriented report writer offers a mail merge generator that rivals those of word processors.

However, version 1.0's mail merge has a few rough edges.

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FIGURE 1

Building Your dBASE IV Mail Merge File

Here's the structure of the data base used in this mail merge example. You may want to add fields to your data base to enhance it for mail merge. For example, the DEARXXX field could be the first name, a nickname, or the last name preceded by Mr. or Ms. The MAILED field keeps track of who has received a mailer, to prevent duplicate mailings.

Field	Field Name	Type	Width	Dec	Index
1	LASTNAME	Character	20		Y
2	FIRSTNAME	Character	20		N
3	TITLE	Character	5		N
4	DEARXXX	Character	20		N
5	CORP_TITLE	Character	50		N
6	COMPANY	Character	50		Y
7	ADDRESS	Character	30		N
8	ADDRESS2	Character	30		N
9	CITY	Character	30		N
10	STATE	Character	2		Y
11	ZIP	Character	10		Y
12	COUNTRY	Character	15		N
13	MAILED	Logical	1		N
14	MAILDATE	Date	8		N

This article explains how to work around these problems as it takes you step-by-step through a typical mail merge operation. All the tips assume you have given the command SET INSTRUCT OFF, or put INSTRUCT = OFF in the CONFIG.DB file, to turn off prompts.

Prep Work

To install printer drivers and fonts, run the DBSETUP program from the directory where your mail merge data is located. Select the appropriate printers, and enter the control codes for the fonts you want.

Next, run *dBASE IV* from the same directory. First you'll open the data base. **FIGURE 1** shows the data base structure used in this example. The structure assumes a flat file data base, but you can just as easily work with a relational model; just use QBE to select the fields you want, and use the resulting view when you create your report. Here's how you begin:

1. To open the data base, highlight its name in the Data column of the Control Center and press **<Enter>**.

2. Cursor to the Reports column and select *<create>*. The report screen appears.

3. Select *Quick Layouts*, then *Mailmerge layout*.

This will open the detail band of the report form, leaving the other bands closed. Here you'll type in the body of the letter and enter the mail merge fields. Before you begin, you can format the letter by opening the print menu (<Alt>-P) and selecting margins, fonts, and other settings. However, the default settings should do the trick for most users.

▶ Set the Date

Before you start the letter, put some blank lines at the top to accommodate your letterhead by making sure <Insert> is on and pressing <Enter>. Then insert a date field. To print the date in the MM/DD/YY format, you would press <Alt>-F to bring up the Fields menu, choose Add field, select Date from the Predefined column, and press <Ctrl>-<End>. For the more formal format that prints the month name, the day number, and the 4-digit year, add a calculated field as follows:

1. Press **<Alt>-F**, choose *Add field*, and select *<create>* in the Calculated column.

2. Select *Expression*.

3. Type the following:

```
TRIM(CMONTH(DATE())) + " " +
STR(DAY(DATE()),IIF(DAY(DATE()) <
10,1,2)) + ", " + STR(YEAR(DATE()),4)
```

4. Press **<Enter>**, then **<Ctrl>-<End>**.

▶ Adding Fields

Now add the name and address fields that correspond to your data base fields:

1. Insert a few blank lines, press **<Alt>-F**, and select *Add field*.

2. Select *TITLE* (for Mr., Ms., etc.) and press **<Enter>** and **<Ctrl>-<End>**.

3. Insert a blank space after the TITLE field (indicated by *X*'s on screen).

4. Press **<Alt>-F**, select *Add field*, choose *FIRSTNAME*, and press **<Ctrl>-<End>**.

5. Insert a blank space and repeat the process to add the LASTNAME field.

At this point you could press <Enter> to start a new line, add the CORP_TITLE field, add COMPANY on the next line, and then move on to the address.

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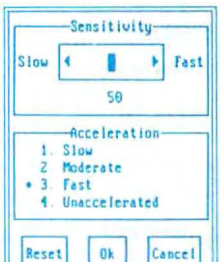

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However, if some clients lack a title or company, *dBASE IV* will print two blank lines between the name and the address, and the personal touch—or illusion thereof—will quickly be shattered. Here's the solution:

1. Instead of placing the CORP_TITLE field on a new line, move the cursor to the end of the LASTNAME field. Don't leave a blank space.

2. Press **<Alt>-F** and select *Add field.*

3. Select *<create>* in the Calculated column.

4. Select *Name field*, and type in a name that's slightly different from the original field name (CORP_TITLE), then press **<Enter>**.

5. Choose *Expression*, and type the following:

```
IIF(LEN(TRIM(CORP_TITLE))>0,
CHR(13)+CHR(10)+TRIM(CORP_
TITLE),"")
```

6. Press **<Enter>** and **<Ctrl>-<End>**.

This blank-line fix first checks the CORP_TITLE field to see if it's filled. If it is, the Immediate IF (IIF) evaluates the first expression as true and places the TRIM(CORP_TITLE) expression on a new line [CHR(13) is a carriage return, and CHR(10) is a linefeed]. If the CORP_TITLE field is empty, a null string (" ") is output, so no blank lines are printed. On screen, the result should be another row of *X*'s directly following the LASTNAME field.

Next, at the end of the same line, without adding a blank space, go through the same process for the COMPANY field, but replace the two references to CORP_TITLE with COMPANY in the expression.

Finally, go ahead and enter the address fields in the usual manner, selecting the fields from the Add field menu and placing each field on a new line. Keep CITY, STATE, and ZIP separated with the appropriate commas and spaces on screen. For the salutation, press **<Enter>** twice, type **Dear**, skip a space, and insert the DEARXXX field followed by a colon. Then press **<Enter>** twice, and type the rest of the letter. *dBASE IV* provides word wrap and lets you change fonts on the fly from the Words/Style menu. (You can import an ASCII file if you want, but you'll have to strip the carriage returns by hand.)

You may encounter a sporadic bug in version 1.0: After you press <Enter>, you may lose the right margin from the ruler line. In this case, you'll have to reset the margin before starting the next paragraph.

When you're done, press **<Ctrl>-<End>**, and enter a report name at the prompt. The code generated by your mail merge report will scroll by on screen.

To print the report from the Control Center, highlight the report name and press **<Enter>**. A print menu appears, providing options to preview the report on screen and change settings before printing. To modify the mail merge report, highlight the report name in the Control Center and press <Shift>-<F2>.

With solid, built-in mail merge, you can forget about lengthy conversions and keeping duplicate lists. Learning *dBASE IV*'s mail merge can save a lot of time. —*Tony Lima*

Desktop Publishing

Eight Tips for Taming Ventura

A pair of Ventura Publisher veterans share their secrets for avoiding crashes, solving baffling formatting glitches, moving pagefuls of text, and more.

What you need: Ventura Publisher 1.1, 2.0, or Professional Extension

Xerox's *Ventura Publisher* may be the best choice for desktop publishing on the PC, but it still has some rough edges. Here are eight ways to fix some of the things that inexplicably go wrong—and avoid getting into jams in the first place. The eight tips range from tricks for steering clear of program crashes to solutions for common formatting errors.

Escape That Crash

Ventura Publisher is no stranger to crashes. Suddenly, your keyboard freezes, or you find yourself staring at a lonely DOS prompt. Crashes frequently occur when you load a document that's bigger than available memory. *Ventura* then swaps out the excess portion to a spill file, sometimes freezing the screen. The simplest solution is to limit chapters to about 20 pages. You can also free up memory by re-

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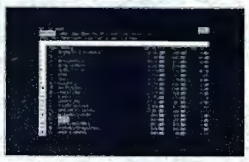

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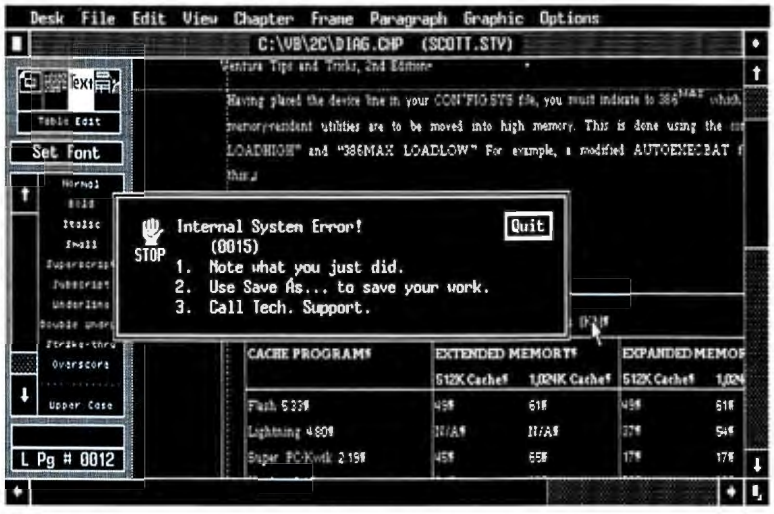

SCREEN 1: Don't take no for an answer. Usually, a Ventura error message like this leaves you with no choice but to reboot. But if you repeatedly click on the Quit button, you may eventually be freed, with your latest changes intact.

moving TSRs or reducing buffers specified in CONFIG.SYS.

Professional Extension largely eliminates this problem by taking full advantage of EMS memory. An EMS board can also help with the base version of *Ventura 2.0*, which can use up to 108K of EMS.

If a chapter crashes frequently, delete the VP.INF file (or VPPROF.INF in the *Professional Extension*) from your *Ventura* directory. This file, which stores display defaults such as whether to show ruler lines, is corrupted when *Ventura* crashes, and continuing to use it can lead to more crashes. The display will revert to *Ventura*'s defaults after you delete VP-.INF, but it's easy enough to reset them. The next time you save the chapter, *Ventura* will create a new VP.INF.

Thawing Frozen Error Messages

Sometimes when *Ventura* crashes, it displays a dialog box, as shown in **SCREEN 1**. Clicking the Quit button usually has no effect, but if you click it 20 or 30 times, you might mysteriously be granted clemency—the dialog box will disappear, and you'll be free to resume working.

Vanishing Screen Fonts

One of *Ventura 2.0*'s most enticing features is the ability to display large screen fonts—72 points or more—at their actual size. Occasionally, though, the program won't display them, usually due to a lack of memory in the screen buffer. If this happens, delete the VGAFSTR.INF, EGAFSTR.INF, CGAFSTR-.INF, or SD_HERC.EGA file (depending on your display) from your *Ventura* directory.

If that doesn't help, increase the size of *Ventura*'s screen font buffer: Load the VP.BAT file (VPPROF.BAT in the *Professional Edition*) into a word processor, and add /F=*x* to the end of the line beginning DRVRMRGR. The *x* specifies the buffer size in kilobytes and can be any number between 68 (the default) and 128. The trade-off to increasing this buffer: You reduce the RAM available for loading large documents.

Waking Up a Sluggish Cursor

If the text-editing cursor refuses to respond when you press the arrow keys, you probably pressed <Shift>-<Ctrl> by mistake, putting *Ventura* into its "no mouse" mode. In this mode, the arrow keys control the mouse cursor, so the text editing cursor is disabled. To return to mouse mode, press <Shift>-<Ctrl> again. Note: Only the <Shift> and <Ctrl> keys on the right side of the keyboard toggle this mode.

Disappearing Formats

Sometimes after you load *Ventura*, you'll find that text formatted in italic or bold has mysteriously lost its formatting. In this case, an index or anchor mark is usually hidden in the text, causing everything after the mark to lose its formatting. Removing the markers alone won't restore the formatting; you'll also have to retag the text. To avoid this problem, don't place such marks within formatted text.

Eliminating an Isolated Paragraph Mark

After you load text into *Ventura*, you may notice an unwanted line with nothing on it but the paragraph sign. This occurs when a space follows the period in the last sentence of a paragraph. To eliminate the unwanted line, select text-editing mode, place the

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cursor in front of the paragraph mark, and press <Backspace>.

Stubborn Text Attributes

Sometimes when you apply text attribute tags in the Text Mode Selection box, the attributes won't take effect. In this case, try highlighting the text in question, choosing Normal from the list, and then selecting your attribute again.

If that doesn't work, hidden attribute settings are probably preempting your new selections and need to be deleted. Say you've highlighted a passage and selected Bold, for example, but text remains italicized. Place the cursor in front of the text (you'll know you're in the right location when 'Attr. Setting' appears in the Current Selection box in the lower left corner of the screen), and press <Delete> to delete the attribute marker. The text is returned to normal, so you'll have to retag it with bold.

Moving Large Blocks of Text

What if you want to move a block of text that spans more than one page? Ventura won't let you highlight more than one page of text at a time. The solution is to temporarily change the Body Text tag to a tiny point size, such as 2 or 3 points, so that you can highlight the entire passage and move it. You can then reset the tag to its normal font size. —*Ted Nace*

This article is adapted from Ventura Tips and Tricks, *2d edition, by Ted Nace with Daniel Will-Harris (Peachpit Press, 1989, Berkeley, California).*

Communications

Money-Saving Tips for Dow Jones News/ Retrieval

DJN/R is an essential source of investor information, but watch out for those steep charges! Our on-line expert offers tested advice for getting top value from your Dow Jones dollars.

What you need: a Dow Jones News/Retrieval subscription

If you're an active investor, Dow Jones News/Retrieval (DJN/R), the on-line information service from the publisher of the *Wall Street Journal*, is virtually indispensable.

DJN/R's collection of 35 data bases provides current and historical stock quotations; full text of *The Wall Street Journal*, *Business Week*, and *Barron's*; and selected stories from the *Washington Post*, *Forbes*, and more than 150 other publications. You also get access to company profiles, earnings estimates, insider trading filings, balance sheets, and much more from such companies as Dun & Bradstreet.

Unfortunately, DJN/R has never been particularly easy to use, and experimenting on line with the meter running can result in high monthly bills: DJN/R charges by the minute; some data bases are more expensive than others; and special services involve costly surcharges. For instance, should you accidentally order a full company report from Dun's Financial Records, you'll be billed an additional $89.

Fortunately, there are a number of expert techniques—such as getting stock quotes directly from the system prompt and using QUICK reports, TRACK portfolios, and the new DOWQUEST search function—that can save you time (and therefore money) on line. (We'll assume you're familiar with standard stock symbols; if not, you can access the Symbols data base by typing //SYMBOLS and pressing <Enter>.)

Prompt Quotes

If you want historical stock quotes fast, you don't need to plough through the DJN/R HQ data base; you can save time and keystrokes by getting quotes directly from DJN/R's main system prompt (either a blank line, or 'ENTER REQUEST'). Just key in a semicolon followed by a stock symbol and a "P" code specifying a certain time period. For instance, typing ;IBM P1 will give you quotes for IBM for the last 12 trading days. (The P codes work in increments of 12 days; P2 gets you quotes from days 13 through 24, and so on.)

Quick and Comprehensive

The fastest way to get a broad selection of information on a given company is to use the QUICK feature. For example, entering //QUICK IBM from the system prompt will produce a menu of items pertaining to IBM drawn from eight DJN/R data bases,

The end of the terror message.

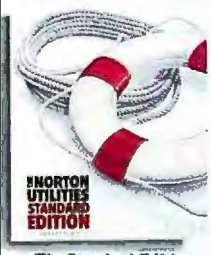
Each one of these PC screens is saying something different. But they're all telling you the same thing.

You and your data are in a whole lot of trouble.

Perhaps someone hit the wrong key and deleted your data by accident.

Perhaps it's simply lost somewhere on your disk.

Or perhaps the disk is corrupted and everything is lost.



The Standard Edition gives you UnErase, File Find and a range of features, functions and enhancements—at an even more reasonable price.

Perhaps you should get the new Norton Utilities.®

Because only the Norton Utilities can take the terror out of all these error messages.

If someone has accidentally deleted your data, fear not. Our legendary *UnErase*® can resurrect it with a few simple keystrokes.

If you've misplaced it—which, when you're dealing with a hard disk, is terrifyingly easy to do—our *File Find* will come to the rescue.

And what if worse comes to worst and your whole disk goes down?

Cheer up.

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All by itself.

In fact, if the Doctor can't cure your corrupted floppy or hard disk, then Buster, you've got one corrupt disk.

In which case, you'll need to refer to *The Norton Trouble-shooter,* a 158-page guide to finding and fixing most anything that could go wrong.

Don't worry, you don't have to go to the library or the bookstore to refer to it, because it's included in the Advanced Edition.

Along with 24 more organizational and disk management utilities we don't have space to mention.

PC Magazine calls the Norton Utilities "indispensable."

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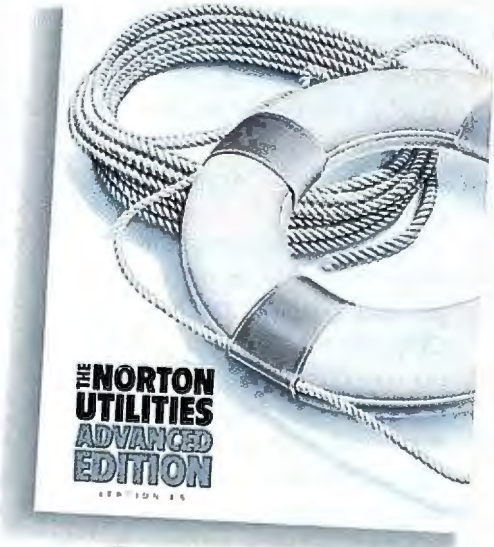

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Circle 91 on reader service card

including current quotes, news stories from multiple sources, a financial overview, and more.

If you accept all the menu items, a complete QUICK report costs $39. It will still save you money if you need a complete company background, though, since without it you would have to delve into eight separate data bases. If you choose only selected items from the QUICK menu, of course, the cost drops.

Saving Time With TRACK

If, like most investors, you follow more than one stock, you can save time by using the TRACK feature to get up-to-the-second news and quotes on selected portfolios. TRACK is a menu-driven function that draws its information from two data bases: Dow Jones Enhanced Current Quotes and Dow Jones News (which includes stories from the *Wall Street Journal*, *Barron's*, and Dow Jones News Service).

With TRACK you can create up to five "portfolios." Each one lets you specify up to 25 stock or security symbols for companies you want to follow, plus DJN/R category codes to specify the kinds of news stories you want to read on those companies. (DJN/R will charge you $8 a month to use TRACK, regardless of the number of portfolios you create.)

A portfolio you name Compute, for example, might contain the stock symbols IBM, AAPL, CPQ, plus category codes I/EDP (for computer industry news) and I/OFF (for office-equipment industry news). Then, when you type in //TRACK COMPUTE from the system prompt, DJN/R will retrieve quotes and relevant news stories—as recent as 90 seconds old—for each company in your profile and display them on screen. You can limit retrieval to quotes and news added since you last ran the profile by using the NO switch (//TRACK COMPUTE NO).

The DOWQUEST Revolution

The most precious jewel in the DJN/R crown is its collection of full-text data bases, containing more than 150,000 articles. There are three access codes you can use to conduct searches: //TEXT, //TEXTM, and //DOWQUEST.

DOWQUEST, introduced only a few months ago, is a giant step forward in text-search software. Not only does it let you conduct a keyword search with simple, English-like queries, but its advanced algorithm is clever enough to assign a higher priority to text in which keywords are grouped together. For example, if *expansion board* is your area of interest, text in which that phrase appears is likely to yield better results than an article in which the words *expansion* and *board* occur separately.

1. To begin using DOWQUEST, type **//DOWQUEST <Enter>** from the system prompt. You will be asked to enter words that describe the subject you are interested in. Simply type in a series of keywords, separated by spaces. For instance, if you were curious about IBM's latest expansion boards, you might enter IBM expansion board new.

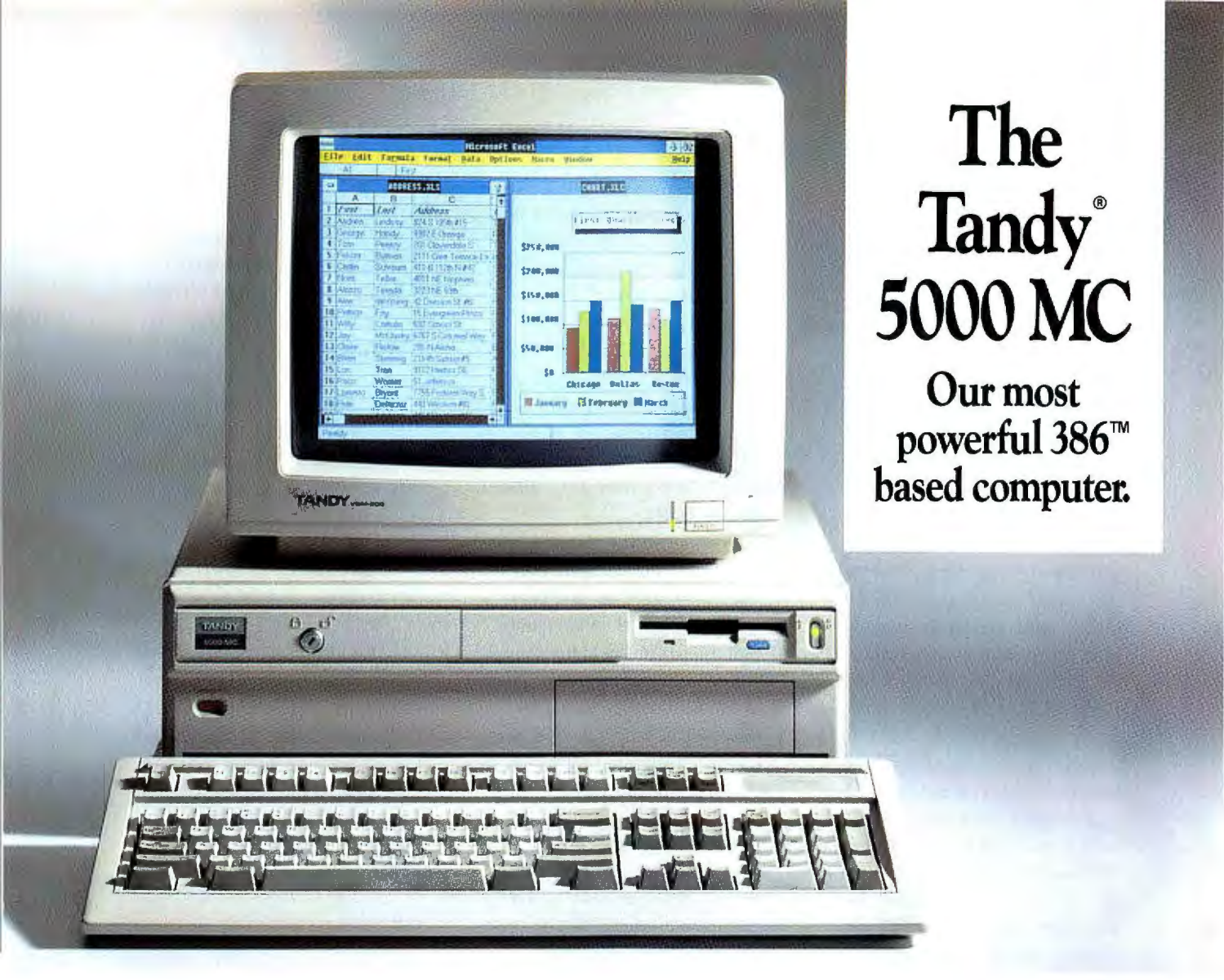
2. DOWQUEST will present you with a list of 16 numbered article headlines, ranked according to how closely they match your query. To view an article, simply enter its number and proceed to step 3. However, if you key in BEST *n*, where *n* is the number of an article, DOWQUEST will take you directly to the page in that article that best matches your search query.

3. In either case, the displayed paragraphs on the page will be numbered, and you will be invited to pick the "best" paragraph or paragraphs to further refine the search. This time when you type SEARCH *n* <Enter>, DOWQUEST uses every word in paragraph *n* to search its files again, looking for the best match.

4. When you have located the most useful articles, you can display the full text by using the **PRINT** command and capture the data to a disk file with your communications package.

DOWQUEST can cost more than twice as much as TEXT or TEXTM, but its ease of use and advanced search features are worth it. For active investors, Dow Jones News/Retrieval is a necessity, not a luxury—which means it's important to keep your bills from reaching luxury levels. That means playing it smart, not cheap. —*Alfred Glossbrenner*

Robert Lauriston is a San Francisco–based computer consultant specializing in WordPerfect *and local area networks. Tony Lima, a* dBASE *author, consultant, and developer, wrote* Inside dBASE IV *(Addison-Wesley, Reading, Massachusetts, 1989). Ted Nace is a contributing editor for* PC World, *and Albert Glossbrenner's many books cover communications and personal computing.*



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USER GROUP TIPS

Helpful hints from members of the nation's user groups

Black Box, White Text in Ventura

White text in a shaded box makes an eye-catching presentation, but if you tried to produce that graphic with early versions of *Ventura Publisher*, all you got was a plain black box. Here's a simple technique that works for release 2.0.

Select the Box Text tool, and then draw a box; it needn't be in its final place on the page since you can position it later. Enter the Graphics menu, and set Fill Attributes to Opaque and Black. Then type the text into the box. Now use the Set Font option to change the color of the text to white, and then print the box.

Bob Levine
NYPC Users Group

Easy Indexing for PC-File:dB Clones

You can speed up *PC-File:dB* searches by tagging data base fields and copying them to an index file. The program will then search only the indexed fields. This handy feature hits a snag, however, if you want to clone an indexed data base format and store the copy *and* its new index in the same subdirectory as the originals. When you try to open either data base, the program forces you to rebuild the original index, which erases the clone's.

One way around this dilemma is to create different index field names by renaming the data base fields when you clone the original data base. First, make sure the clone doesn't contain any records, so *PC-File:dB* can open it without finding bad index entries. [For a good *PC-File* cloning technique, see "Cloning PC-File Plus Data Base Formats," *User Group Tips*, *PCW*, October 1989.]

Then, open the clone and display the Utilities menu. Select the Name function, and press <F10> to edit the field names that appear in the index. Simply adding a single lowercase letter to the field name, as in ADDRESSa or COMPANYb, allows the program to distinguish between the two indexes without obscuring the real field name. The extra letter also serves as a marker for indexed fields. Just remember to change the name of each field you subsequently add to the index.

Dan Shelburne
Modesto PC User Group

Cut Down Those Program-Loading Batch Files

Most people create several short batch files, each of which logs on to a directory and loads an application. For example, this one loads *Microsoft Word:*

```
C:
CD\WORD
WORD
```

These batch files work fine, but because of the way DOS stores files on disk, a few small files can eat up a lot of space. If your disk space is at a premium, here's a single general-purpose batch file called GO.BAT that uses DOS's replaceable parameters to load instead of specifying a directory to log on to and an application to run:

```
C:
CD\%1
%2 %3 %4 %5 %6 %7 %8 %9
```

To switch to the \WORD subdirectory and load WORD.COM, for example, type GO WORD WORD at the DOS prompt. GO also lets you enter an application's optional parameters. For example, GO WORD WORD BIKE /G will load *Word* in graphics mode and open the file BIKE.

Paul Katzer
San Francisco PC User Group

Chip in! If you're a member of a user group and have tips to share, send them to PC World. *We pay $25 for each published tip. Or if you have a business problem that requires a PC solution, get in touch with our experts. See How to Contact PC World, page 4.* ●

POWER TIP NO. 74

Easy SideKick Plus Phonebook Searches

Here's a quick way to track down *SideKick Plus* Phonebook entry forms by searching for keywords in the text or attached notes. From the Phonebook screen, press <Ctrl>-QF. When *SideKick* displays the Search menu, press F to search the text of a form, A to search attached notes, or E to search everything—forms and notes. Next, type the search string and press <Enter> to locate the desired form.

George Beinhorn
Nevada City, California

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CONSUMER WATCH

Advice and information for the computer consumer

As the dBASE industry struggles out of its state of confusion, here's practical advice for business buyers on how to cope with the proliferation of competing standards.

Anita Amirrezvani

Who's Minding the Store?

A few years ago, the standard-bearer for the dBASE language was unquestionably Ashton-Tate. But now many users and developers aren't so sure.

Contrary to expectations, the release of *dBASE IV 1.0* has failed to put Ashton-Tate back on top. The industry is buzzing with controversy over whether *dBASE IV* is a useful product, given its problems with memory management and buggy SQL. Although Ashton-Tate originally promised a corrected version 1.1 sometime in the third quarter of 1989, it's uncertain when the company will deliver this fix.

As a result, Ashton-Tate may have permanently tarnished its image among developers. "Ashton-Tate is no longer perceived as a leader in dBASE technology," claims Mike Masterson, head of the Silicon Valley dBASE Society. "The company rested on its laurels with *dBASE III Plus*, and the only thing that kept it going was the clones."

Two significant competitors, Fox Software and Nantucket, have taken leadership roles in dBASE language technology development. Fox Software's *Foxbase+* is a broad-based, inexpensive product that surpasses *dBASE III Plus* with better performance and extensions to the dBASE language; Nantucket's *Clipper* provides a superior high-end application-development environment. WordTech's *dBXL*, while slower than *dBASE*, offers an easy interface (see *Five Against IV, PCW*, May 1989).

Faced with this competition, Ashton-Tate has moved aggressively to regain control of its most valuable commodity, the dBASE language. Ashton-Tate's suit against Fox Software, for example, is widely perceived as an effort both to monopolize the language and to squash an embarrassingly successful competitor. Ashton-Tate has also formed the dBASE Language Advisory Board (dLAB) and selected 15 members to provide input on the language's future direction.

Even some of dLAB's members, who refer to themselves as thorns in CEO Ed Esber's side, believe that Ashton-Tate's position hurts the language more than it helps. "Big thorn" Russell Freeland, a dLAB member and president of Synergy, a consulting firm in Fort Lauderdale, Florida, says the dBASE language is becoming too diversified. "There is no defined center and no defined standard, mostly because one vendor—Ashton-Tate—claims to own it," says Freeland.

As a result, other vendors are charting alternate courses with their dBASE-language products to avoid lawsuits and provide users with needed enhancements. Nantucket is moving *Clipper* toward object-oriented programming. Fox's new product, *FoxPro*, is expected to depart slightly from *dBASE IV* compatibility in its report writer and template language system.

Clearly, having many different dBASE language products to choose from benefits developers. "As a programmer, I love having a choice," says dLAB member Tom Rettig, president of Tom Rettig Associates in Beverly Hills, California. "Consultants should know all the languages so that they can develop the best solution for each client."

But others would prefer more coherence. "In an ideal world, I'd

(continues)

ANTHONY RUSSO

Who put Chipsoft in the chips?

Mike Chipman, creator, founder and president of Chipsoft Inc. tells why PC WORLD is an integral part of his successful strategy to make Turbo Tax the country's #1 tax software package.

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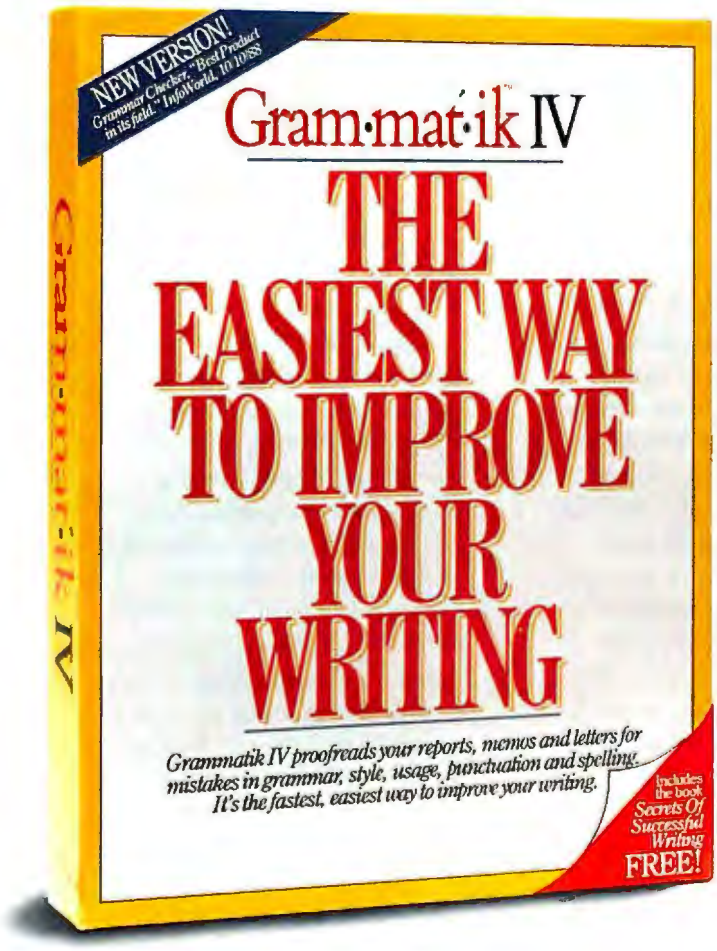

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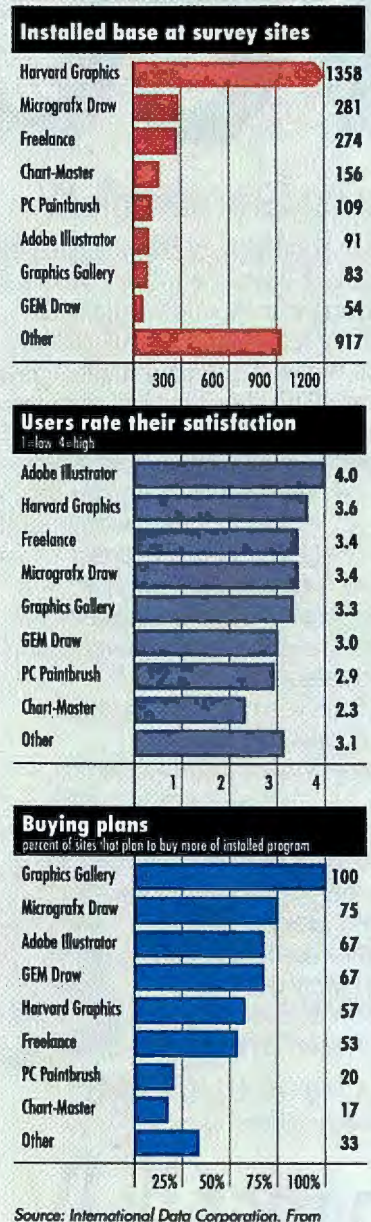
RATE YOUR SATISFACTION: Graphics Software

In sheer volume, easy-to-use *Harvard Graphics* outstrips all the other programs listed in this survey of large organizations. But *Adobe Illustrator*, a draw program, pulls down a better user satisfaction rating. It also ranks higher on the plan-to-buy list, along with two other draw programs, *Micrografx Draw* and *GEM Draw*.



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

like to see good stuff from a single vendor," says dLAB member Candy Prince, a staff engineer for Union Carbide Corporation. "Mixing 57 varieties doesn't always work," because nuances crop up even between compatible products.

Some people feel that developing an industrywide dBASE language standard, at least for such basic conventions as windowing, would help arrest the fragmentation of the language. But so far, standardization efforts have fallen apart. An IEEE committee, which succeeded in agreeing only on *dBASE III Plus* as a basic standard, has temporarily disbanded "due to lack of interest," says Martin Rinehart, former chair of the committee and founder of Wallsoft Systems. "My distinct impression is that some vendors feel it's to their advantage not to have a standard," says Rinehart. "The user community should reject these vendors' monopolistic solutions."

Ashton-Tate has set the tone by insisting that it is the only legitimate custodian of the language. "Our view is that Ashton-Tate offers the best solution," says company vice president Eric Kim categorically. But Nantucket isn't keen on the standards idea, either. "We just don't care about meeting some arbitrary list of standards," says Nantucket president Larry Heimendinger. "This may sound snobby, but we suggested once that we might try to be compatible with somebody else's products, and we got shouted down by our developers."

Even Fox Software is lukewarm. "If all the companies decided they were interested in a standards effort," says Richard Ney, director of marketing, "then certainly we would be, too. But with the lawsuit and the fragmented market, it doesn't make a good deal of sense."

On the other hand, WordTech's Mike Gardner, vice president of research and development, says his company supports the standardization efforts wholeheartedly. "I think all the vendors should forget their selfish self-interest and promote the dBASE language," he says.

Despite the industry's fractiousness, Mark Schnapp, an International dBASE Users Group member and representative for the now-dormant IEEE committee, says he's optimistic about getting vendors together, even Ashton-Tate. "Ashton-Tate is going to become a lot more responsive—or dead," says Schnapp. But he says the standards committee lacks the infrastructure right now to organize interested parties.

Meanwhile, the market will decide which product becomes the next data base leader. Many analysts are betting on *FoxPro;* others think Ashton-Tate has a good chance of regaining its reputation with a corrected *dBASE IV.* But while the industry is making up its mind, what should the business buyers do? Cary Prague, a dLAB member and assistant director for corporate finance at The Travelers' Companies, offers this advice: "Stick with what you've got until the market shakes out."

WordTech's Mike Gardner offers two interim suggestions: "If your applications aren't too ambitious, try to use *dBASE III Plus* code because it's easy to

(continues)

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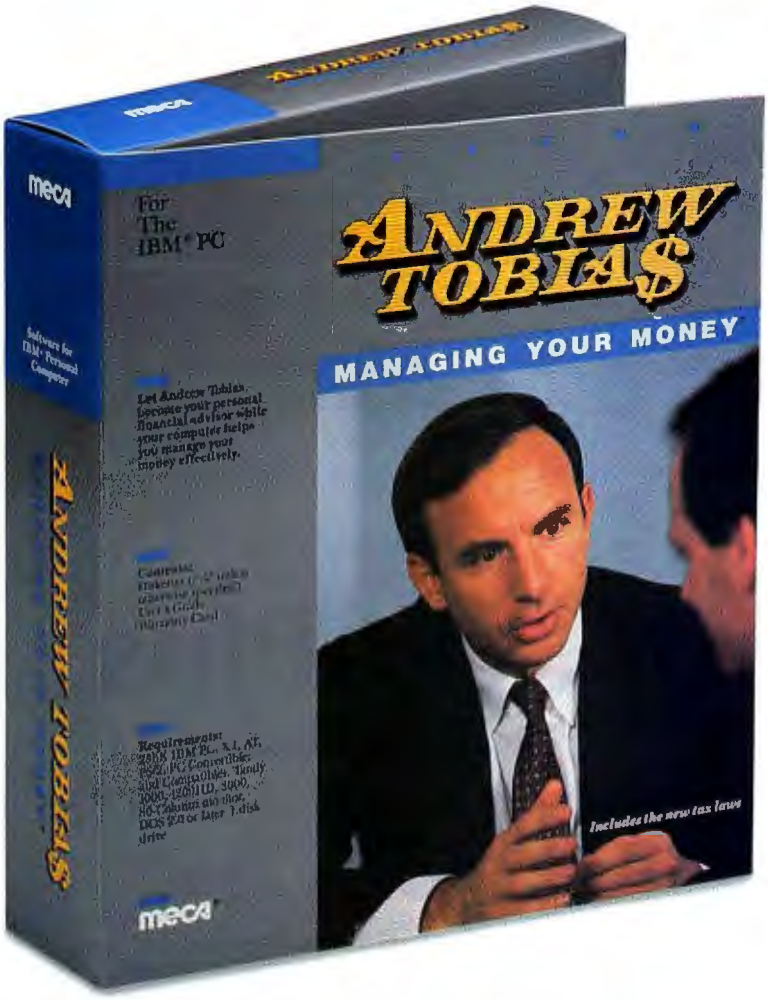

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move from product to product." Another option, he says, is to modularize the code so that a windowing procedure, for example, can easily be rewritten in another dialect.

To help users cope with multiple-product environments, David Kalman, editor in chief of *Data Based Advisor*, has written a 1000-page reference guide called *The dBASE Language Book* ($27.95 from Microtrend Books; 800/336-6060), which cross-references all the linguistic variations on *dBASE III Plus* in *Clipper*, *dBXL*, *Quicksilver*, *dBASE IV*, and *Foxbase+*.

Code converters, which translate code from one dialect to another, are another helpful option. Ashton-Tate's $49.95 *Step Forward*, for example, converts code from competing products into *dBASE IV* syntax.

In the future, data base vendors and server companies offer the promise of SQL access to data bases on multiple platforms. As these solutions become more clearly articulated, business buyers will have a better shot at developing sensible strategies for managing precious data.

SHOP TALK

Fast Micro Improves Its Policies

Fast Micro, a mail-order company in Phoenix, Arizona, has improved its return policy. The company's previous policy stated that "all returns are subject to a 15 percent restocking fee." The new policy is as follows: Computers returned within 30 days are fully refundable (no restocking fee); so is any *unopened* hardware and software. A 15 percent restocking fee is charged on *opened* hardware and software (the seal on the software disk package must be intact).

Refunds don't include shipping costs, and consumers must obtain a return authorization number before returning a product.

A Bug Without a Fix

I want to alert *Consumer Watch* readers to a major bug in Quadram's JT Fax 9600 fax board.

A few months ago I purchased this product and installed it in an AT compatible. From the beginning it transmitted random pages instead of entire docu-

(continues)

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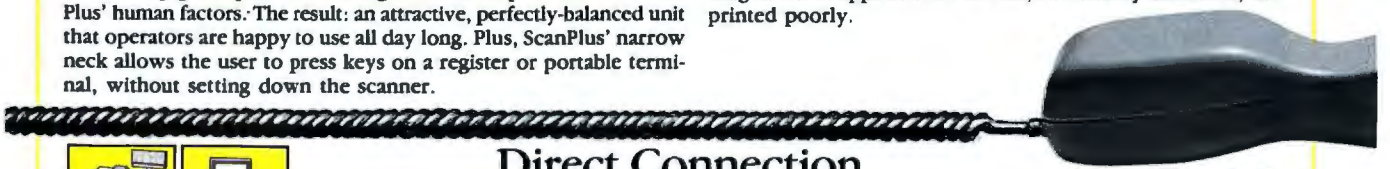

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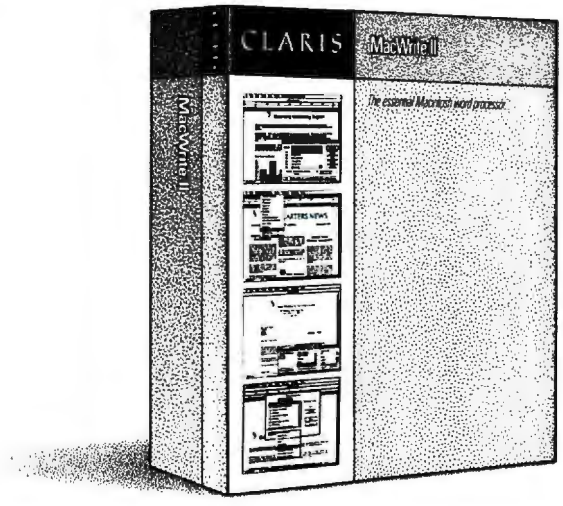

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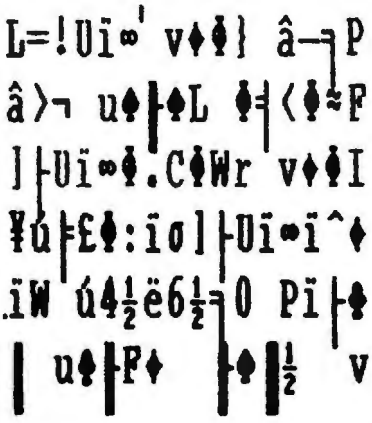

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ments, even while indicating that the entire transmission had been successfully received.

Repeated calls to technical support resulted in a complete denial of the problem. Finally, after months of wasted time, a technical support representative admitted that the company was aware of the problem, that there was no fix, and that everything I had been told was untrue.

Steven I. Kern
Morristown, New Jersey

Quadram responds: We acknowledge this problem. Due to its intermittent nature, it took some time for our support staff to identify it. Although the JT Fax line has been sold to Hayes, we will continue to work closely with Hayes to find a solution.

Timothy D. Cutler
Business Marketing Manager

Great Package, Poor Support?

After reading *PC World*'s article selecting the Vendex HeadStart III as a Best Buy (*The Hardware Shelf*, June 1989), I felt I should inform your readers of the problems I've encountered. Shortly after purchasing the system, I ran into a problem with the video board; after several trips to the computer store the problem was fixed. A few months later the system clock stopped working. When I went back to the store, they told me they no longer carried Vendex computers because they couldn't receive the technical support they needed. I called Vendex's support number to get a listing of local repair shops; every location I called said they didn't want to be bothered because Vendex wouldn't support them.

Finally I found a computer store that felt sorry for me and helped me out. After that, I decided to purchase an AST Bravo/286. I tried to use Vendex's application programs and found that they are compatible only with Vendex hardware. Vendex may offer an impressive package, but it doesn't offer the necessary support and compatibility.

Gene A. Palecco
Bloomfield, New Jersey

Vendex responds: HeadStart is now a division of North American Philips Corporation, and as in any transition, we have experienced growing pains. But every effort is being made to improve consumer support.

Frank R. Muniz
Director of Merchandising Support

Editor's note: None of the Vendex software packages bundled with the HeadStart will work on other systems, according to Mr. Muniz, because they have been modified to improve their integration. For example, the HeadStart version of 3D Perspective Graphics *works with* Framework II *spreadsheets, unlike the off-the-shelf version.*

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.* ●

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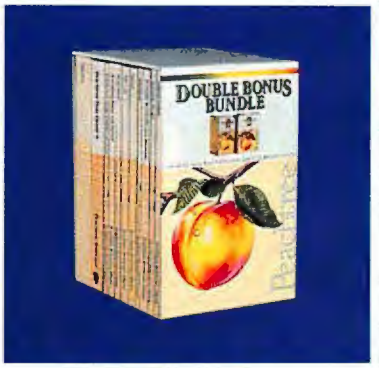

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STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Automate infrequent commands, check for existing files and directories, make temporary additions to PATH, access multiple LAN printers from MultiMate, archive deleted dBASE records, and improve WHEREIS.

Edited by Tom Swan

ANTHONY RUSSO

4, 3, 2, 1...Backup!

Since I use my computer infrequently, I figured I might forget to perform regular backups. So I added commands to AUTOEXEC.BAT that back up the PC's hard disk automatically every fifth time it boots [see **LISTING 1**].

You initially create a zero-length file named COUNT5. When you reboot the system (or turn it on), COUNT5 is renamed COUNT4, and AUTOEXEC.BAT ends; the next time you restart the PC, COUNT4 is renamed COUNT3, and so on. When you boot the system and COUNT1 exists, the backup begins, and you're prompted to insert the first backup disk in drive A:. When the backup is done, the next command resets the count by renaming COUNT1 COUNT5.

Before running this AUTOEXEC.BAT file, log on to your system's boot drive and create a zero-length file named COUNT5 in the root directory by entering **TYPE COUNT5> \COUNT5**. Ignore the 'File not found' error message.

Charles J. Williams, Jr.
Virginia Beach, Virginia

Editor's note: You can change the BACKUP command to any other command you want to execute every fifth time you boot. You can also change the frequency. To use an 8-step countdown, for example, add appropriate IF statements (use the others as guides), and change COUNT5 in the last command to COUNT8.

C Directory/File Detector

There's no easy way for DOS commands—or batch files—to determine if a certain directory already exists. So I wrote CHECKFOR.C [**LISTING 2**], which checks for the existence of the directory or file name you specify. CHECKFOR returns an errorlevel of 0 if the specified name is not an existing file or directory, 1 if it's a directory, 2 if it's a file, and 3 for syntax errors. Now you can use IF ERRORLEVEL and IF NOT ERRORLEVEL in your batch files to branch to appropriate routines.

Edwin J. Tobias
Greenville, South Carolina

(continues)

```
echo off
if exist count1 goto backup
if exist count2 rename count2 count1
if exist count3 rename count3 count2
if exist count4 rename count4 count3
if exist count5 rename count5 count4
goto done
:backup
cls
echo Insert backup disk in drive A:
pause
backup c:\*.* a:\ /s
rename count1 count5
:done
```

LISTING 1: Add these commands to AUTOEXEC.BAT to back up your C: drive every fifth time you boot.

```
/* CHECKFOR.C by Edwin J. Tobias */


#include <stdio.h>


main(int argc, char *argv[])
{
    if (argc != 2) {
        printf("Error: no directory/file name specified\n");
        exit(3);   /* syntax error */
    }
    else {
    if (fopen(argv[1], "r") != NULL)
        exit(2);   /* it's a file */
    else
        exit(access(argv[1], 0) == 0); /* 1=dir; 0=not used */
    fcloseall;     /* close any open files */
    }
}
```

LISTING 2: CHECKFOR.C lets batch files check whether a directory or file already exists.

```
checkfor %1
if errorlevel 3 goto end
if not errorlevel 2 goto not2
echo %1 is a file.
goto end
:not2
if not errorlevel 1 goto not1
echo %1 is a directory.
goto end
:not1
echo %1 does not exist.
:end
```

LISTING 3: WHATIS.BAT demonstrates the use of CHECKFOR (see LISTING 2).

Editor's note: To compile CHECKFOR.C, use Turbo C, QuickC, *or any C compiler that supports a file access() function. Then copy CHECKFOR.EXE to a directory listed in a PATH command. To see CHECKFOR in action, create and save the batch file WHATIS.BAT (***LISTING 3***). Then issue a few commands at the DOS prompt, such as WHATIS C:\COMMAND.COM and WHATIS \DOS.*

Beating Out New Paths

When I try out new software, I often need to add directories temporarily to my PATH environment variable. To simplify matters, I wrote AP.BAT [**LISTING 4**], which lets you add directories such as C:\MYWORK to the current PATH by typing AP C:\MYWORK. You can also add two or more directories by separating them with semicolons. For example, you could add C:\WORD and C:\123 into PATH by typing AP C:\WORD; C:\123. To reset PATH to its previous state, type AP- and press <Enter>; type AP - to display brief instructions.

Young J. Han
Clemson, South Carolina

Multiple Printers for MultiMate LANs

MultiMate LAN doesn't allow access to more than one printer on a Novell network. When the (N)etwork Printer Type is called, documents are sent to network printer 0 regardless of the device number. *MultiMate*'s technical support personnel agreed this was a problem but could offer no solutions.

By experimenting, I have found I can use Novell's CAPTURE command to redirect output intended for my local LPT2 and LPT3 to network printers 1 and 2. I just issue the following two commands before entering *MultiMate:*

```
CAPTURE P=1 L=2 NB TI=2
CAPTURE P=2 L=3 NB TI=2
```

The P= parameter selects the desired network printer, L=

(continues)

```
echo off
if "%1"=="" goto help
if "%1"=="-" goto reset
set oldpath=%path%
path=%1;%path%
goto end
:reset
if "%oldpath%"=="" goto end
set path=%oldpath%
set oldpath=
goto end
:help
echo AP newdir : Add a directory to current PATH
echo AP -      : Reset to previous PATH
:end
```

LISTING 4: AP.BAT adds directories temporarily to the current PATH.

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specifies the local port that will have its output redirected, NB means no banner page, and TI= sets the number of seconds that the network should wait before issuing a printer time-out.

Network printer 0 can still be accessed in the normal fashion. To select network printer 1 or 2, open the Document Print Options screen, enter the appropriate Printer Action Table (PAT) file name for the network printer you want to use, choose (P)arallel Printer Type instead of (N)etwork, and enter 002 (for LPT2) or 003 (for LPT3) in the Device Number field. To print to a locally connected LPT1 printer, use the (P)arallel Printer Type and Device Number 001 (assuming, of course, that a CAPTURE command has not redirected your local LPT1 output to a network printer).

Robert Bell
Fullerton, California

Archiving dBASE Deletions

A simple procedure preserves copies of deleted *dBASE* records in a separate data base file. SAVEDELS.PRG [**LISTING 5**] opens a master file, copies records marked for deletion to

(continues)

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CD ROMs for Developers

If you purchased Microsoft's *Programmer's Library 1.0* CD ROM, you should have received your free 1.1 upgrade by now. The new CD ROM is stuffed to the gills with facts about OS/2, MS-DOS, *Windows*, networking, and PC hardware. Included also is a three-user version of *Opti-Net* networking software, making this the ideal on-line library for small programming teams (you can add more users at $65 a pop).

Programmer's Library is by far the most impressive PC technical reference ever assembled. Sharing one CD ROM disk is the complete text of the *MS-DOS Encyclopedia* along with programming references for C, Macro Assembler, BASIC, Pascal, and FORTRAN. The disk stores the contents of several books, including Peter Norton's *Programmer's Guide to the IBM PC and PS/2*, *Microsoft QuickC Programming*, and *Advanced OS/2 Programming*, plus volumes 1 through 4 of the *Microsoft Systems Journal*. There's also 15MB of sample code ready for cutting and pasting into your own programs. The list goes on ond on.

Best of all is the superb browse program. After searching for keywords, I just click a reference line to view the full text and then click special charocters to scan cross-references and study sample code. The browser is so engaging, I often have to force myself to stop reading and get back to work.

Unfortunately, only a few other CD ROM publishers cater to developers. One good CD ROM source is the Bureau of Electronic Publishing. Another is Alde International Publishing, which produces several titles including the *Ada ROM* and the 20MB *C CD-ROM* of public domain C programs—a real find for C source-code collectors. Some of the C programs date back to CP/M days, but I was able to compile much of the code with *QuickC* and *Turbo C*.

I wish one of these companies would consider publishing the remarkable *Moby Words* on a CD ROM. This ten-disk set from Illumind compresses over 500,000 words and phrases plus such extras as 21,400 common names and a file of 9000 star positions. Despite the 7MB of disk space required to hold the uncompressed files, *Moby Words* is a great data source for sort and index benchmarks. And now that I've got the words at hand, I can get to work on that super spelling checker I've always wanted to write.

I welcome your comments. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. —*Tom Swan*

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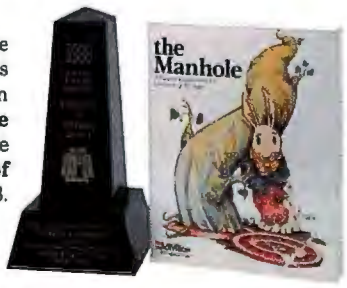

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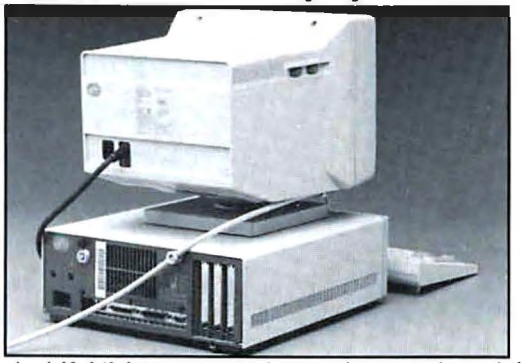

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```
USE MASTER
COPY TO TEMP FOR DELETED()
IF .NOT. FILE("OLDRECS.DBF")
   COPY STRUCTURE TO OLDRECS
ENDIF
USE OLDRECS
APPEND FROM TEMP
USE MASTER
PACK
USE
ERASE TEMP.DBF
```

LISTING 5: SAVEDELS.PRG transfers deleted dBASE records to OLDRECS.DBF for safekeeping.

TEMP.DBF, creates OLDRECS-.DBF (the first time), and appends marked records from the master file to that file. The program then packs the master file to delete the marked records and erases TEMP.DBF. To use SAVEDELS, change MASTER to your data base's file name, and type DO SAVEDELS at *dBASE*'s dot prompt.

Audrey Troyka
Merrick, New York

Improving WHEREIS

Jeff Richards's WHEREIS.BAT ["Seek and DOS Shall Find," *Star-Dot-Star, PCW,* July 1989] works well, but for DOS 3.3 users, there's an easier file search technique that supports wild cards and works with uppercase and lowercase file names:

```
echo off
cd\
echo Searching for %1...
attrib %1 /s | more
pause
```

This batch file, which I call SF.BAT, makes use of the ATTRIB command's /s parameter to hunt down files. The batch file's PAUSE command lets you read the results before returning

(continues)

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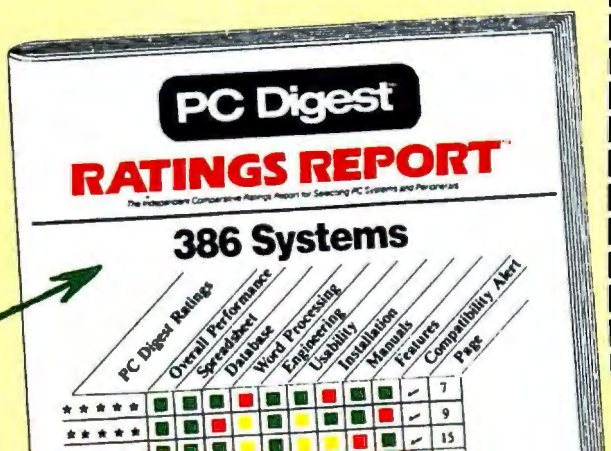

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to another program—for example, when executing SF from inside a *Microsoft Word* macro.

John East
Oxnard, California

*Editor's note: ATTRIB was never intended to search for files this way, but it works great! Enter commands such as SF LOAN.WKS and SF *.PAS, and if SF.BAT finds the specified files, ATTRIB will display their full path names.*

Tom Swan is the author of Mastering Turbo Pascal 5.5 *(Howard W. Sams, Indianapolis, Indiana, 1989).*

Share your tips and discoveries with PC World *readers; see* How to Contact PC World, *page 4.* ●

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You can protect confidential *Professional Write 2.0* files with passwords. When you're ready to save a document, press <Ctrl>-S, enter a file name in the dialog box, press <Tab> twice, press E, and press <Enter>. *Professional Write* will display a dialog box and prompt you for a password. From now on, every time you access this file the program will prompt you for the password, so don't forget it.

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NETWORK Q&A

Tips and strategies for departmental networking

Downloading fonts across the LAN with WordPerfect, speeding up your server with extra memory, getting around workstation RAM limitations, installing remote printers on a server-based LAN, and choosing the right disk-caching system for your net.

David Ferris

Q. *We have a seven-node Novell* NetWare *LAN. Can we use the single-user version of* WordPerfect 5.0 *to download soft fonts to our network LaserJet?*

Kevin Shannon
Huntsville, Alabama

A. You're in luck—*WordPerfect 5.0* is fairly well behaved on a LAN. To redirect output from your printer port to the network spooler, you'll need to issue a *NetWare* Capture command from the command line (or a batch file) before loading *WordPerfect*.

Once you have redirected the printer output, you can employ the same *WordPerfect* commands you'd use to download fonts to a local LaserJet. Keep fonts to a minimum so you don't use printer memory. Mark seldom-used fonts with a plus sign so they'll be cleared from memory after printing.

Q. *We are running* NetWare 286 *on a first generation (16-MHz) Compaq 386 server. How can we make workstation applications run faster? Specifically, how critical is it to have a lot of memory and an 80387 math coprocessor in the server?*

T. J. Miyoshi
Denver, Colorado

A. Speeding up network performance is complicated. While you can't do anything to your server to affect how fast applications *run* on your workstations, you can definitely speed up server disk I/O and network traffic.

It is important to have plenty of memory in your server; *NetWare* uses it to set up disk buffers, which can speed up reads and writes on the server disk significantly. Three to four megabytes of server RAM should be sufficient for a 300MB hard disk. If you have a gigantic hard disk, you might need as much as 8MB.

Adding an 80387 will not improve performance; today's network operating systems do not use floating-point arithmetic. In the future, as server-based applications like SQL data bases become more common, floating-point arithmetic will probably play a larger part, but until then you can forget about installing this chip in your servers.

One excellent and relatively inexpensive way to speed up LAN performance (regardless of topology) is to install two network boards in your server. You don't need complicated bridging hardware or software; simply connect the boards in series using your standard network cabling. When the server is heavily loaded, this can cut the time it takes to service a disk request from a workstation by 30 to 40 percent.

Q. *I'm running* NetWare *on an AT-compatible file server with 1MB of memory and 2MB of expanded memory, and I have set up my CONFIG.SYS to run* Windows' *disk-caching program, SmartDrive. I want to run* PageMaker 3.0, *which has* Windows *built in. But when I try to load it, a message comes up saying there isn't enough memory. What should I do?*

Frank Schmidt
Frankfort, Kentucky

A. You're running into a classic case of RAM cram. Typically, with DOS, *NetWare*, NETBIOS, assorted device drivers, and a

(continues)

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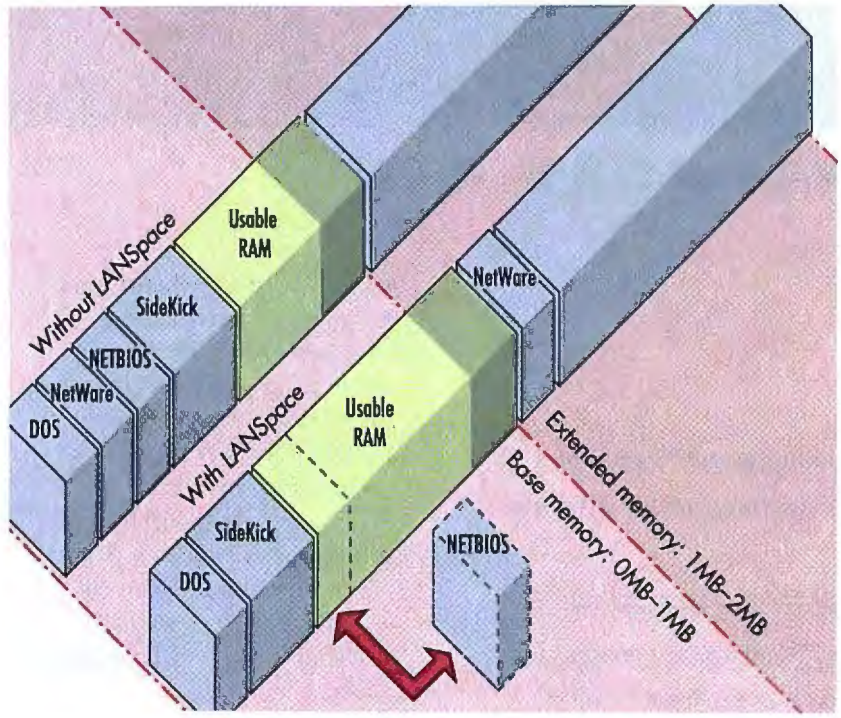

LANSpace puts Novell's NetWare shell into extended memory and allows you to swap NETBIOS in and out as needed.

TSR loaded, you can end up with only 520K of usable workstation memory. *PageMaker* needs a minimum of 550K.

Until network software takes better advantage of operating systems like OS/2 that can access more than 640K of RAM, there are only two solutions to your problem. The simplest is to log off the network and reboot (using a different set of AUTOEXEC.BAT and CONFIG.SYS files that load a minimum of RAM-hungry TSRs) before running *PageMaker*. You'll be disconnected from the network printer, so you'll need to connect a printer to your PC. After your *PageMaker* session is finished, you can reboot with your normal AUTOEXEC.BAT and CONFIG.SYS.

Another choice is to try an excellent new utility called *LANSpace* that provides two memory-saving options: It moves the *NetWare* shell into extended memory, and it lets you load and unload NETBIOS without rebooting. This can give you up to 56K of additional RAM.

Q. *We run* NetWare *on a thin-wire Ethernet LAN with a centrally located file server. Users in remote sections of the building can access the LAN via a repeater, but they have to walk a long way to get printouts from the network printer, which is attached to the server. Is there any way to provide a remote printer for them that will attach directly to the network cable without a PC?*

Kraig Patterson
Salt Lake City, Utah

A. If you are running *NetWare 2.15*, which supports AppleTalk, you can connect an AppleLaserWriter directly to your network

(continues)

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via a LocalTalk cable; *NetWare* can then send output to the LaserWriter.

Otherwise, your best bet is to turn an inexpensive PC into a remote print server via products such as *PS-Print* and *LANSpool* (see *Network Q&A*, *PCW*, October 1989). Take your oldest, slowest PC, place it close to your remote users, install a network board, and plug the PC into the network. Now you can simply connect a printer to the new server and run *PS-Print* or *LANSpool*. Your remoter users will need to run the TSR component of these programs on their workstations, but their printing problems will be solved.

Q. *I have read that Novell* NetWare *is "hardware independent." How does this statement apply to disk caching? In particular, if a system has an Intel 82385 cache controller, will it be used by* NetWare? *Is there any particular cache system (hardware or software) that performs particularly well with* NetWare?

Jack Goodell
Talent, Oregon

A. You are referring to two different types of caching: memory caching and disk caching. Both stash data, but otherwise they serve different purposes.

A *memory cache* is a special section of high-speed memory that sits between the CPU and the system RAM. The CPU can access instructions and data in the cache much faster than from regular RAM. The Intel 82385 cache controller sets up and manages this memory cache; *NetWare* doesn't know anything about it and doesn't need to. In this sense, it is "independent" of the 82385 cache controller.

Disk caching is another story. The disk cache sits between the hard disk and system memory. The CPU can access data in the cache much faster than it can read it from disk. Disk-caching software tries to anticipate what disk-based information will be needed next and place it in RAM before the CPU needs it.

Disk caching is especially important on a network, where multiple users make simultaneous disk requests. *NetWare* sets up its own disk cache; the more memory your server has, the more *NetWare* devotes to disk caching. For instance, although 3MB or 4MB of RAM is recommended for a *NetWare* server, *NetWare* code requires only

(continues)

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about 500K of that; the rest is used for disk caching.

A number of third-party disk subsystems employ their own caching, so you may end up running several disk-caching schemes on top of one another. Since Novell goes to great lengths to "train" disk manufacturers about how its caching works, conflicts are rare—and in this sense, *NetWare*'s disk caching is hardware independent. Nonetheless, make sure any disk subsystem you buy is Novell "certified," or at least designed to work with *NetWare*.

David Ferris is the president of Ferris Networks, a San Francisco-based PC dealer specializing in networks.

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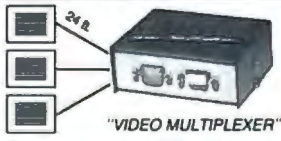

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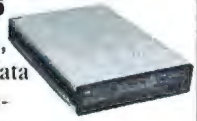

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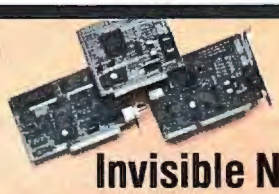

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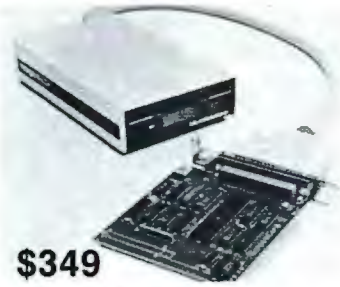

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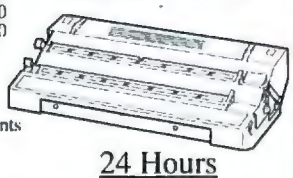

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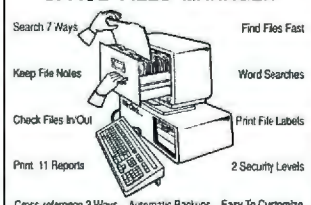

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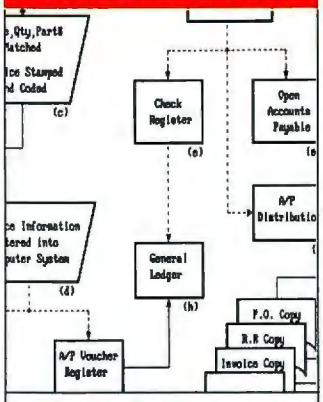

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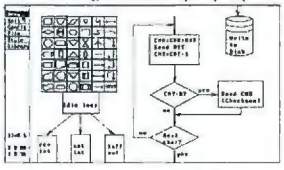

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- 80387 SOCKET
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- 40 MB (ST-251-28 MS)
- One 1.2 MB FD
- 101 Key Board (Click Feel)
- 80386-25 (option)

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- 80286-10 (option)
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- 80287 Socket
- 200 W Power Supply
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- Side 15 1/4 " X 9 1/2" X 8"
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LCD-386-20 __ $2195.00

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- 20 MB HD ST-225
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- Phoenix BIOS
- 101 Key Enhanced Keyboard with tactile click
- Parallel & Serial Ports
- Clock Calendar
- 1.2mb Floppy Disk Drive
- 5 Drive Bays
- 8 Expansion Slots
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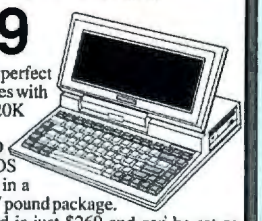
SPECIALS

Toshiba T1000

$639



The T1000 is the perfect second PC! It comes with 512K of Ram, a 720K floppy drive, a supertwist LCD screen and MS-DOS in ROM! All this in a battery-powered 7 pound package. A 768K Ram card is just $269 and can be set as base, expanded, or a non-volitile Ram disk.

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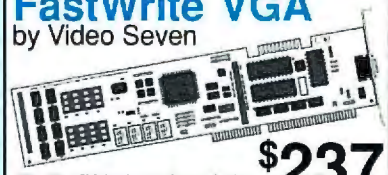

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The MICROBIZ CONTROLLER SERIES is extremely flexible. MICROBIZ works the way you run your business. Use it with or without a bar code reader to scan transactions; use it with or without a cash drawer; use it with or without a receipt printer... or, use it with the bar code reader, scanner, cash drawer and receipt printer to form a complete POS (Point-of-Sale System).

For point-of-sale transactions, the operator simply scans the bar code label on merchandise (or enters transactions through the keyboard) and with one keystroke can produce a complete receipt containing a description of the merchandise, quantity, and discounts, if applicable. The average transaction takes only seconds.

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A COMPLETE POINT-OF-SALE SYSTEM

AT A FRACTION OF THE PRICE. THE RETAIL CONTROLLER, JR. offers most of the features found in the THE RETAIL STORE at a fraction of the price. THE RETAIL CONTROLLER, JR. does not handle accounts receivable, purchase orders and layaway plans. If you find that you need these features, you may update to THE RETAIL STORE COMPLETE EDITION at any future time. Your data is 100% compatible. The transfer is easy.

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■ 'Pop-up' windows let you select inventory items ■ Pull down menus ■ Suitable for most small Retail stores ■ Track promotional sales ■ Point & Select ■ Multi-level Password protection ■ One Work Screen for all transactions ■ Item or Invoice discounts ■ View 'in stock' condition from Work Screen ■ Refund reports ■ Daily close-out report ■ Automatic price lookup (for invoices) ■ Promotional price lookup ■ Set limited time promotions ■ Accepts manufacturers bar codes ■ Accepts split tender ■ Automatically calculate change ■ Track inventory by size/color/style ■ Flexible tax percentages ■ Reorder reports ■ Receiving reports ■ Bin labels ■ Track sales by salesperson ■ Take markdowns by SKU or Department ■ Sales reports: Department, Employee, Unit sales history, Overall Summary ■ Mailing labels ■ Track customer history ■ Simple price changes ■ Customize features to fit individual business needs ■ Supports bar code readers/cash drawers/keyports ■ Prints on plain paper or custom invoices ■ Links to MICROBIZ bar code printing software ■ Prints 40 or 80 column receipts ■ Links to ACCPAC EASY

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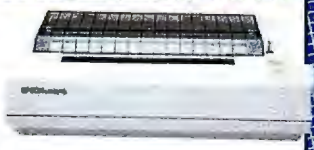

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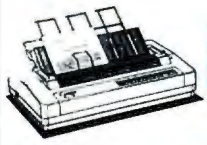

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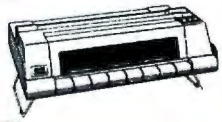

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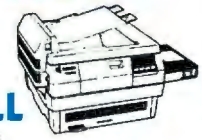

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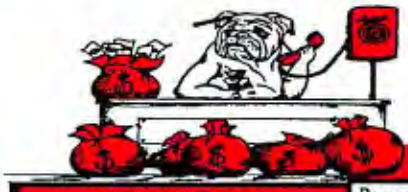

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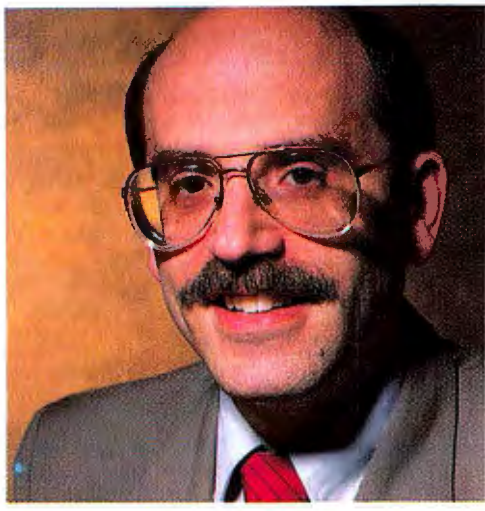
Law of the Jungle?



Marc B. Schnapp

Software publishing pachyderms should pay less attention to the law of the jungle and more to life in the jungle—or the way it could be if the biggest would leave a little something in the watering hole for their fellow inhabitants.

Consider what high school biology taught us about symbiotic relationships between animals. For example, look at the yellow-billed oxpecker, a diminutive hitchhiker that keeps ticks and other nasty insects off the backs of rhinoceroses, elephants, and hippopotamuses.

There once was room on Ashton-Tate's broad back for such simpatico passengers as Fox & Geller. The late George Tate knew these small fix-it companies could make ticks more bearable and increase customer devotion to his data base language. When Jeff Fox and Jake Geller cobbled together *Quickreport*, *dBASE* reports improved. When programmers needed a tool to make sense of their swelling applications, Wallsoft gave them *dFlow*.

Everyone was fruitful and multiplied.

Last year, I remarked to the NY Metro Clipper User Group how helpful mouse support would be for navigating a data base with a lot of fields—think how many taps of the <Enter> key we'd eliminate if we could move the mouse cursor past 30 to 40 fields and click on the one we wanted. A few months later, one group member gave me a shrink-wrapped box containing *FUNCky*, which among its 500 or so features included mouse support for Nantucket's dBASE-derived compiler *Clipper*. Dirk Lesko's package is helping me make my corporate clients much happier.

This is one reason dBASE language developers like myself have become so devoted to Nantucket's compiler. Whenever I need a feature that *dBASE* or *Clipper* doesn't provide, I simply consult the PC publications or my user group colleagues for a lead on products. We *Clipper*-ites can always find a nifty add-on from some small entrepreneur. In this environment, users and developers alike have thrived.

But into this cozy habitat, Nantucket has chosen to introduce *Clipper Tools One*, a product of debatable merit that directly challenges the company's add-on industry. This could be a case of poisoning the well—if Nantucket kills off a thriving market of add-on tools, it may also stunt its own growth. And what benefits does Ashton-Tate's *dBASE File Recovery* provide that Paul Heiser's *dSalvage Professional* doesn't—other than a brand name and a marketing budget that lets the rhino roll over the smaller company?

Will the big boys, already hard-pressed to keep their flagships afloat, provide the same quality and support as their smaller but more focused counterparts? Or will quick "revenue enhancers" lead to consumer dissatisfaction, ultimately harming the behemoths' own balance sheets?

Software publishers don't owe add-on vendors a free ride, but are the yellow-billed oxpeckers of the data base market really so threatening? The thick-skinned rhinos of the African continent may lack grace and beauty, but they know better than to roll over on the little creatures that make their lives more bearable. ●

A Queens, New York, computer consultant, Marc B. Schnapp is president of the Professional Association of Database Developers.

Have a different perspective? Write Dan Lavin, User Ombudsman, PC World, *501 Second St., San Francisco, CA 94107.*

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Instead of waiting for the 65 millisecond (ms) access time of an MFM drive, or even the 17 ms of an ESDI drive, you can have instantaneous access to your data. The 325ET is blindingly fast with an average disk access time of 1 ms. In addition, the system architecture allows data transfer speeds that match drive capabilities. (That's really fast!). In fact, the overall read/write performance of the 325ET is 50 times faster (5,000%) than the Compaq[c] 386/25.

53,000 PORTABLE PAGES

The 325ET, when located along side of a monitor, takes little desk space. The compact design of the 325ET lets you carry it onto an airplane and easily stow it under your seat. Imagine bringing the equivalent of seven four-drawer filing cabinets worth of valuable information to your next meeting – accessible in just 1 ms.

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25 Mhz - 80386 1 ms HD ACCESS

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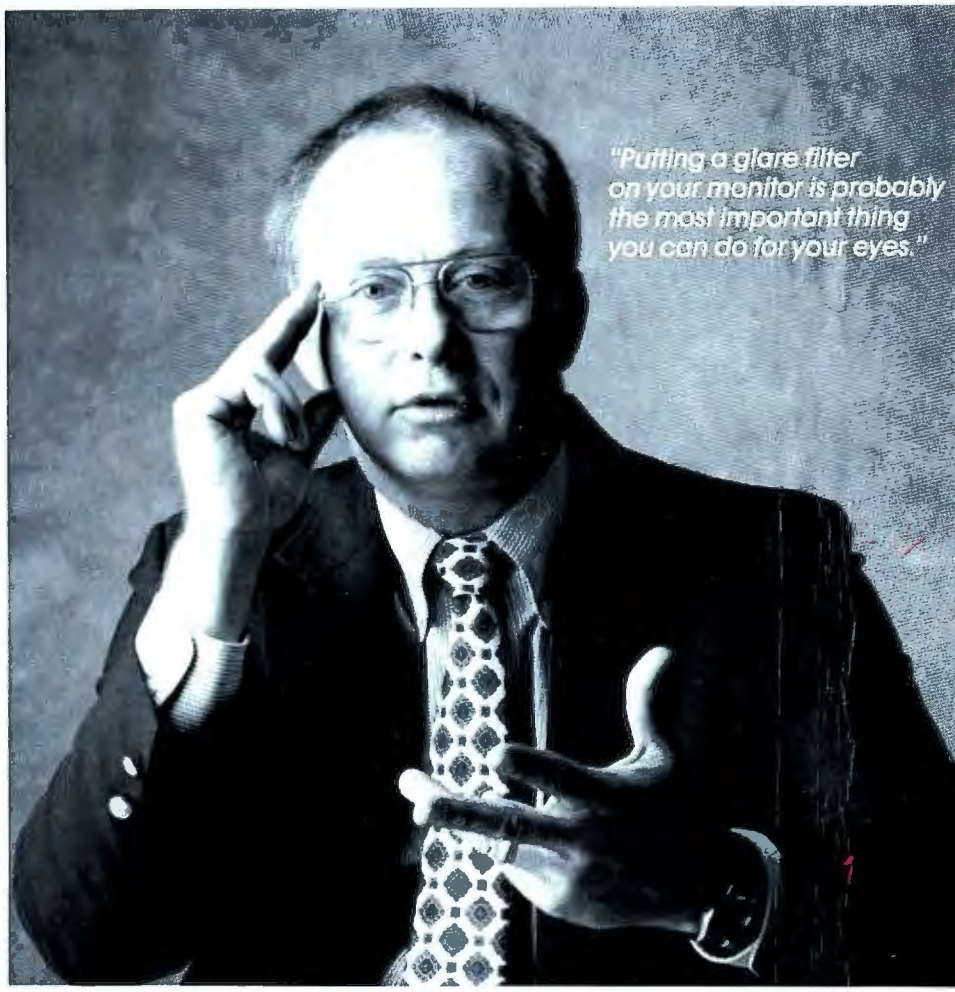
"Since I began using a computer five years ago, my eyeglass prescription has increased three times."



Tom Judd, president and founder of Curtis Manufacturing, on why you should use a glare filter.

"Headaches, blurry vision, scratchy and burning eyes, overall visual fatigue ... These are the most common manifestations of monitor glare.
The solution? Get a glare filter.
The Curtis Anti Glare Glass Filter has been specifically designed to reduce monitor glare and improve on-screen contrast. Using one reduces headaches, visual fatigue, and even neck and back strain.
When I asked our design team to develop the highest quality, best value glare filter on the market, I learned that certain filter elements worked better than others:"

Glass vs. plastic:

"When I tested the plastic models, they scratched so easily after one cleaning, I could see for myself that glass was significantly better."

Glass vs. mesh:

"I have a high resolution color monitor. When I put a mesh filter on it, the monitor was harder to read, not easier. The mesh made the characters appear fuzzy."

Two-sided optical coating vs. one:

"I learned that monitor glare would hit both sides of the filter. A glass filter with optical coating on both sides visibly reduces glare better."

Cleaning the filter:

"All glare filters need to be cleaned occasionally. I asked, 'How?' Our design team answered by including a bottle of specially formulated, non-streaking cleaner and a lint-free cloth in every package. No other manufacturer does this."

Reversible frame:

"I asked for a durable, cosmetically attractive and ergonomically designed frame. Our designers delivered with a unique high-impact injection molded plastic frame which is black on one side—for those who want the utmost ergonomic design—and gray on the other side—for those who want to match the aesthetics of their monitor."

The results:

"The technical specifications of our filters are impressive: glare reduced by 95%, contrast improved 20 times. The design team told me how successful our product was, but I didn't realize it until I put one on my computer. What a difference! In fact, the Curtis Anti-Glare Glass Filter worked so well, I had one added to every computer at our corporate headquarters."

If you'd like to know more about the Curtis Anti-Glare Glass Filter and other Curtis products that make life in front of a computer easier and less stressful, write or call for our free brochure: *Tips to Computing More Comfortably*, Curtis Manufacturing Company, Inc., 30 Fitzgerald Drive, Jaffrey, NH 03452. (603) 532-4123 ext. 99

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